

CRITICAL SYSTEMIC ENGAGEMENTS WITH RURAL
DEVELOPMENT AND NATURE CONSERVATION
ORGANIZATIONS

by

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ABSTRACT

This collection of papers represents the author's maturing reflection on systemic engagements with three different organizations within the latter half of the first decade in post-Apartheid South Africa. The first two papers deal with two different systemic engagements: the first with a rural community development organization in a rural area of KwaZulu-Natal south of Durban and the second with the implementation of a district health system by a provincial health authority, also in KwaZulu-Natal. The last three are concerned with the theoretical and practical aspects of a single critical systems intervention (CSI) for policy development within the KwaZulu-Natal Nature Conservation Service, a parastatal nature conservation organization.

The first paper, *Designing a Management System for a Rural community Development Organization Using a Systemic Action Research Process* describes the use of Soft Systems Methodology (SSM) for the development of a Human Activity System (HAS) Model, that is, a conceptual model of purposeful human activities, to facilitate debate regarding a 'problem situation' faced by the community development organization.

A Critical Systems Intervention to Improve the Implementation of a District Health System in KwaZulu-Natal is the second paper. As the title suggests, this paper describes a Critical Systems Intervention in a district health system implementation process. By using Concept Maps and Sign-Graph diagrams with SSM this paper contributes theoretically to the growing body of literature on methodological pluralism.

Paper 3, *Towards a critical systems approach to policy formulation in organizations* contributes to the literature on organizational policy. It is noted in this paper that whilst there is a substantial body of literature on organizational strategy as well as on public policy, there is a dearth of literature on organizational policy. The thrust of the paper is twofold. Firstly, it draws a distinction and shows the relationship between organizational policy and organizational strategy. Secondly, building on this distinction, it develops a critical systems approach to policy formulation.

Paper 4, *Environmental Paradigms, Biodiversity Conservation and Critical Systems Thinking* develops a framework of environmental paradigms which may be used for any CSI in nature management as a tool for values clarification.

The collection concludes with Paper 5, *A Critical Systems Intervention for Policy Development within a Nature Conservation Organization*. It discusses the process undertaken in the nature conservation organization – Ezemvelo KwaZulu-Natal Wildlife – intervention and shows how the approach to policy formulation (developed in Paper 3) and the framework for environmental paradigms (developed in Paper 4) were used in the intervention.

PREFACE

The work described in this collection of papers for the thesis was carried out in the
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These papers represent original work by the author and have not been submitted in
any form for any degree or diploma to any University.

Where use has been made of the work of others it is duly acknowledged in the text.

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I am grateful to Prof. Richard Bawden, then of the University of Western Sydney, who first introduced me to the stimulating field of systems thinking and suggested that I consider writing a PhD in this area. Prof. Don Petkov, my first supervisor, took the process further by encouraging and supporting my exploration into Critical Systems Thinking and my first hesitant steps into writing the thesis. I am also grateful to Prof. Ben Parker who, as co-supervisor, applied his logically rigorous and insightful mind to the last three papers of this collection. A special thanks is due to Prof. Rob Fincham, my supervisor, who steered me through the last three papers as well as the production of the thesis as a whole. I could not have wished for a more diligent and encouraging supervisor.

In the world hidden from my realm of work is my family. Thabo David, my son, and Thembi-Kate my daughter who suffered my grumpy moods and supplied endless cups of tea to keep me going. And, without the support, encouragement and love of my wife, Kath, the whole project would have been still-born.

Finally, I dedicate this thesis to my mother and father who encouraged me to take my first steps in the long journey of learning.

INTRODUCTION:

**Critical Systemic Engagements with Rural Development and
Nature Conservation Organizations**

Introduction: Critical Systemic Engagements with Rural Development and Nature Conservation Organizations

This collection of papers describes and reflects on systemic engagements with three different organizations. The papers themselves use the word ‘intervention’ rather than engagement and, in the processes described, there was indeed always an intervention in the sense that I, (together with others), outsiders to the organizations concerned, sought to modify (improve) aspects of the organizations. But there was also a commitment to work alongside and ultimately under the authority of the members or officials of the organizations; hence, in retrospect, ‘engagement’ is a more fitting description of the processes. This commitment to participatory processes is evident throughout the reports on the interventions.

These papers, which focus on the three engagements, illustrate the development of my approach to action research and to systems thinking. By way of setting the scene, I discuss the context of the engagements and conclude by summarizing the outcomes of the engagements.

1. THE CONTEXT OF THE ENGAGEMENTS

The three engagements fall within the latter half of the first decade in post-Apartheid South Africa. The first democratic elections held in 1994 ushered in a period of immense expectations for service delivery to the previously disenfranchised and disadvantaged people of South Africa. The new government responded to these expectations by hastily developing a comprehensive suite of new policies and programs which had implications for all public sector departments, including parastatals, at all levels of governance. However, because there is a shortage of management capacity and skills in the country, this has led to an implementation crisis. This climate of change and crisis was both the catalyst and context for the engagements described in the papers that follow.

The first engagement was with a network of community based organizations in a rural area of KwaZulu-Natal (KZN) in South Africa. These organizations are all located within a traditional area (Embo) and are bound together by an umbrella organization known as the Embo Masakhane Community Development Organization (EMCDO). EMCDO has an executive elected by the members of the community based organizations. This executive had run into difficulties in an attempt to deliver on an ambitious development plan (the

Framework Report) and I was asked by the executive to facilitate a process to improve the management of the delivery of the projects. This engagement is discussed in Paper 1, *Designing a Management System for a Rural community Development Organization Using a Systemic Action Research Process* (Luckett, et.al., 2001)¹.

The second engagement, discussed in Paper 2, *A Critical Systems Intervention to Improve the Implementation of a District Health System in KwaZulu-Natal* (Luckett and Grossenbacher, 2003)², was an attempt to deal with some impediments to a process of implementation of a District Health System (DHS) in KZN. Soon after the first democratic elections (1994) in South Africa, the Minister of Health of the province began a process of restructuring the (Apartheid-era) inherited health system. The core of the restructuring process into a DHS was a primary health care oriented approach, that is, an approach in which health care providers work with the public in order to improve the general health of their communities. The implementation of the DHS had run into a number of difficulties and through an invitation from the Health Care Trust, a non-government organization, with a solid reputation in the health sector in KZN, we (a masters student and myself) conducted a critical systems engagement with various stakeholders in the health sector.

The last of the three engagements was with Ezemvelo KZN Wildlife (EKZNW), a parastatal nature conservation organization in KZN. EKZNW was, at the time, undergoing a time and resource consuming restructuring exercise and was, as part of this exercise, engaged in a five year strategic planning programme. As part of its strategic plans, the organization had identified the (re)formulation of its conservation policies as a strategic priority. Many of the existing policies were vague and ambiguous and, therefore, often ignored by officials in the organization. The implementation details of this engagement are discussed in Paper 5, *A Critical Systems Intervention for Policy Development within a Nature Conservation Organization*, (Luckett, 2004b). This paper builds on theoretical frameworks that were developed during the engagements which are set out in the two remaining papers in this collection, namely, Paper 3, *Towards a critical systems approach*

¹ The research process was conceptualised, directed and written up by myself. The other authors were two undergraduate students and native speakers of isiZulu. Their role in the research project was to conduct the fieldwork.

² This paper was based on research undertaken by Grossenbacher for a Master's dissertation supervised by myself. I wrote the paper.

to policy formulation in organizations (Lockett, 2003) and Paper 4, *Environmental Paradigms, Biodiversity Conservation and Critical Systems Thinking* (Lockett, 2004a).

2. ACTION RESEARCH

Action research is considered (originally by Lewin (1951)) as a more appropriate way of doing research into social phenomena than research that is based on the scientific method, which assumes given general laws, the validity of which are tested through the formulation of hypotheses. This is especially the case where one of the aims of the research is to bring about an improvement in the social situation being investigated. Action research is essentially a learning process which iterates between theory and practice such that this learning is usually conceptualized as a cycle. In Paper 1 this cycle is typified, quite simply, as ‘observing’, ‘reflecting’ (‘theorizing’) and ‘doing’. In the next engagement, my conceptualisation of the learning cycle is considerably refined. There the elements of the cycle are derived from Kolb (1984). The Kolbian learning cycle (KLC) provides a more sophisticated framework of phases of the cycle, namely, ‘diverging’, ‘assimilating’, ‘converging’ and ‘accommodating’. In this paper the theory underpinning these phases is spelt out and they are then related to the seven-stage version of Soft Systems Methodology (SSM)³ (Checkland, 1981). Thus SSM is taken to be a particular form of action research (Checkland and Holwell, 1998).

SSM is, however, not the only systems intervention methodology that may be conceptualized as an action research process. Jackson (2003) sets out a framework for what he calls Critical Systems Practice (CSP) which is also an action research process, although Jackson does not articulate it as such. Table 1 compares the CSP with the KLC.

³ Richard Bawden and his colleagues at the Centre for Systemic Development, University of Western Sydney (Hawkesbury) introduced me to the link between Kolb’s Learning Cycle and Soft Systems Methodology.

Table 1. A comparison between Jackson's (2003) Critical Systems Practice and Kolb's (1984) Learning Cycle

Jackson's CSP	Kolb's LC
Creativity Highlighting significant concerns, issues & problems	Divergence Becoming aware of meaning and values in a situation; viewing situations from many perspectives; generating alternative ideas relevant to a situation
Choice Choosing appropriate methodologies/methods in combination	Assimilation Creating theoretical models; assimilating disparate observations into integrated explanations
Implementation Deciding on and implementing specific proposals for change	Convergence Debating & decision making; applying theoretical models
Reflection Producing learning about the problem situation and the methodologies/methods used	Accommodation Carrying out planned tasks

In Paper 5, I discuss both of these action research processes and on the basis of this discussion, together with insights from Vickers (1965), construct a revised action research cycle which is described in the paper.

3. CRITICAL SYSTEMS THINKING

The philosophical framework for all the papers in the collection is Critical Systems Thinking (CST). Systems thinking, following Checkland and Scholes (1990), may be defined as an approach which makes use of the concept of 'adaptive wholes'.

There are three⁴ main paradigms of systems thinking, namely, functionalist, interpretive and critical. Early CST (Flood and Jackson, 1991) was conceptualised as having three interrelated intentions or commitments, namely, *emancipation*, *critical awareness*, and *complementarism*. With Midgley (1996, 2000) I argue that these be replaced by

⁴ Jackson (2000) adds a fourth, namely, postmodernism. However, by his own admission, "postmodernism does not offer us a systemic conceptual framework, or even a systemic manner of proceeding in intervention" (Jackson 2000, p.335). Furthermore, attempts to find ways to synthesize postmodern insights with systems thinking have only a few proponents. It is therefore a little premature to regard postmodern systems thinking as a paradigm. A definition of a paradigm is given in Paper 3.

improvement, boundary critique, and methodological pluralism respectively. I discuss how this collection of papers deals with each of these three commitments in turn.

Improvement

In all three engagements the concern was for improvement (generally) rather than emancipation (specifically). In Paper 1 the issue of emancipation is discussed but it was assumed, at the beginning of the engagement, that because of the democratic nature of the organization, the possibility of a skewed distribution of power was not significant enough to warrant the use of an emancipatory methodology. (The paper does, however, recognize that this assumption was misplaced.) Consequently, SSM, an interpretive methodology, was selected for the engagement.

In the next (District Health System) engagement, SSM was used as the ‘governing’ methodology, that is, SSM with some variations from the standard usages of the methodology. In Paper 2, reflecting on this engagement, the limitations of the approach are pointed out. In this intervention the range of participants was restricted to those who were immediately involved in the implementation process. We assumed that there was no skewed distribution of power amongst the implementers, and so thought it appropriate to use an interpretive methodology. However, if a wider range of participants, such as the ‘public’ or ‘politicians’, had been included, then there would, in all likelihood, have been very different power dynamics. In such a case a methodology such as Ulrich’s (1994) Critical Systems Heuristics (in conjunction with SSM) would have been more appropriate. However, Critical Systems Heuristics results in the surfacing of tensions which we didn’t feel we had the expertise to manage in that particular context.

I discuss the theoretical question about the possibility of an emancipatory systems methodology in Paper 1 and again more fully in Paper 4. Essentially I argue there is no systems methodology that can be used in situations where the distribution of power is so skewed that the possibility of open debate is foreclosed. If the distribution of power is not sufficiently skewed to foreclose rational debate, then one can successfully employ an interpretive methodology. Therefore emancipation is a questionable goal for CST; other non-systemic processes would be more appropriate. CST should, therefore, aspire only to the goal of improvement without any emancipatory dimension.

Improvement is, as I point out in the discussion on systems thinking paradigms in Paper 3, common to both interpretive and critical systems approaches. However, where the critical approaches differ from the interpretive approaches is that the former aim to provide a

mechanism for the clarification of the values of the stakeholders. An example of such a mechanism in the form of a table of environmental paradigms is provided in Paper 4.

Boundary critique

One of the fundamental tenets of the systems approach is that everything is related to everything else. However, when we apply this approach to the real world it is inevitable that assumptions will be made about the system-in-focus, that is, what is to be taken as part of the system and what is to be left out. These assumptions are known as boundary judgments; boundary critique is the ethical reflection on these boundary judgments.

Boundary critique is alluded to in Paper 1. It had not, at that stage, become a significant part in my thinking regarding systems interventions. It is, however, given some attention in both Papers 3 and 5. In Paper 3 the close inter-relationship between boundary judgements and methodology design is noted, as is the relationship between the perception of the inquiry context and the boundary judgments. In Paper 5, I reflect on the implications of boundary judgements for various aspects of the nature conservation organization intervention, namely, the role of policy and the underlying policy principles.

Methodological pluralism

With regard to the third aspect of CST, methodological pluralism, not only has my thinking shifted over time but also, my position as set out in Paper 5, differs from that of Jackson on whom I relied heavily in Papers 1 and 2.

Methodological pluralism, which is not only an issue for systems thinking, but also for management science in general, has arisen as an issue in response to the many methodologies, methods, models, tools and techniques that have been developed. As pointed out in Paper 3, two landmarks in the early development of methodological pluralism are the System of System Methodologies (SOSM) and the Total Systems Intervention (TSI), both involving the authorship of Jackson. Both of these approaches are, however, too rigid in that they recommend the use of whole methodologies⁵ either singly, depending on the context, in the case of SOSM or in combination in the case of TSI. A move towards greater flexibility gained ground especially with the publication of Mingers and Gill's (1997) collection of papers on multimethodology. Flexibility could be

⁵ Complementarism, as it was then known, was concerned with the complementary use of whole methodologies.

considerably enhanced by detaching methods, models, tools and techniques from methodologies. This move was embraced by both Jackson (1997, 2000) and Midgley (1997, 2000) and it is now widely accepted that, for example, methodologies and methods from different paradigms may be combined to suit the needs of particular interventions. Jackson, however, recommends that an interpretive ‘governing methodology’ be used in the initial stages of any intervention because, as he suggests, this gives the participants the “freedom to design [their] own futures” (Jackson 1997, p. 374).

4. OUTCOMES OF THE ENGAGEMENTS

In the first engagement, the use of SSM’s Rich Picture proved, as was expected, to be especially useful to the participants in clarifying the problematic issues. What was a little more surprising, given the level of education of the core group of stakeholders, was that the participatory involvement in the construction of Root Definitions (definitions of conceptual models of human activity systems) and the associated use of CATWOE⁶ – a very technical stage of SSM – helped to clarify their preferred transformation. However, the engagement also had various shortcomings, which are acknowledged in Paper 1. Amongst these was the fact that the full cycle SSM was not completed; its completion being thwarted by national political developments concerning municipalities and their boundaries which were beyond the control of the participants. The preferred transformation was, therefore, never implemented.

In the second engagement, as pointed out in Section 2 above, SSM was used as a ‘governing’ methodology. In this case Concept Maps and Sign-Graph diagrams were used instead of the usual Rich Pictures, as a basis for the development of the Root Definitions. The participatory use of these, together with the resulting conceptual models, helped to restart the implementation of health systems again, after it had ground to a halt. Also, at the theoretical level, by using the concept maps and Sign-Graph diagrams with SSM, Paper 2 contributes to the growing body of literature on methodological pluralism.

⁶ C is the customer/beneficiary/victim of the transformation activity; A the actors who make the system work, i.e., perform the activities of the system; T the (purposeful) transformation activity; W, the ‘worldview’ or assumptions underlying the system which make it meaningful; O, the ‘owners’ or key decision-makers who have the power to stop the transformation activity; E, the constraints in the environment which the system takes as given, i.e., the components of the environment which impact on the system, but over which the system owners have no influence.

The engagement with EKZNW began as a research project into policy implementation initiated by myself. However, at the request of senior officials and in the ‘spirit of engagement’, I shifted the focus of the research into the role of policies in the organization and the development of a user friendly policy format. During the engagement I worked closely with senior managers who formed a project steering committee to oversee the process which involved interviews of officials at many different levels of the organization, as well as participation in meetings of key decision-making bodies of the organization. The outcomes for the organization were a set of principles for all biodiversity conservation policies, a new policy format and a number of new policies. These outcomes made a substantial contribution to the strategic priorities of the organization.

Paper 3, the first paper that provides a theoretical foundation for the EKZNW engagement, contributes to organizational studies by clarifying the relationship between organizational policy and organizational strategy. The failure to draw this distinction and to focus on strategy is typified in Pidd’s (2004) discussion on strategy development and policy-making. He states unequivocally that, “The terms strategy and policy, whether in the private and public sectors, are taken to be the same” (Pidd 2004, p.791). Secondly, building on this distinction, Paper 3 develops a critical systems approach to policy formulation. In doing so, the paper refers to three paradigms (Kuhn, 1962) of systems thinking and discusses in some detail the differences between Midgley’s (2000) and Jackson’s (2000) understanding of critical systems thinking (CST). At the end of this discussion my view on what constitutes the key elements of CST are synthesized. I then proceed to use this as a basis for developing a critical systems approach to the formulation of organizational policy.

Paper 4, the second paper that provides a theoretical foundation for the EKZNW engagement, develops a framework of environmental paradigms which may be used for any critical systems engagement in nature management, as a tool for values clarification. Values clarification is a key element in CST and the framework expands significantly on Midgley’s (1994) insights into the boundary implications of two different paradigms of thought about the interaction between humans and nature.

5. SUMMARY

This set of five papers based on three CST engagements demonstrate the practical value of CST in development contexts as well as contribute to the refinement of CST theory in the

light of this practice. With respect to the development of my own thinking this series of engagements and reflections thereon has refined my understanding of action research and enabled me to develop a more comprehensive understanding of the key commitments of CST – improvement, boundary critique and methodological pluralism. In turn this has led to an increasingly rich critical systems praxis as demonstrated in the papers that follow.

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PAPER 1:

**Designing a Management System for a Rural Community
Development Organization using a Systemic Action Research
Process**

Designing a Management System for a Rural Community Development Organisation Using a Systemic Action Research Process

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ABSTRACT

This paper describes the first phase, 'finding out', of a systemic participatory action-research intervention in the management systems of rural community development organisation in the KwaZulu-Natal province of South Africa. The aims of the intervention are to (a) improve the management system of this organization and (b) evaluate the usefulness of particular systems methodologies for the improvement of management systems of organisations involved in community development in under-resourced rural contexts. The second phase, 'implementation', needs to be completed and thoroughly evaluated before any final conclusions can be drawn about the suitability of the chosen systems framework for Third World type rural contexts. However, the second phase is, at the time of writing, underway and all indications are that an interpretive ('soft') systems methodology, combined with insights from a more functionalist ('hard') approach (with methods chosen through a Critical Systems Framework) holds much promise for participatory systemic interventions in these contexts.

1. INTRODUCTION

This paper describes the first phase of an ongoing participatory action-research (PAR) ‘intervention’¹ that seeks to improve the management system of a rural community-based organisation in the KwaZulu-Natal province of South Africa. The paper begins by briefly setting out the socio-economic context of the community development organisation, Embo Masakhane Community Development Organisation (EMCDO), with whom we worked during this phase of the intervention. This is followed by a theoretical section that describes the systemic action-research methodology used in this intervention. Critical Systems Thinking (CST) informed the choice of systems methodologies and group process methods: Soft Systems Methodology (SSM), Viable System Model (VSM), Concept-mapping and Delphi. We briefly introduce Critical Systems Thinking (CST), Hard Systems Thinking (HST) and Soft Systems Thinking (SST) and outline a methodology known as Soft Systems Methodology (SSM) in some detail because it was the ‘dominant’ methodology used in our action-research process. The techniques, Concept-mapping and Delphi will be explained at the relevant points in the text, i.e., where they are used.

It is important to note here that SSM lends itself to a participatory action-research (PAR) process. And, like any PAR, it results in participatory design(s) for the improvement of the situation, action-for-improvement based on those designs, theoretical insights/questions and therefore new ‘learnings’ by the participants accompanied by the generation of new research themes.

2. BACKGROUND AND CONTEXT

2.1. Embo Masakhane Community Development Organization and the Embo region

Located both south and north-west of the greater Durban metropolitan area, Embo is a rural area governed by traditional tribal authorities. The area serviced by EMCDO, and

¹ “Project” would be a more familiar word to use here, but we prefer to think about our involvement as an ongoing intervention process. The word “project” too often carries the connotations of something with a fixed beginning and end, with “measurable outcomes” and which allows no space for emergent issues and new twists and turns so characteristic of the flux of human affairs. Since our concern is both to research the appropriateness of particular systems methodologies to organisations working in under-resourced rural communities and , at the same time, to see an improvement in the conditions of the people in those communities, the intervention is best broadly understood as an action-research process.

therefore of concern here, are the three tribal authorities located in the south: Embo-Thimuni, Embo-Vumakwenza and Embo-Isimahla.

Embo² has an interesting history in that it is one of the original six ‘native’ reserves established during the last century by the British Governor, Sir Theophilus Shepstone, and is the original home of the Mkhize clan which is one of the largest clans in KwaZulu-Natal and dates back to the pre-Shakan era. Traditional rule is consequently strongly entrenched and the ‘amakhosi’ (tribal chiefs) are deeply respected. During the political upheavals of the 1980s and early 1990s, thousand of lives were lost in bloody clashes between the ‘traditionalist’ Inkatha Freedom Party³ (IFP) members and the more ‘modern’ African National Congress (ANC) supporters in KwaZulu-Natal.

In the Embo tribal authorities there is strong support for the IFP, but there is also a significant ANC presence. EMCDO is itself a ‘modern’ organisation and the leadership has had to find a way of engaging the people of Embo in development projects without threatening the authority of the ‘amakhosi’. This, in itself, is no small achievement and that it has been able to do so suggests that it has deep roots in the area.

There is no accurate population and economic data for the region. What evidence there is (Gibb Africa *et.al.*, 1998) suggests that the current population is somewhere between 80 000 – 105 000 people, with about 30% of the working-age population (16-60 yrs.) economically active in the region⁴. A large proportion of these are in informal sector occupations.

The geo-physical landscape presents considerable challenges to development. Because of the shallow soils in 92% of the region, there is very little agricultural potential. Yet the informal sector is almost entirely agriculturally based. The topography is characterised by deep valleys and steep, eroded granite hills. The traditional homesteads scattered in these remote areas are connected by untarred roads in very poor condition. Telecommunications and electricity has reached almost none of these homesteads and villages. This poor communications infrastructure is another serious impediment to development.

² We use the word ‘Embo’ to refer to the three tribal authorities collectively.

³ The Inkatha Freedom Party (IFP) is the dominant and governing party in the province and the African National Congress (ANC) is the official opposition.

⁴ If other rural areas are anything to go by, a more than 80% of the employed males are migrant labourers.

It is in these conditions, not dissimilar to many other parts of the province, that EMCDO is attempting to initiate and coordinate development projects and programs.

2.2. The ‘Development Framework’

In 1996 EMCDO commissioned a consortium of consultants (Gibb Africa, Lima Rural Development Foundation and Metroplan) to initiate a ‘development process’ with the objective of facilitating the social, economic and physical advancement of the communities of Embo. The consortium embarked on an ambitious ‘multi-faceted and holistic’ process which was participatory as far as possible, within the time constraints and included Participatory Rural Appraisal (PRA)⁵ exercises in at least 14 areas (Gibb Africa et al. 1998).

In 1998 the consortium produced a substantial report, the ‘Embo Rural Development Framework’ which, within a spatially coordinated framework, spells out strategies for: economic development; addressing environmental concerns; the provision of social services; the provision of bulk infrastructure; institutional development; and, land development and housing.

Within these strategies no less than 400 projects have been identified, including community gardens, schools and communication infrastructure. (This is not counting roads and other infrastructural development. If we include these, the total number of projects is close to 1000.)

The management requirements for such a plan within the geo-physical and communication constraints and complex social structures and relationships would stretch even well-resourced organisations.

Within less than a year, available evidence suggests that many of the community gardens that were initiated are floundering and at least one project, for which there has been substantial start-up funding, has not got off the ground.

⁵ This is a method which, by making use of many different techniques, aims to assess the needs of a community. As its name indicates the method (and therefore the techniques that have been incorporated) was developed for rural areas and in particular for rural communities in which there is a low level of literacy and numeracy. PRA shares the following principles with a number of other participatory processes: members of the community participate in the process of gathering information; it has a built in (participant) learning process; it assumes that there are multiple perspectives on any issue; the use of techniques (and their combination is context specific; the role of the outside ‘expert’ is as a facilitator; and, it must ultimately lead to change. For a useful summary see (Pretty et al. 1995) and for more details see Chambers (1992, 1997)

The EMCDO leadership recognised that the development of management systems and capacity had not kept pace with the initiation and commissioning of projects, with potentially serious consequences for the sustainability of the projects, and they approached the staff of the Centre for Rural Development Systems for ‘advice’ on how to improve their management systems. We accepted the task because we felt that an intervention of this nature would result in some valuable lessons in the use of particular systems methodologies (described below) whilst at the same time satisfying EMCDO’s need to improve their management systems. [See, for example, Beer (1985), Checkland and Scholes (1990), Jackson (1991), Flood and Jackson (1991), Ulrich (1994), Mingers and Gill (1997).]

3. THE RESEARCH METHODOLOGY: A SYSTEMIC PARTICIPATORY ACTION-RESEARCH

3.1. Participatory Action Research

There is a wide-spread (mis)conception that all social phenomena can be understood through positivist scientific research processes because social phenomena obey scientific ‘laws’ in much the same way that bridges, plants and aircraft do. However, in a large (probably, majority) proportion of human situations, that which is often regarded as ‘fact’, is ‘in fact’, something constructed by human beings. Research into social phenomena should therefore involve a somewhat different process, viz., an interpretive process.

Interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors and that *this applies equally to researchers*. There is thus no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science. Our theories concerning reality are ways of making sense of the world and shared meanings are a form of intersubjectivity rather than an objectivity. [*italics ours*](Walsham, 1993), p5.)

the researcher immersing her/him-self in a human problem situation with the intention of participating in processes to change (improve) the situation and then learning from the consequences of the changes. Action-research is now a well-established research approach, having been in use for over 40 years.

Action-research follows a learning cycle involving observing, reflecting (and theorising), and acting. When this learning cycle is more than an individual learning for the researcher, but involves all those would be ‘problem solvers’ who have a commitment to improving

the situation, Kurt Lewin (1946, 1951) is credited with pioneering the concept of action-research as a more appropriate way of doing research into social phenomena. Essentially it involves it has come to be known as *participatory action-research* (Bredo and Feinberg, 1982; Kemmis and McTaggart, 1988; Lather, 1991; Whyte, 1991; Reason, 1994)

We agree with Holwell and Checkland who insist that action-research should work from a “declared in advance framework of ideas ... for without [such an] epistemological framework it is sometimes difficult to distinguish researching from novel writing” (1998, p.22). This does not imply that this framework of ideas is not open to change during the process; indeed, Checkland expects that it will do so.

Any research that involves people in processes that aim to improve a problem situation, is necessarily value-laden. Some of these values will be overt, but others will be hidden. It is our view that the facilitator’s task is to surface these hidden values and thereby enable the participants to make ethical choices. Lather⁶ stresses that any PAR should be underpinned by an emancipatory commitment, and that if there is ambiguity in the participants’ values in this regard, the facilitator should declare her/his commitment in this regard.

For us then, PAR (a) improves a problem (human/ecological) situation, (b) is committed to participatory processes, (c) involves all participants in learning about the situation and their own practice through participating in a learning cycle, (d) has a declared epistemological framework (which may be revised) and, (e) has an emancipatory interest.

The action research learning cycle is the core process of a systems approach known as Soft Systems Methodology and the commitment to emancipation is a theme which is found in Critical Systems Thinking. Both of these systems methodologies are described in the next section.

3.2. Systems Thinking

Systems Thinking⁷ is a way of seeing or understanding the world.

Our definition of a system is: *A set of ‘things’ and activities that are interconnected to form an adaptive whole, which exists for a purpose.* This definition implies that a system is

⁶ Lather (1991) coined the phrase *praxis-research* to refer to PAR which is underpinned by emancipatory interests.

⁷ Note the emphasis is on *thinking*: it is an *approach* which helps us to understand the world and intervene in it; it does not constitute a formal theory.

not simply a pile of ‘things’ but that there are relationships between these ‘things’. Furthermore, these relationships exist for a purpose. And, finally, given the purpose, the system can adapt to perturbations (shocks) from the environment (i.e., all the elements outside of the defined set which may impact on the system). Therefore to make (cognitive) use of this image (or metaphor) of an ‘adaptive whole’ is to do systems thinking (Checkland and Scholes, 1990, p.19)

The application of systems thinking to societal and management issues has generated several methodologies such as Systems Engineering (SE), Systems Analysis (SA), System Dynamics (SD), Operational Research (OR) and Management Cybernetics. These were derived largely from methodologies used for solving engineering type problems and came to be collectively known as Hard Systems Thinking (HST) (Checkland, 1981; Jackson 1991). However, societal problems are generally not amenable to these approaches because of their assumptions about the ‘objectivity’ of systems made by systems ‘analysts’. Such methodologies have, therefore, limited applicability in situations where the human factor is a significant constituent. Consequently, soft systems thinking (SST) emerged as an organised way of exploring human problem situations. Soft systems thinking has also spawned a number of methodologies: Interactive Planning (IP), Strategic Assumption Surfacing and Testing (SAST), Soft Systems Methodology (SSM), Community Operations Research (COR) and Community Cybernetics are amongst the better known. These methodologies were developed primarily to manage problems relating to organisational ‘culture’, i.e., motivation, purpose, roles and values.

Each of these approaches has their own strengths and weaknesses and the difficulty is to know which of them or which combination of them to use. This ‘theme’ of *methodological pluralism*⁸ is one of the issues addressed by a later development in systems thinking known as Critical Systems Thinking (CST). Two further ‘themes’⁹ are foregrounded by CST: *emancipation* and *critical awareness* (Midgley, 1996).

The issue of ‘methodological pluralism’ requires of systems practitioners/researchers that they choose or design methods according to their and the stakeholders’ perceptions of the

⁸ A complementary and theoretically coherent development and use of variety of systems methodologies. This is an issue which first began to be addressed by Ulrich (1994), Jackson (1991), Flood and Jackson (1991) and Midgley (1996) amongst others

⁹ Jackson (1991) calls them ‘commitments’.

situation. ‘Emancipation’ may be subsumed under the rubric of ‘improvement’ (Midgley, 1996, p. 21); thus the intervention should aim to improve the client’s problem situation . ‘Critical awareness’ requires that the systems practitioner/researcher attempt to surface all taken-for-granted assumptions regarding the client, the ‘context of application’ and the methodologies used. (Midgley, 1996, p.15).

Because we discerned that the nexus of problems that had arisen could be described primarily as problems relating to organisational ‘culture’ we needed to employ a ‘soft’ methodology and because we wanted a clear step-wise action-research process which we believed could be made understandable to our client (the commitment to participatory learning) and because our clients were interested in outcomes which would result in an improvement in their situation, we opted for Checkland’s Soft Systems Methodology (SSM) as the dominant methodology.

SSM is particularly well suited to those situations where participants need to debate and develop their ideas. One of the criticisms levelled against SSM (by Flood, Jackson and Midgley) is that, because it aims at reaching accommodation and consensus through open debate, some voices may be marginalised in those situations where there is an uneven distribution of power. However, since EMCDO is a community-based organisation with elected leaders and since it is, as an organisation, committed to transparency and democratic processes, we felt that the instances of coercion, which inevitably exist in all organisations, could be ‘contained’ through careful attention to the use of techniques and skilled facilitation. We were open to our assumptions being questioned and were (partially) aware of making *boundary judgments*¹⁰ assumptions particularly in regard to which stakeholders should be included and who the client is. The latter was brought into question as the process unfolded and is discussed further on.

3.2.1. *Soft Systems Methodology*

SSM was developed by Peter Checkland (1981, 1999) as a process of inquiry and action for improving unstructured problem situations where the issues of concern are vaguely

¹⁰ Ulrich (1996) points to the need to be aware of, and make clear to all concerned, the assumptions about which organizations/people and which concerns are to be included in the ‘system of concern’. He called these assumptions “*boundary judgments* because they define the boundaries of the planning effort or *justification break-offs* because they define the point at which justification ends” (1996, p.15)

perceived but not clearly defined. Von Bulow neatly summarizes the methodology as follows:

SSM is a methodology that aims to bring about improvement in areas of social concern by activating in the people involved in the situation a learning cycle which is ideally never-ending. The learning takes place through the iterative process of using system concepts to reflect upon and debate perceptions of the real world, taking action in the real world, and again reflecting on the happenings using system concepts. The reflection and debate is structured by a number of systemic models. These are conceived as holistic ideal types of certain aspects of the problem situation rather than as accounts of it. It is taken as given that no objective and complete account of a problem situation can be provided (von Bulow, 1989, p.35).

This summary points to three main characteristics of SSM:

The first is based on Checkland's argument that "it is useful to take the world to consist of a complex of interacting systems" (Checkland, 1981, p.214). The term 'system' is not used to describe a part of reality but should be understood as a conceptual device that is relevant to the problem situation. The conceptual device, a 'human activity system'(HAS) is an 'ideal type' of sets of connected purposeful activities which together would bring about a transformation identified as necessary. This HAS is, however, not imposed on the situation as if it had some 'objective' status, but is used to facilitate debate about possible improvements of the problem situation.

The second characteristic is based on Checkland's view that "human beings can always attach different meanings to the same social acts" (Checkland, 1981, p.214). This means that there are always multiple interpretations for any real-world action, and that therefore any description of an analytically employed HAS has to be explicit concerning the assumptions about the world which that description takes as given. To be able to consider a system of purposeful activity as meaningful, it is always necessary to declare the *Weltanschauung* on which it is based.

These two lead to the third basic characteristic: SSM as a learning system. The SSM users learn by comparing pure models of purposeful activity (HASs) with perceptions of what is going on in a real-world situation. The purpose of this comparison, carried out in the later

stages of the inquiry process, is to achieve a readiness to take purposeful action in the problem situation.

An early but still widely used version of the methodology (Checkland, 1981) is a system with seven activities organised as a circular action researching process.

Phase 1 – the systems practitioner enters an ill-defined *problematic situation*. SSM is a process for improving ill-defined situations. It may be no more than an expression of unease by the client and normally the values and goals are not articulated at the outset.

Phase 2 – through a process of inquiry, usually through semi-structured interviews and interest groups, the systems practitioner is able to draw a *rich-picture*. This is a symbolic representation of the key actors (and other elements) and the relationships between them. The picture attempts to capture the attitudes, norms, values and power relationships in the situation. On the basis of discussions (with stakeholders) around the picture problematic themes are isolated and articulated.

Phases 1 and 2 are ‘finding out’ activities conducted in the real world: the views of stakeholders, around immediate contextual concerns, are investigated. Different ways of doing this are possible, but the most promising is what Checkland calls the ‘three analyses’. (Checkland, 1989b)

Analysis One takes aspects of the intervention itself as its subject matter. It clarifies who the ‘client’ is who commissioned the intervention; who the ‘situation improving facilitator’¹¹ is. During this analysis the facilitator also attempts to find out who all the stakeholders are, i.e., the people/organisations who have an interest in, or who are likely to be affected by, the situation. This information provides a starting point for sources of information about the situation.

Analysis Two inquires into the social milieu of the problematic situation in an attempt to identify the social roles and the norms of behaviour that are expected of these roles. In order to do this it has to attempt to uncover a wider value system or the pervading ‘ethos’ in the situation. The information obtained through this analysis provides a framework for the cultural feasibility of any situation improving systems which are later developed.

¹¹ Checkland uses the term ‘would-be problem solver’ (Checkland, 1981), pp 237-240) but in keeping with the facilitatory rather than problem-solving nature of soft systems interventions, I prefer the term ‘situation improving facilitator’.

Analysis Three attempts to uncover the power relationships in the situation, i.e., how power is manifested, spread, used, obtained, delegated, etc. This involves inquiring into the formal structures of power as well as the informal (and often charismatic) leadership that is accepted and given. This analysis alerts the facilitator to power issues which need to be taken cognizance of during the later phases of the SSM process.

Phase 3 – in this phase the practitioner enters the ‘systems thinking world’ and generates *root definitions* of systems which are relevant to the problematic ‘themes’ which have been identified. A root definition is a description of a *purposeful* system relevant to (an intervention in) the real world, and key to this description is a *transformation process* (T) which will improve the situation¹². Usually a few root definitions are developed, one for each of the different perspectives on the situation. In other words a system is defined for each of the relevant themes. Checkland has through conducting and analysing numerous systems interventions that, in order to be useful, a root definition should be constructed by consciously considering the elements of the mnemonic, CATWOE¹³.

Phase 4 – Formal systems models, logically contingent on the root definitions, are constructed. The model is an account of the activities, and the relationship between them, necessary to make the system work. These are known as Human Activity Systems (HASs). An HAS, must, apart from the activities and relationships between them, include purpose, a defined boundary, and a communication and control (decision-making) feedback loop. Effective decision-making is only possible if criteria of effectiveness and efficiency (ethicality can also be added) have been determined. Insights from other systems approaches¹⁴ are often useful in constructing the HAS.

¹² This process is defined in such a way that a defined input is transformed into a (defined) output. A word of caution: a common error is to confuse a system input with the resources needed to bring about the transformation. In the transformation process something is transformed into the same thing, but of a different quality.

¹³ T the (purposeful) transformation activity; C the customer/beneficiary/victim of the transformation activity; A the actors who make the system work, i.e., perform the activities of the system; W, the ‘worldview’ or assumptions underlying the system which make it meaningful; O, the ‘owners’ or key decision-makers who have the power to stop the transformation activity; E, the constraints in the environment which the system takes as given, i.e., the components of the environment which impact on the system, but over which the system owners have no influence.

¹⁴ For example, in this study use is made of Stafford Beers’ Viable Systems Model.

Phase 5 – The practitioner re-enters the real world and uses the constructed models to generate discussion about present activities; the practitioner does not try to impose any model on the real world (i.e., on an organisation etc.).

Models are only a means to an end, which is to have a well-structured and coherent debate about a problematical situation in order to decide how to improve it. (Checkland and Scholes, 1990)

Phases 6 and 7 – the discussion generated in the comparison stage should lead to decisions (by the clients and other relevant stakeholders) about changes¹⁵ which could be brought about to improve the problem situation.

This process is illustrated in Fig.1.

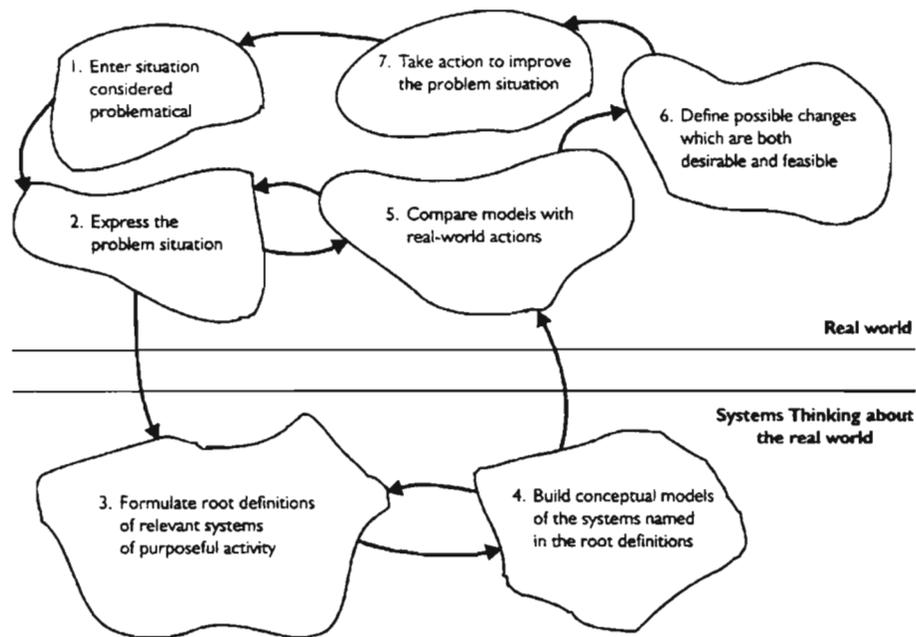


Fig. 1. The Soft Systems Methodology Learning System (after Checkland, 1981)

The arrows which link the stages simply illustrate the logical structure; it is not Checkland's intention that the seven stages should be slavishly followed. Another

¹⁵ Changes of three kinds are possible: changes in structure, process and attitude. Any changes should meet three criteria. They should be: *systemically desirable* – instituting monitoring processes, developing adequate decision making processes, ensuring appropriate information flows, making sure that the necessary resources are available, ensuring that the logical connections between activities are reflected in real world sequential actions; *culturally feasible* – ensuring that the myths and meanings of organisations, communities and institutions are respected; Implementation of changes will affect the organisational culture and therefore the proposed changes will only be acceptable if they are perceived as being meaningful within that culture; and, *ethically defensible* – ensuring that human values are upheld.

important feature of the diagram is the distinction made between ‘real world’ (stages 1 and 2, 5-7) and ‘systems thinking about the real world’(stages 3 and 4). Checkland may have intended the latter as a heuristic device (Checkland, 1999), but in many applications of the methodology the ‘systems thinking about the real world’ is done by the facilitator. The other stakeholders are included in the process only in the ‘real world’ stages.

3.2.2. Viable System Model

During stage 4 of the SSM process we made use of insights from the Viable System Model (VSM), to build one of our conceptual models.

The Viable System Model (Beer,1985) is primarily a tool for diagnosis and (re-)design of organisational processes and is considered to be “the most developed and usable expression of organisational cybernetics” (Jackson, 1991, p.117). The intention of VSM is to develop within any organisation, functions that enable the organisation to survive in its given environment. For this to happen, organisations require five functions: (i) implementation, a function which implements the goals of the system, and contains the ‘operational activities’ of the system; (ii) coordination, which coordinates the activities of the implementation sub-systems in emergency situations; (iii) monitoring and control, which distributes resources to, conducts audits of, and issues directives to, the implementation sub-systems; (iv) intelligence and development, which forecasts future needs, opportunities and threats and, which has a long-term developmental role; and, (v) policy and planning, where the organisations mission, policies and long-term strategic plans are developed.

4. THE INTERVENTION

The intervention, began in June 1999 with two half-day workshops involving an EMCDO core group. This was followed by a one-day workshop with all the EMCDO sector leaders and a comprehensive survey of the views of members of community projects in Embo. A further workshop with the core-group was held in December to report back on the survey findings, and a final workshop was held on the March 2 and 3, 2000 with the sector leaders to develop plans for implementing changes to their management system.

A widely accepted method of SSM is the *three analyses*: of the intervention¹⁶ itself; of the culture of the organisation; and, of the politics (power relationships) of the organisation. (This is normally part of stage 1, but is not necessarily confined to that stage.) Although the cultural and political analyses are recommended by Checkland, he devotes very little attention to how they may be done. We used the initial core-group workshops for facilitating an intervention analysis, and the sector-leaders' workshop and survey for probing the organisation's culture and politics.

4.1. Initial Core-group Workshops

The core-group is a five-member group consisting of staff and officials, including the chairperson and general secretary, who were selected by the EMCDO leadership to work closely with us on the project.

In these two workshops, apart from facilitating an intervention analysis, we reached agreement on the objectives of the intervention, developed a time-frame and outlined the methodology.

4.2. First Sector Leaders' Workshop

During an early (1997) organisational development workshop, EMCDO decided to structure themselves into eleven sectors (or departments)¹⁷. These were later revised and combined into the present 8 sectors: Sports and Arts; Small Business Development; Women Empowerment; Infrastructure; Youth Development; Education and Training; Health and Social Welfare; Peace and Religion. Leaders from most of these sectors and some project leaders were present at the workshop.

The core activity of this workshop was a *concept mapping*¹⁸ exercise. The participants were divided into sector and project groups. They were then asked to develop concept

¹⁶ In this analysis the role of the client and the facilitator is defined and other possible 'problem owners, (stakeholders) are identified.

¹⁷ The *Embo Masakhane Community Development (EMCDO) Profile* (undated mimeo)

¹⁸ A concept map (also known as a mind-map) is a simple graphic device for linking ideas and concepts. In drawing a concept map, a group (or individual person) begins by writing down an issue to be explored on a large piece of paper. Ideas/concepts that are triggered off (in the the minds of the group members) are then added to the paper and linked by means of lines. The lines may be drawn in such a way that the strength of the perceived connection is indicated (e.g., by means of the thickness or colour of the lines. Proceeding outwards in this way a network of ideas is eventually developed. It is a simplified form of Eden's *cognitive mapping* technique in that direction and opposite concepts are not indicated. (See (Eden, 1988)

maps starting with the phrase 'Embo Rural Development Framework'. This they did by writing on large pieces of newsprint. The newsprint sheets were stuck onto the walls and each group had an opportunity to speak to their concept maps in a plenary session.. A significant emergent issue was dependence¹⁹ by the majority of the groups on outside resources. Whilst this was the dominant feature of most of the groups, the map paths of some of the groups were more diverse. The Womens' Empowerment group referred to the initiatives (e.g., handcrafts, catering, adult basic education, Zulu dancing) taken by this sector and the Health and Social Welfare sector was unique in that the issues mapped were almost exclusively problems relating to management and human resource issues.

4.3. The Survey: Emerging Issues

The findings given below are distilled from a survey of 16 sector leaders of the organisation and the members (37 in all) of a cross-section of projects: a sewing project, a piggery project, a poultry project and four community gardens.

Initial information was gathered at a sector leaders workshop where the leaders filled in a questionnaire. This was followed by structured interviews, using a questionnaire and follow-up semi-structured interviews and group discussions with members of the above-mentioned projects.

4.3.1. Purpose of the Community Nutrition Projects

All the responses from the members of the community nutrition projects included the following purposes, (a) fight poverty, (b) develop our community, (c) unite our community, (d) growing vegetables to sell, and (e) growing vegetables to eat.

The Department of Health, which provided substantial start-up funding for the projects, expected the projects to 'increase families' food supply', though it seems that nowhere in the contracts drawn up with EMCDO was this stipulated.

There exists therefore considerable confusion around what the purpose of the projects should be.

¹⁹ This attitude of dependence was also something that emerged in the survey. See the section: *Emerging Issues*

4.3.2. *Organisational Culture: Roles, Norms, Behaviour and Attitudes*

From the questionnaire results it was possible to build a reasonable profile of what the people think should be the essential qualities of a respected leader: S/he is a person who is honest, polite, patient and humble. S/he is also hardworking, dedicated and committed (to the extent of giving freely of own time and resources) and follows organisational procedures (e.g., takes decisions in consultation with the appropriate people/committees, reports back to meetings). The ordinary members also expect the leader to have good ideas and to give advice. From our interviews it was possible to conclude that the people felt that most of the leaders met this profile expectation.

It was also possible to develop a profile of the activities and features of the organisation that were valued by both leaders and project members. Some activities were highly valued by both leaders and ordinary members. Prominent amongst these were: (a) the implementation of the Embo Masakhane Nutrition Programme (EMNP) with its 'productive projects', and (b) people living harmoniously together and working cooperatively.

The following activities were mentioned by the leaders but not mentioned by ordinary members: (a) Framework Report and business plans were produced, and (b) organising of training proposals²⁰.

It is interesting to note that the establishment of the community health care centre (CHCC) features strongly in the perception of the valued activities of the leaders but is hardly mentioned by the ordinary members. This discrepancy was explored in both the final core-group meeting as well as in the last sector leaders workshop. (See below)

Dependency and motivation are other issues that were explored. We expected to find evidence of a widespread 'dependency syndrome' so typical of many poor people in South Africa. Whilst we found evidence of this 'dependency', it was balanced by the realisation by many ordinary members that they could improve their lives through their own actions:

I was motivated by willingness to feed my family
I saw women feeding their families and was motivated to do the same thing by
joining the project

²⁰ It is understandable that the ordinary members are not that interested in framework reports, business plans and proposals. They are much more interested in concrete things happening on the ground which bring food into their stomachs (and of course they do not readily appreciate the background work that is necessary in order to implement projects.)

Whilst the initial motivation of project members seemed to be high, this has not been sustained and the drop in motivation of project members emerged as a significant issue:

Some members are no longer enthusiastic when it comes to paying the monthly contribution of R15 per head [it] discourages those who are paying well.

Members are not as dedicated as they were when we started this community garden. I think this is because of a poor yield we normally get.

Members getting demotivated because of lack of irrigation, technical advice on crops, lack of family support, and unfulfilled promises ... irrigation has not been supplied.

The men work in the big cities, those who are unemployed were not willing to help us [the women] when installing the tanks and taps. The children are not willing to help in the garden after school and during the week-ends ... this makes us feel as if what we are doing is worthless.

4.3.3. Boundaries and Environment

We tried to understand what boundaries the ordinary members were implicitly drawing. From the survey results we made the surprising finding that the project members did not see themselves as part of EMCDO; that many people viewed EMCDO as one of the many service providers operating in the area:

Embo organises workshops for us, it organises trainers for us.

This overturned our initial boundary assumption about the client and is an issue to explore further.

4.3.4. Feedback: Communication and Decision-making

Much is usually revealed about an organisations effectiveness in communication and decision-making by looking at the budgeting and financial reporting procedures.

All community gardens surveyed received initial equipment (tools, fencing, water pumps) to the value of approximately R30 000 from the provincial Department of Health. It is an accepted practice for all the nutrition projects to raise running costs by charging a joining fee and a monthly membership fee. We found considerable disagreement (across all the projects surveyed) as to what this fee is, what the profits are and how these are or should be spent:

We have not decided what the money will be used for.

I am not sure how this money will be spent, but I think we will use it to buy seeds an other things that we might need along the way.

I have no idea how the money was used.
It became clear that the communication and decision-making processes needed attention.
These were picked up in the following workshops.

4.4. Third Core-group Workshop

This workshop gave us the opportunity to report back, by means of a rich picture. (Fig. 2) supplemented by a written report on the survey findings and to work with the core-group in developing definitions of purposeful management systems (root definitions) for EMCDO.

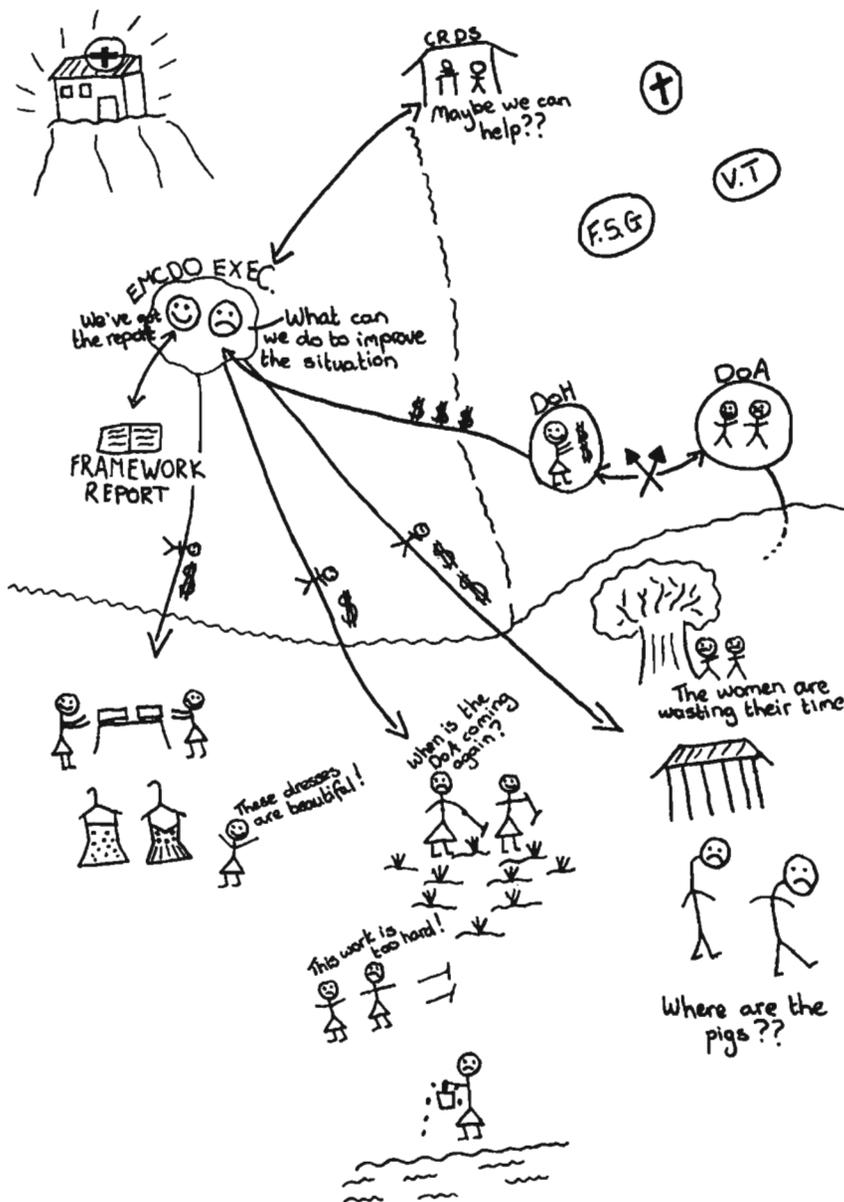


Fig. 2. Rich Picture

A major generative theme of the picture was the role service providers (Dept. of Health, Dept. of Agriculture, churches, NGOs) were playing in Embo and the process by which they got involved. This came out of the pictorial depiction of EMCDO and other service providers on the same side of the dividing line, and on the other the community-level projects. The core-group did not like the perspective, which implied that the ordinary membership saw EMCDO as simply another service-provider, but they understood how this perception may have come about. They forcefully expressed the view that all other service providers should go through the EMCDO executive when working in the Embo area. This view had important implications for the construction of a 'systems definition'.

Also in the picture and *the Framework Report* and the Community Health Care Centre (CHCC) were both depicted as very significant for the leadership but of very little significance for the ordinary membership.

The core group felt that the perception of the latter may be the result of three factors: (a) the CHCC is not supplied with electricity; (b) there has been considerable opposition to the CHCC in the area as it is perceived to be an ANC project (it was an RDP 'Presidential Lead Project' and opened at a function addressed by President Mandela) in what is predominantly an IFP area; (c) the planning and implementation of the CHCC did not go through the local Department of Health structures which are dominated by the IFP.

4.4.1. Root Definition of the System

The construction of root definitions is in the seven-stage SSM process a 'below the line' activity, and is usually done by the facilitators on their own.

However, in order for the process to be a learning experience for the core-group members, we felt that they should be involved in the development of the root definitions. We were originally concerned that, because of the conceptual difficulty of this phase, the members of the core-group would only be able to participate minimally in the discussion. Although, it is true that we had to skim over the surface of some of the issues in order to complete the exercise in the allotted time, we believe that substantial learning did take place. Significantly, the provisional 'systems definition'²¹ that we put up to kick-start the

²¹ The provisional definition that we offered was: A system 'owned' by the *EMCDO Board that develops the people of Embo by initiating and supporting community level income-generating projects* subject to available resources.

discussion was questioned and an alternative definition (see following) was developed and discussed. At the end of the workshop we were asked to develop HAS models based on both of the definitions, and to bring these back to the sector leaders for further discussion.

We allowed a lengthy discussion of T, the transformation, because we believe that the transformation is the foundation of all the other considerations²².

The desired *transformation* was developed by means of a modified Delphi²³ technique exercise around the *core-purpose* of the system. The exercise yielded a range of statements of purpose, of which the following are some examples:

To improve the quality of life of the people of Embo through accessing resources equitably by forming partnerships with local, provincial, national and international stakeholders during diagnosis and implementing Embo community needs.

To improve the standard of living of the people of Embo and to equip them with skills necessary to develop their employability and stimulate their earning capacity so that they become economically active.

To unite the three tribal authorities of Embo.

To transform Embo community by initiating and managing economic and social upliftment programmes.

To provide proper social services and infrastructure in order to create a conducive environment in which a better standard of living can be attained and realised.

To ensure that people get trained and that youth participate in agricultural activities.

Through the technique process agreement was reached on a transformation that expressed the (desired) purpose of EMCDO, viz., a transformation from uncoordinated services in the region to co-ordinated services.

Once this core purpose was accepted, the group had little difficulty in formulating a root definition:

²² This is a point made so strongly by Richard Bawden and his colleagues at the centre for Systems Development (UWS) that they use the mnemonic TWOACES to emphasize the primacy of T

²³ The Delphi technique, developed by Delbecque et.al. (1975) enables the facilitator to reach a consensus of the views of key stakeholders (or, 'experts') on any particular question or set of questions. Often the participants are not known to one another but this is not essential to the technique. What is essential is that the views expressed remain anonymous. Anonymity enable the consideration of views without imputing value to those views based on some perceived authority or status of the person expressing the views. A Delphi exercise is often conducted at a distance (e.g., through e-mail). In this case the participants were in the same room at the same time but the process guaranteed anonymity. The procedure was as follows: (a) I, as facilitator, asked the participants to write on a 4"x6" card their desired 'statement of purpose' of EMCDO; (b) I then collected the cards and combined the list of statements into one non-repetitive list; (c) this was followed by an open discussion of all the statements on the list, during which the strengths and weaknesses were informally identified; (d) participants then privately ranked the list of statements. The ranking was overwhelmingly favoured one 'statement of purpose'.

An EMCDO owned system which co-ordinates the provision of services to the people of Embo in order to improve the quality of life of these people.

When this definition was scrutinised using the CATWOE mnemonic (see footnote 13), some important difficulties emerged around who the owners should be and the worldview underpinning the system.

The group felt that the EMCDO executive should be the 'owners' (i.e., the key decision-makers) of the system.

During the discussion it became clear to the group, that it was making fairly strong assumptions (worldview) in relation to ownership. They assumed, either that all the 'actors' would, on moral grounds, accept the EMCDO executive as the 'owners', or, that the people of Embo would not accept the services of other providers unless they had first gone through the EMCDO executive. Both of these were recognised to be unlikely scenarios.

It was agreed therefore that further thought would be given to the issue of ownership at a future workshop, during which HASs, based on each of the root definitions would be discussed.

4.5. Second Sector Leaders' Workshop

We again presented the survey findings by using the rich picture. This was supplemented with a lengthy written report for those who had the ability (many of the participants were semi-literate) and the inclination to read such things!

The rich picture provoked additional insights from the sector leaders. Some of the leaders felt that there were two 'items' missing from the picture. Firstly, it did not depict the pressure to deliver that was being brought to bear on the EMCDO executive by the membership. All agreed that there was unfair pressure on the chairperson and general secretary. Secondly, some felt that the preschool that had been built was missing. Considerable debate ensued as to where to place it in the picture. Was it in a similar position as the CHCC, i.e., valued by the leaders and not 'recognised' by the majority of the ordinary members? The leaders did not reach consensus on this. However, they agreed that the issue of the preschool would be an important one to follow up during the implementation phase.

On the ‘picture’ showing men not working alongside the women in the community gardens, some of the leaders offered an explanation. They felt that all the ‘active’ men were away (working in the cities) most of the time and that the picture only depicted those men who were ‘inactive’ and who in any case felt that it was beneath the dignity of men to be seen working in gardens and who did not support their wives. It is perhaps significant that the women present did not comment on this understanding.

We then facilitated discussion around the two root definitions accepted at the third core-group workshop:

RD1 – An EMCDO owned system which co-ordinates the provision of services to the people of Embo in order to improve the quality of life of these people. (See Fig. 3)

RD2 – An EMCDO owned system that develops the people of Embo by initiating and supporting community level income generating and service provision projects subject to available resources.

We also prepared an additional root definition, RD1b, which we suggested had, of necessity, to logically precede RD1. (See Fig. 4)

RD1b – A service-provider (SP) owned system that establishes and maintains the system defined as RD1. Underpinning this definition is the assumption that all stakeholders will be able to be persuaded that they will contribute to the establishment of, and benefit from, the EMCDO owned system

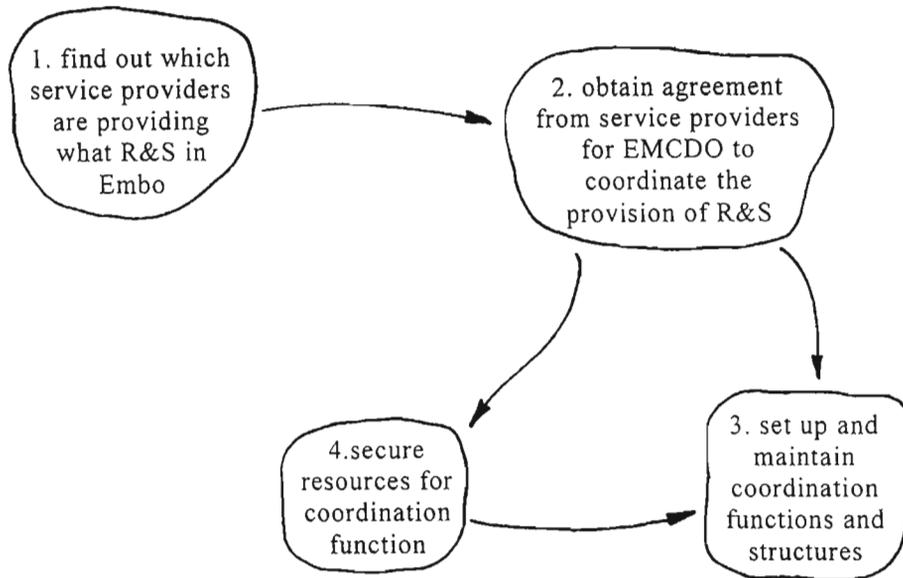


Fig. 4. A service provider owned system that establishes and maintains the system shown in Fig. 3

We drew on the insights of VSM in designing the model implied by RD2. (We illustrated this with the standard VSM diagram). SSM makes specific provision for incorporating insights from other systems methods during phase 4 of the process. In our view VSM is very useful in those contexts where the operational activities are part of an institution/organization in which there is a single management function with the power to allocate resources but not in those contexts where the management function is nothing more than a coordinating body that has no authority to allocate resources.

RD2 assumes that the operational activities, viz., ‘community level income generating and service provision projects’, will be accountable to a management function that is expected to implement the goals of EMCDO and which has the power to allocate (available) resources in accordance with these goals. These assumptions do not underpin RD1, where EMCDO simply acts as a coordinating body for a number of service providers and organizations which control their own resources; EMCDO is in this case nor much more than an information gatherer and disseminator.

The models were then used to take the discussion further. We felt that we should ask the participants to decide on one of the systems definitions, because we did not feel that the organisation had the resources to attempt the implementation of both. A lengthy (half a day) of a very engaged discussion ensued, at the end of which the participants decided that they should try to implement organisational systems which encapsulated the definitions of both of the presented systems. In other words the participants wanted to implement two systems contemporaneously²⁴

The *participatory action research* process now enters the next phase: implementation of the systems and monitoring this implementation.

5. CONCLUSION

The implementation process (the second phase of the intervention) needs to be evaluated before any final conclusions can be drawn about the suitability of the systems approach used here for Third World type rural contexts. However we are able to say at this stage that the SSM process has enabled some important issues to be surfaced and some valuable lessons have already been learned.

These include the value of a methodology of organisational diagnosis that is based on systems concepts: in particular this study has highlighted the importance of the *perceptions* of organisational boundaries and organisational purpose. The use of SSM has also demonstrated the value of: (a) reaching organisational consensus on naming (i.e., a clear definition) the system of ‘purposeful activity’; (b) fostering debate around the ‘beneficiaries (and ‘victims’) ‘owners’, ‘actors’, and the ‘environment’; (c) seeking clarity on the ‘transformation’ implied by the system and; (d) obtaining consensus on the ‘worldview’ underpinning the system. The use of ‘rich pictures’, an SSM technique, was expected to be helpful and indeed, in this study, it surfaced some important (and, hitherto, unarticulated) issues.

Interestingly, the members of the core-group, in a workshop setting, were able to participate in the construction of a root definition, i.e., a definition of the system, and could understand that different root definitions lead to different Human Activity Systems. This

²⁴ It may be worth noting here that we made our own position clear, viz., that it would only be feasible to attempt to implement one system and preferably something along the lines of RD2, but we also made it clear that it was their decision and that we would support any decision that they came to.

was very satisfying since the normal SSM process leaves the construction of root definitions to the ‘consultant’. The root definition that was developed in the workshop may have been a little simplistic, but the effort taken in developing some alternatives jointly was both a point of learning for the core-group as well as an insightful exercise. We believe that it is only by participating in this step that the decisions around owners, actors, beneficiaries, the transformation, environment and, in particular, the ‘worldview’ assumptions come clearly into focus for all participants. The use of CATWOE here greatly facilitated the process; the precision of the terms avoids struggles over semantics.

5.1. Issues for further research.

We have already mentioned the need to evaluate the implementation of decisions to be taken regarding organisational change. It is only when we evaluate the attempts to implement the decisions that we will be able to judge the true value (or otherwise) of the systems approach used here.

We have also mentioned that in drawing up the ‘Framework Report’ the consortium of consultants, commissioned by EMCDO, engaged in a participatory process that included extensive PRA exercises. PRA, an information-gathering and disseminating tool, is purported to be ‘empowering’ to people in the kind of situation in which the people of Embo live, i.e., resource-poor rural communities in Third-World type countries. It is puzzling therefore that so many of the project members, who participated in the original PRA exercises, had a dependent ‘mind-set’ and, as discovered in our survey, did not see themselves to be part of EMCDO. They viewed the latter as one amongst many service-providers. Does this indicate a weakness in the way the PRA exercises were conducted or is there an inherent weakness in the PRA methodology²⁵? Is PRA susceptible to the same criticism as that directed to SSM, viz., that because it attempts to be participative (i.e., accommodate the voices of the weak and the powerful), the voices of the weak are often submerged because, (a) the weak do not articulate the grievances/demands if they suspect that they may be victimized by the powerful for doing so, or (b) the weak and illiterate do not feel that they have the ability or the right to participate with the powerful in determining

²⁵ Pretty *et.al.* warn against some ‘pitfalls’ of PRA which need to be taken account of by facilitators: expectations can be raised; if carried out too quickly it leads to incorrect insights; the choice and sequence of methods need to be adapted for the context; it will not usually yield quantifiable results; and, there are no final answers! (1995, p68)

the direction of projects? (In both these cases the weak censor themselves.)? Or, do the boundaries that get drawn in resource-poor contexts become so readily ‘solidified’ that even emancipatory methodologies (e.g. CST) would not be able to ‘unlock’ them? And what are the implications of this for working with resource-poor communities?

A further question that requires investigation is, why, when systems and resources logic indicates that EMCDO would not be able to successfully implement a coordinating system (root definition 2) did so many of the leadership want to do this? Is it a question of deeply entrenched mental models or is it a simply a question of wanting to hold onto the perceived power that goes with coordinating service provision in the area? The instruments that we developed were not able to probe the issue of power. But this may also be a fundamental flaw in the systems design. We have briefly alluded (in the section *Systems Thinking*) to the criticism levelled against SSM that it does not take account of coercion in the organizational setting. However, a methodology that provides the instruments for doing so has, in our view, not yet been developed: Midgley argues that coercion an not be addressed through the use of a conventional systems methodology, but can only be be dealt with through “methods of campaigning and direct political action” (1997, p.38). This is perhaps the most important theoretical challenge with which our study leaves us.

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PAPER 2:

**A Critical Systems Intervention to Improve the Implementation
of a District Health System in KwaZulu-Natal**

A Critical Systems Intervention to Improve the Implementation of a District Health System in KwaZulu-Natal

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ABSTRACT

This paper reports on a critical systems inquiry into the complexities of the implementation of a District Health System in the KwaZulu-Natal (KZN) province of post-Apartheid South Africa. The inquiry process, which was 'governed' by Checkland's Soft Systems Methodology (SSM) and followed the four-phase learning cycle developed by Kolb, produced 'conceptual models' which enabled participant stakeholders to gain fresh perspectives on the context and, in so doing, to get the implementation process 'unstuck'.

At the theoretical/methodological level the paper contributes to the growing literature on the combination of systems methods by illustrating how conceptual models of purposeful human activity, a method intrinsic to SSM, were constructed from the participatory use of Concept Maps and Sign-Graph Diagrams. We also reflect on the interrelationship between methodology/method combination and two other aspects of the intervention that we considered to be important for maintaining the 'systemicity' of the intervention, viz., the inquiry context and boundary critique.

1. INTRODUCTION

The difficulties that public agencies have in achieving the goals of social policies are often rooted in the limitations of conventional managerial approaches in dealing with the 'messy' problems at the interface of policy and practice (Barrat and Fudge, 1981; Hill, 1993; Cloete, 1998). These approaches assume a linear unidirectional relationship between policy-making and implementation of the policy. This assumption fails to take account of: (a) the (lack of) capacity and willingness of key role players to implement policy; (b) the fact that the politicians, administrators, private sector players and the public are not homogeneous groups of people sharing the same values and interests; and, (c) the organizational system, within which the implementation of policies takes place, is not a closed one, but is exposed to a large variety of external influences.

This paper reports on a critical systems inquiry into the complexities of the implementation of a District Health System (DHS) policy in KwaZulu-Natal. The inquiry process produced outputs, viz., conceptual models, for use by the 'participant stakeholders' for improvement in the implementation of the DHS. At the theoretical/methodological level the paper contributes to the growing literature on the combination of systems methods by illustrating how conceptual models of purposeful human activity were constructed from the participatory use of Concept Maps and Sign-graph Diagrams (SgDs). In Soft Systems Methodology (SSM), which 'governed' the particular combination of methods here, the conceptual models are normally constructed from the insights gained from discussion facilitated by the use of Rich Pictures.

The rationale for using SgDs instead of Rich Pictures is given below in the section, *A Critical Systems Methodology*. In that same section our use of SSM as a 'governing' methodology is also explained. Before proceeding to that section, we, in the first section, discuss the policy to transform the health system against the background of the inherited health provision of the Apartheid era.

We conclude with a brief reflection on the systems design.

2. TRANSFORMATION OF HEALTH PROVISION IN SOUTH AFRICA

Health provision during the Apartheid era was highly fragmented and geared towards the needs of the White minority. As in other sectors of public life, institutions and facilities had been built and managed with the specific aim of sustaining racial segregation. The

uneven distribution of human and financial resources was, on the one hand, reflected in a high concentration of resources and services in urban areas, where there were sophisticated curative hospitals, and on the other, in an under-provision of services in rural and peri-urban areas and informal settlements, for which only health centres, clinics and secondary hospitals were provided.

In 1994 when it came to power, the new democratic government set about correcting the imbalances. The new health policy revolved around a District Health System (DHS), with a primary health care (PHC) oriented approach. It is a system of health care where individuals and communities work with health care providers in order to improve their own health conditions. Various policy documents (ANC NHP, 1994; Dept. of Health, 1995, 1997) mention three fundamental areas of transformation that are required in order to move towards such a system.

(i) Integration of services

The transformation towards a more integrated health care service faced two main challenges. Firstly, there is the need to integrate services and resources that were previously provided by a myriad of authorities. Secondly, the goal of delivering comprehensive and integrated PHC services requires strategies and processes to horizontalise health care programmes (such as Tuberculosis, Malaria, HIV/Aids, Immunisation, Post-natal care, etc.) that are all historically vertically managed.

(ii) Accountability and governance

Accountability to community structures at local, district, provincial and national levels is an important principle of the PHC approach, and therefore to secure good governing structures is a major concern in the transformation process. For this reason district health systems, in the long term, are expected to become part of local government, where the boundaries of a health district coincide with those of a local authority. This governance structure is generically referred to as the District Health Authority.

(iii) Community participation and empowerment

The emphasis that a PHC approach puts on community (i.e., those people living in the geographical area served by a Community Health Centre) participation implies that the users of the health facilities should be an integral part of the health services, and not merely be seen as the passive recipients of services. Depending on population density, access and other services in the district a Community Health Centre is expected to cover on

average a population of about 50,000. These communities are the most important demographic 'units' for the delivery of primary health care and within them a variety of community-based organizations need to be accommodated. Democratically elected community structures, integrated with representatives of different sectors involved in health and community development, should therefore have the power to decide on health issues and be represented on the management structures of the facilities in their area (Hospital Boards, District Health Authorities, etc.).

2.1. Implementation of a District Health System (DHS) in the KwaZulu-Natal Province

The process of developing a DHS care system began in KwaZulu-Natal (KZN) in 1994, soon after the first democratic elections, when the newly elected Minister of Health appointed a strategic management team to provide relevant advice on the restructuring of health services within the province. The initial steps in the transformation process were structural measures necessary to integrate different health administrations (for 'Whites', 'Africans', 'Coloureds' and 'Indians') at provincial level. Subsequently, the Provincial Department of Health undertook a number of other initiatives aimed at implementing the DHS but few of these achieved their aims (Provincial Department of Health, 1997, 1999a, 1999b, 1999c).

In the following sections we describe the particular critical systems methodology that was constructed and used in order to develop an understanding of the implementation of the DHS policy and then to develop usable models for improving the DHS. We begin by describing the methodological framework.

3. A CRITICAL SYSTEMS METHODOLOGY

The use of appropriate systems methodologies and methods, singly or in combination is the subject of considerable discussion and debate in the systems community (Mingers and Gill, 1997); Jackson, 2000; Midgley, 2000). This is not the place to go into this debate, other than to note that Flood and Jackson (1991) recommend the selection of a 'governing' approach and one or more 'dependent' approaches. We opted for an essentially interpretive governing approach because an initial scan of the situation indicated that a methodology was needed which would facilitate debate amongst various stakeholders with wide-ranging views on what the 'real problem' was, and there were no obvious coercive constraints which would significantly hinder the inquiry process. Furthermore, Jackson argues that in

his experience the use of an interpretive approach (initially) enables interventions “to proceed more smoothly than those governed by functionalist and emancipatory rationales”(1997, p.374) The main reason being that the participatory nature of interpretive approaches tends to ensure buy-in from the stakeholders of the outcomes of the process. It is also, he suggests, “attractive because it suggests we have the freedom to design our own futures”.

Thus having opted for an interpretive approach it seemed to us that the obvious candidate governing methodologies were Mason and Mitroff’s (1981) Strategic Assumption Surfacing and Testing, Ackoff’s (1981) Social Systems Sciences and Checkland’s (1981,1999) Soft Systems Methodology.

The latter was chosen as a governing methodology for the simple reason that both of the authors were more comfortable with SSM and its (usual) constituent methods than with any of the other two. For Brocklesby this is a valid consideration, as systems practitioners are unlikely to be fully “multi-methodology literate” (Brocklesby, 1997, p. 212).

3.1. Soft Systems Methodology

SSM was developed by Peter Checkland (1981, 1999) as a process of inquiry and action for improving unstructured problem situations where the issues of concern are vaguely perceived but not clearly defined. Von Bulow neatly summarizes the methodology as follows:

SSM is a methodology that aims to bring about improvement in areas of social concern by activating in the people involved in the situation a learning cycle, which is ideally never-ending. The learning takes place through the iterative process of using system concepts to reflect upon and debate perceptions of the real world, taking action in the real world, and again reflecting on the happenings using system concepts. The reflection and debate is structured by a number of systemic models. These are conceived as holistic ideal types of certain aspects of the problem situation rather than as accounts of it. It is taken as given that no objective and complete account of a problem situation can be provided (von Bulow, 1989, p.35).

This summary points to three main characteristics of SSM:

The first is based on Checkland’s argument that “it is useful to take the world to consist of a complex of interacting systems” (Checkland, 1981, p.214). The term ‘system’ is not used to describe a part of reality but should be understood as a conceptual model that is relevant to the problem situation. The conceptual model, a ‘Human Activity System’(HAS) is an ‘ideal type’ of sets of connected purposeful activities which together would bring about a

transformation identified as necessary. This HAS is, however, not imposed on the situation as if it had some 'objective' status, but is used to facilitate debate about possible improvements of/in the problem situation.

The second characteristic is based on the view that "human beings can always attach different meanings to the same social acts" (Checkland, 1981, p.214). This means that there are always multiple interpretations for any real-world action, and that therefore any description of an analytically employed HAS has to be explicit concerning the assumptions about the world which that description takes as given. To be able to consider a system of purposeful activity as meaningful, it is always necessary to declare the *Weltanschauung* (Worldview) on which it is based.

These two lead to the third basic characteristic: SSM as a learning system. SSM users learn by comparing pure models of purposeful activity (HASs) with perceptions of what is going on in a real-world situation. The purpose of this comparison is to achieve a readiness to take purposeful action in the 'problem situation'. The phrase 'problem situation' is more appropriate than the word 'problem' because one is dealing with a 'mess' of problems and different perspectives on these.

SSM has gone through various transformations and in its most recent form is expressed as *four main activities* which "subsumes the cultural stream of analysis" (Checkland, 1999, p.A15) that was so prominent in earlier formulations of the methodology. The four activities are: (i) finding out about the problem situation; (ii) developing relevant purposeful human activity system (HAS) models; (iii) debating the problem situation using the models as facilitative devices to come to an agreement on (systemically desirable, culturally feasible and ethically defensible) changes which would improve the situation; and, (iv) taking action in the situation based on the agreed-upon changes.

Since its inception SSM has been understood by Checkland to be an action research methodology (Checkland, 1999, pp.146ff). Thus, when using it, the researcher/practitioner, together with participant stakeholders, engage in a 'learning cycle' (Kolb, 1976, 1984).

3.2 Soft Systems Methodology Interpreted as a Kolbian 'Learning Cycle'

Kolb formulated a Learning Cycle (LC) based on the following three propositions:

i.) Learning is a *process* of creating knowledge, rather than a 'product' or 'outcome'; it is a process of adaptation to the world which involves transactions between the subject (person or group) of learning and the world (environment);

ii.) Learning is *grounded in, and transforms, experience*;

iii.) The process of learning requires *the resolution of conflicts between two dialectically opposed processes (or modes) of adaptation to the world (environment)*.

The two dialectic processes involving four modes of learning are:

i.) concrete experience (CE) \Leftrightarrow abstract conceptualisation (AC);

ii.) reflective observation (RO) \Leftrightarrow active experimentation (AE).

In figure 1, the two dialectics are represented as two axes on a plane and the various knowledge forms as quadrants formed by the intersection of these axes.

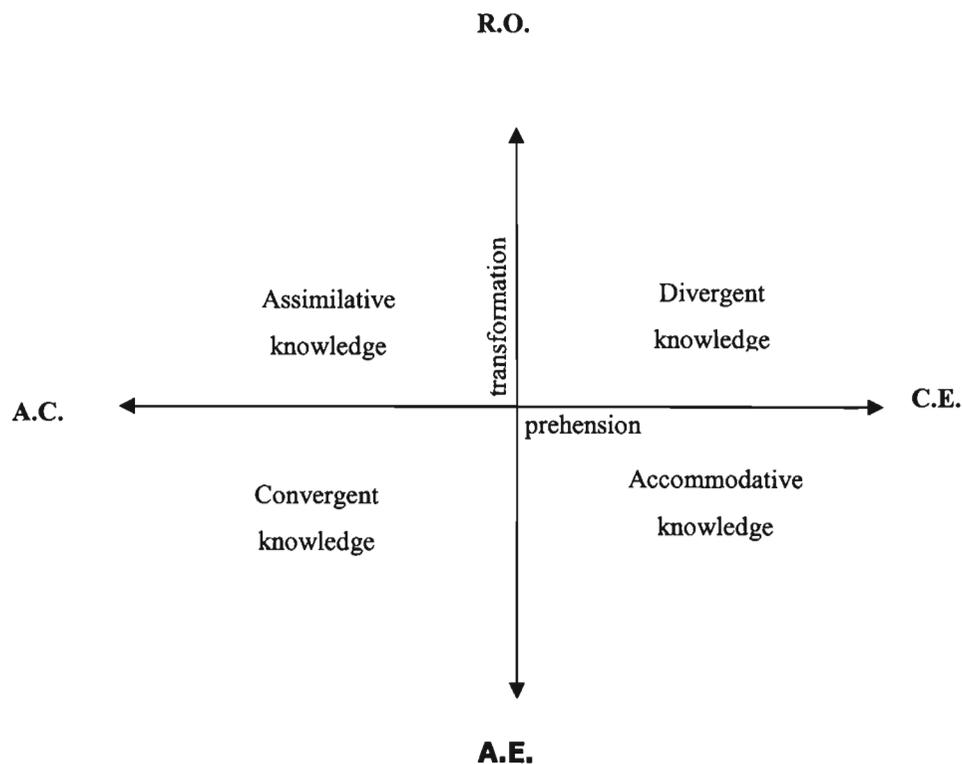


Fig. 1 Kolb's knowledge forms

According to Kolb, if learners are to be effective they need to operate with all four modes, which is by definition a conflict-filled process:

They must be able to involve themselves fully, openly and without bias in the new experiences (CE). They must be able to reflect on and observe their experiences from many perspectives (RO). They must be able to create concepts that integrate their observations into logically sound theories (AC), and they must be able to use

these theories to make decisions and solve problems (AE) ... it is the complexity and the integration of the dialectic conflicts among the adaptive modes which are the hallmarks of true creativity and growth in learners. (Kolb, 1984, pp.30-31).

For Kolb the first dialectic is the process of “grasping or taking hold of experience in the world” which he calls *prehension*, and the second is the process of *transformation* of the prehension. Knowledge, therefore, is the result of the combination of the two (dialectic) processes, i.e., ‘grasping’ the world and transforming that ‘grasp’ of the world.

The combination of these two dialectics results in four different kinds of knowledge and each with appropriate kinds of activities. These are given in Table 1.

Table 1. Kolb’s Learning Phases

Combinations of the transformation & prehension dialectics	Kinds of knowledge	Phases with appropriate activities
Concrete Experience & Reflective Observation	Divergent knowledge	Diverging Observe: record observations
Reflective Observation & Abstract Conceptualisation	Assimilative (theoretical)	Assimilating Assess and/or theorise: reflect on what the observations mean
Abstract Conceptualisation & Active Experimentation	Convergent knowledge	Converging Decide what is important (to do)
Active Experimentation & Concrete Experience	Accommodative	Accommodating Implement decisions

Before proceeding with a discussion of the different ‘phases’ a *caveat* is necessary: the learning process should not be understood as following the phases in a linear fashion; it can move back and forth between them.

Checkland’s (1999, p.A15) latest formulation of SSM is a ‘four activity’ process that may be interpreted as a Kolbian learning cycle. Here we follow Kolb’s original formulation and terminology rather than that of Checkland’s.

In the *diverging* phase, one gathers information about a problem situation. During this phase it is important to gather the views of as many stakeholders, or more precisely, in

Checkland's term, 'problem owners', i.e., those people who accept that the situation is problematic, as is practically possible. This of course raises the question of 'boundary judgments' (Ulrich, 1983; Midgley, 2000) in that there are no 'objective' criteria regarding who to include as problem owners; value judgments (by the 'problem solvers' which includes at the very least the systems practitioner) in this regard are unavoidable. The awareness of boundary judgements, known as 'boundary critique' is a key aspect of critical systems thinking (Midgley, 2000).

In SSM the usual method employed in the *assimilating phase*, i.e., for structuring the problem situation, is the 'Rich Picture'. This is a pictorial representation of the problem situation using cartoon-like figures and diagrams to depict significant and/or contentious aspects of the situation. However, in this intervention we used Concept Maps and Sign-graph diagrams (SgDs). The reason for using SgDs is to explicitly draw out the feedback processes that Rich Pictures tend to overlook. And it is easy to overlook them because, as Powers notes, "All behaviour involves strong feedback effects ... [it] is such an all-pervasive and fundamental aspect of behaviour that it is as *invisible* as the air that we breath" [*italics, mine*] (Powers, as cited in Vennix, 1996, p. 31).

In the *converging phase*, conceptual models of purposeful systems of human activity, i.e., HAS models, relevant to the problem situation are constructed in order to facilitate debate and enable decisions to be taken in the subsequent *accommodating phase* about desirable and feasible action to improve the situation. But before the models are constructed the systems are carefully defined. Central to this definition, known as a Root Definition (RD), is a transformation (T) that the system performs and a Weltanschauung (W) which explains why this transformation is considered to be relevant and meaningful. Through a purely pragmatic process, Checkland has found that the mnemonic CATWOE is a useful device for testing the RD. Here we replace CATWOE with *BATWOE* because we feel that 'Beneficiaries' better expresses who or what benefits from the transformation than does Checkland's 'Clients'. The other elements of the mnemonic are: the Actors – the people who make the system work; the Owners – the key decision makers; and the Environment – those elements outside of the system, i.e., outside of the control of the 'owners', which can influence the outputs of the system.

It should be stressed that, consistent with an interpretive approach, the models have no claim to being objective and therefore should not be imposed on the situation. They are merely devices to facilitate discussion amongst all the problem owners.

4. THE INTERVENTION

4.1. Diverging: Finding out about the Problem Situation

The inquiry into the problem situation proceeded through the following stages.

First, individuals, within defined problem owner categories were identified with the help of the leadership of a non-governmental organization (NGO), with a solid reputation in the health sector in KwaZulu-Natal. Later on more people, identified by these problem owners, were identified and interviewed; a kind of ‘sweep-in’ process (Ulrich, 1988). Two ‘boundary judgments’ regarding the participants were made and accepted here: the choice of the NGO and the time and language constraints imposed on the ‘sweep-in’ process.

Through this process, we interviewed officials in the provincial and regional offices of the Dept. of Health as well as members of the district health teams and officials of municipal health services. NGO managers and project leaders were also interviewed. However, because of the time and language (neither of us are able to converse fluently in the local language, isiZulu) constraints we were not able to interview lower level support and ‘field’ staff at the district health centres. For the same reason we were not able to interview the ‘clients’ (rural villagers) of the centres. (We reflect on the implications of this in the Concluding Discussion.)

Individual interviews were conducted by means of ‘open conversations’ and were usually started with a question such as “What do you perceive to be the major disturbances/obstacles to the policy implementation process?” The response provided an initial overview of the issues that were important to the particular participant. It also produced sufficient ‘connection points’ for surfacing ‘conceptual’ and ‘structural’ aspects of the DHS implementation process in follow-up interviews.

After each session the individual contributions were captured in Concept Maps and translated into Sign-graph Diagrams (SgDs) – as perceived by the respective problem owners. In further conversations with the problem owners both the Concept Maps and the SgDs were checked and used to explore some of the more important ‘theories’ the participants had about the problem situation.

Individual SgDs were then merged to aggregate the inputs of the different individuals and to develop a larger and ‘richer’ conceptualisation of the intervention context. This was done through an iterative process. For the first draft, key concepts were selected and clustered. They were then linked into a plausible explanation of the dynamics and inter-

relationships in the problem situation. In the sessions that followed the merged diagram was presented and continuously redeveloped taking into consideration the comments and further opinions of the problem owners.

Because of space limitations we only give, by way of illustration, the Concept Map and SgD for one of the problem owner categories, viz., the district management. These are shown below in figures 2 and 3 respectively. The other categories were provincial offices, regional offices, municipal health services, and NGOs.

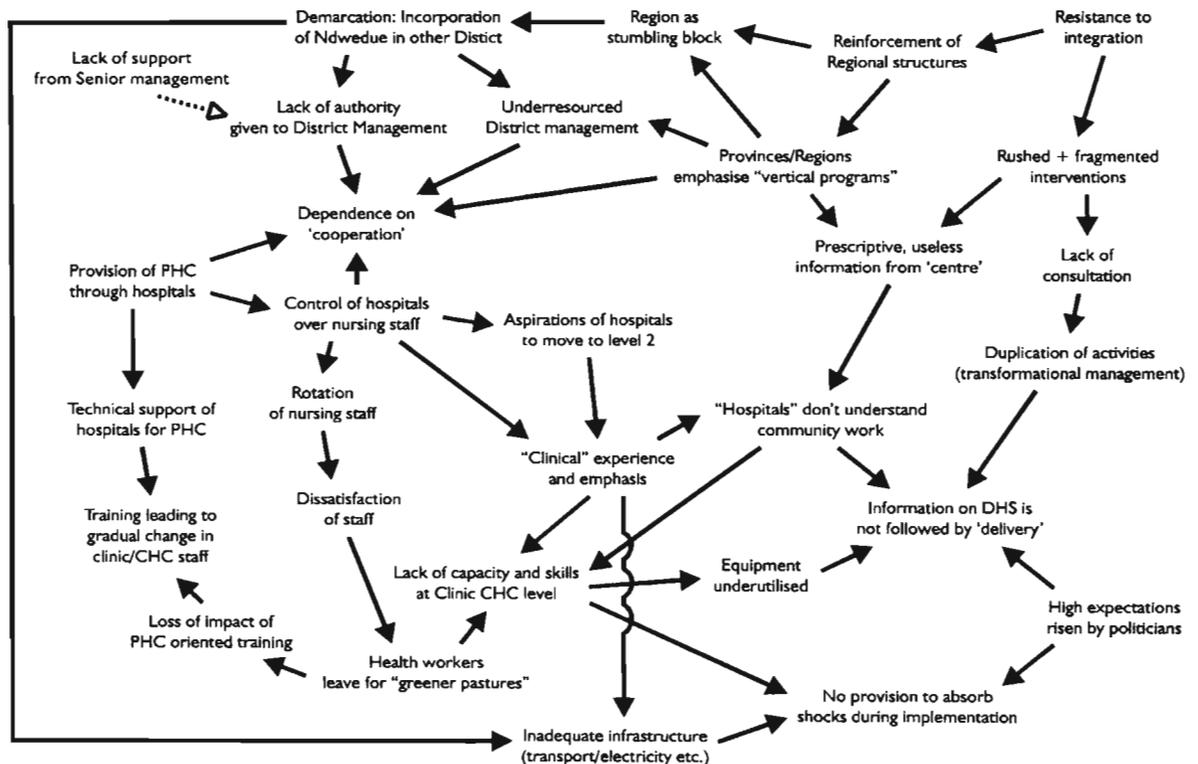


Fig. 2. The DHM perspective expressed as a Concept Map

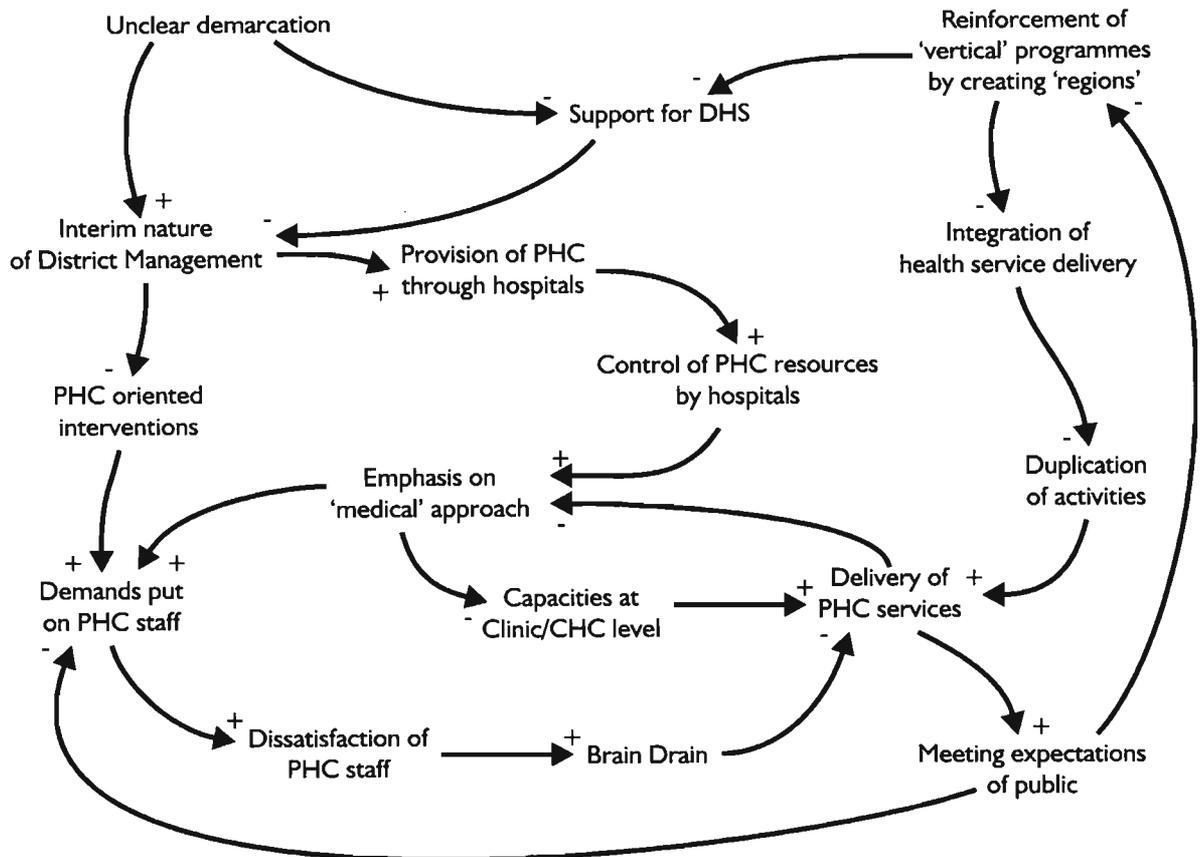


Fig. 3 The DHM perspective expressed as a Sign-graph Diagram

4.2. Associating – Structuring the problem Situation

Structuring of the problem situation involved two steps.

The first step was to engage the problem owners in conversations around the merged SgD. In these conversations the merged SgD was examined for crucial links, vicious circles, and stabilising loops, which could be explored, and, if necessary, disrupted through specific interventions and action. Although it was not always possible to draw clear distinctions, the purpose of the conversations were to identify ‘leverage’ points for intervention.

These conversations were followed up by further conversations in which we searched for possible intervention points (“Where in this system do we want to make a change?”). The diagram was reshaped (on the basis of the conversations) continually until seven ‘dynamics’ emerged, which were believed to have a major influence on the transformation process and the overall development of the problem situation. The seven ‘dynamics’ were then used as a source for designing Human Activity Systems (in the converging phase)

relevant to the dynamics. The systems were defined in the hope that they would enhance the positive and suppress the negative characteristics in the 'dynamics'.

The seven 'Dynamics' of the transformational process

A short description of each of the 'dynamics' is given below:

Dynamic 1: PHC/DHS oriented training and education is vital for the stimulation of district level decision-making and empowerment. It motivates people to get involved in problem-solving activities, which in turn provides the basis for further learning and reduces dependency on the already overloaded regional and provincial structures. The impact is only felt in the mid-term but is essential considering the importance of decentralisation in DHS. District management capacity and multi-skilled PHC staff is a precondition for giving life to the new policies and, among other things, depends on the effectiveness of the training. The better the quality of the training the easier (and more convincing) it will be to establish and reward the 'new breed' of health officials in politically acceptable institutional arrangements.

Dynamic 2: One essential feature of the new policy is the move away from an exclusively 'medical' and 'hospicentric' approach. This implies a reduced demand for hospital services and an increased awareness on the part of the public for a more holistic approach to health care. The less the demand for 'hospital services' the more resources can be transferred from curative activities to those that should gain priority under the new policies; the greater the resources that become available for these purposes, the easier it is to enhance the PHC oriented skills and behaviour of the health staff through further capacity building measures; and, the better the PHC interventions, the greater the awareness and satisfaction of the public will be, and therefore the faster will be the required change in attitudes and patterns of behaviour. This dynamic is slow but decisive, because it is the demand for hospital versus community services that will ultimately determine whether resources can be freed up to implement the shift to a more holistic form of health care (or not).

Dynamic 3: The establishment and alignment of management and organisational processes and systems appear as particularly active elements with influence over several other important aspects and factors that shape the current dynamics in the problem situation. Their potential support for the process of self-transformation at district level and the establishment of an organisationally and operationally feasible and sustainable PHC service has been mentioned above. Their importance also extends to supporting structural

conditions that enhance local level discretion and decision-making. The better the exploration of such conditions, the more relevant the policies and their implementation will be to the specific local contexts. The more feasible the policies become and the better the understanding of their implications, the more relevant and credible the implementation plans will be. All these factors contribute to sustaining the belief in the new policies, a fundamental precondition for seeing the transformation through. Dynamic 3 is likely to produce improvements relatively quickly, but only to the extent that the management and organisational development interventions are followed by the actual delegation of authority to the local level managers and administrators.

Dynamic 4: Dynamic 4 is closely linked to Dynamic 3 and highlights the effects of the availability of adequate ‘planning capacity and competence’ in the problem situation. Together with the outcomes of Dynamic 3 this capacity and competence is a vital ingredient for the improvement of the effectiveness of change management and the relevance and quality of the policy and strategy implementation plans. The better the change management and the implementation planning, the easier it is to restore and maintain the confidence and the belief in the new policies and to secure the commitment of skilled personnel (and to stem the ‘brain drain’ that has been one of the factors contributing to the loss of planning capacity.) At the level of service delivery an increase in planning skills and know-how impact positively on the coordination of the sector activities, the setting of realistic targets and the efficient allocation of resources. Improvements in these areas are essential for the dampening, in the short term, of the effects of fragmentation and duplication on service provision. In the longer term, better services will – under the influence of Dynamic 5 – enable the emergence of an organisational culture in the health sector that builds on democratic leadership and effective consultation processes, and therefore stems the drain of skilled but frustrated professionals and retains the critical mass of planning competence in the sector.

Dynamic 5: It is a central aim of the DHS to overcome the fragmentation and the expensive duplications that undermine the performance of the health sector. To do something about it has, however, proved to be difficult because the situation is caught in a ‘vicious circle’. Unkept promises and unfulfilled expectations lead to an outcry from dissatisfied citizens. The stronger this outcry gets, the more the politicians interfere with issues and responsibilities that belong to the ‘administration’. Increased political pressure results in the ‘burden of accountability’ at central level becoming even heavier and creates an

increased sensitivity and urge among the top executives to have a tighter control over events and resources. This leads to the reinforcement and establishment of vertical structures and lines of command, which are then used to channel and drive the sector activities and developments from the top (more 'vertical programmes'). The problem of duplication and fragmentation gets reinforced and the quality and efficiency of service delivery declines further, resulting in even more public dissatisfaction and more pressure from the centre. This dynamic is a breeding ground for more bureaucracy and authoritarian management styles and impacts negatively on the sector's ability to tackle the big health issues on the ground. It further leads top-management structures to set unrealistic targets, which add to the impression of low efficiency and bad performance, not only in the actual delivery but also in the management of the transformation process. This further undermines the credibility of current performance assessment initiatives and further lowers the already relatively low morale of the health staff and officials. The intensity with which Dynamics 1, 2, 3 and 4 come into play, heavily influences the impact the dynamics of the 'vicious circle' have on the culture and the structure of the transformation process. In the short term it appears to be vital to soften the effects with the employment of an increased planning and coordination capacity and competence (Dynamic 3) and with targeted management and organisational development interventions, which improve local level decision-making (Dynamic 4). In the mid- and long-term the progressive self-transformation of the districts, and the shift in consumer behaviour and resource allocation, will positively impact on the quality and the effectiveness of service delivery. The latter are crucial factors for moving out of Dynamic 5 and reshaping the political and administrative processes and structures in the health sector along the principles of decentralisation, good governance, and community participation set out by the new policy.

Dynamic 6: Centralization and authoritarian management styles impact negatively on the quality of communication and the effectiveness of the consultation processes in the problem situation. Lack of communication undermines the consultation between different sector players and leads to increased resistance and opposition to the transformation process and, in turn, to further communication breakdowns. The effects of this dynamic are profound in that they lead to a large diversity of conflicting 'agendas' that block the ongoing negotiations and bargaining processes, and they contribute to the decline in the commitment and the moral of the staff, which, in turn, threatens the professional integrity of the public health service and the viability of the transformation.

Dynamic 7: The key issue around which negotiations are taking place is the issue of ‘governance’. The more successful these negotiations, the better are the chances that the relevant legislation and policy decisions will be implemented and that the gaps between legislation and policy can be closed. Progress along these lines is vital for the credibility of the new policies and, therefore, the commitment, motivation and participation of the communities and the health sector personnel in the ongoing transformation and bargaining processes. Two factors considered to have the potential to stimulate negotiations are (a) improved consultations with active participation and the commitment of the key decision-makers, and (b) fast progress on some of the easier issues in order to restore confidence in the negotiations and to show to everybody that results can be achieved.

At this point it may be useful to remind the reader that our approach is interpretive. The choices made and the degrees of ‘relevance’ ascribed to the Dynamics are subjective. They reflect dominant views that were, however, not always fully shared by everybody. In that sense each of the Dynamics reflects a perception that has been particularly important to one or other of the stakeholder groups. From the district management perspective Dynamics 1, 5, 6 and 7 are the most vital. The central authorities, on the other hand, emphasise difficulties reflected in the Dynamics 4 and 5. The NGOs are primarily concerned with issues and aspects contained in 1, 2, 6 and 7. Dynamic 3 is more a product of the many discussions that we held with the various stakeholders than a strong point on the agenda of any one of the stakeholder groups.

4.3. Converging: Inventing new possibilities

In the last phase of the inquiry, for each of the Dynamics referred to in the previous section, we defined a relevant system and then developed the corresponding HAS model. These models were then clustered and assembled into operational sub-systems.

Here we discuss the construction of one of the systems models: *a system to improve the structural viability of the health sector*, i.e. a model relevant to Dynamic 5. We then proceed to illustrate the interdependencies between the models.

Defining relevant systems

In our RD, the T and the W is made explicit. The other elements of the BATWOE mnemonic are also briefly set out.

Root Definition: A system which creates decentralised and accountable organisational structures and processes that enhance the capacity at local level to produce relevant responses to environmental disturbances.

Transformation:

A policy implementation structure, which is vulnerable to external pressure and operates on the basis of hierarchical control and communication mechanisms → A policy implementation structure which has the adequate capacity to manage its environment and which operates on the basis of decentralised core processes and regulatory functions

Weltanschauung: a) that the DHS approach will only materialise if the process of designing and managing its implementation is based on the same principles of decentralisation, participation and governance as envisaged for the approach itself; b) that hierarchically structured implementation processes have an increased probability of failure because standardised solutions, developed at great distance from the problem, are notoriously unreliable; c) that recursive 'implementation structures' increase the ability to absorb and manage internal complexity and to adapt to disturbances in the external environment. They emphasise local level discretion, which is carefully bounded and controlled by monitoring devices that strengthen the top structures against the bottom; d) that policy oriented learning can be significantly enhanced by improved communication and feedback channels. These assumptions are strongly influenced by the Viable System Model (Beer, 1985).

The *(B)eneficiaries*, are mainly the health care managers and the service staff.

The *(A)ctors*, include the district health managements, the provincial/regional health authorities, the managements of the service institutions, the local government authorities.

To define the *(O)wner(s)* proved to be difficult in a situation where the outcome of any transformation is a product of interaction between different players and institutions. In general one could say that, until the transformation process has matured and the third sphere of government has taken over the full responsibility for the delivery function, considerable formal power over the process rests with the central health authorities. Once these changes occur it will be local government that controls a considerable part of the transformation processes.

The *(E)nvIRONMENTAL constraints* include systems 4 and 7 as shown in figure 4 below.

Modelling relevant Human Activity Systems

To assemble and structure the ‘conceptual models’ for each of the seven systems, between five and seven of the many activities proposed by the participants were included to keep a further discussion manageable. They were chosen because of the frequency with which they were mentioned and because they are in line with the dominant Weltanschauungs expressed in the BATWOE analysis of the respective systems. Figure 4 is a visual representation of the model implied by the RD defined above.

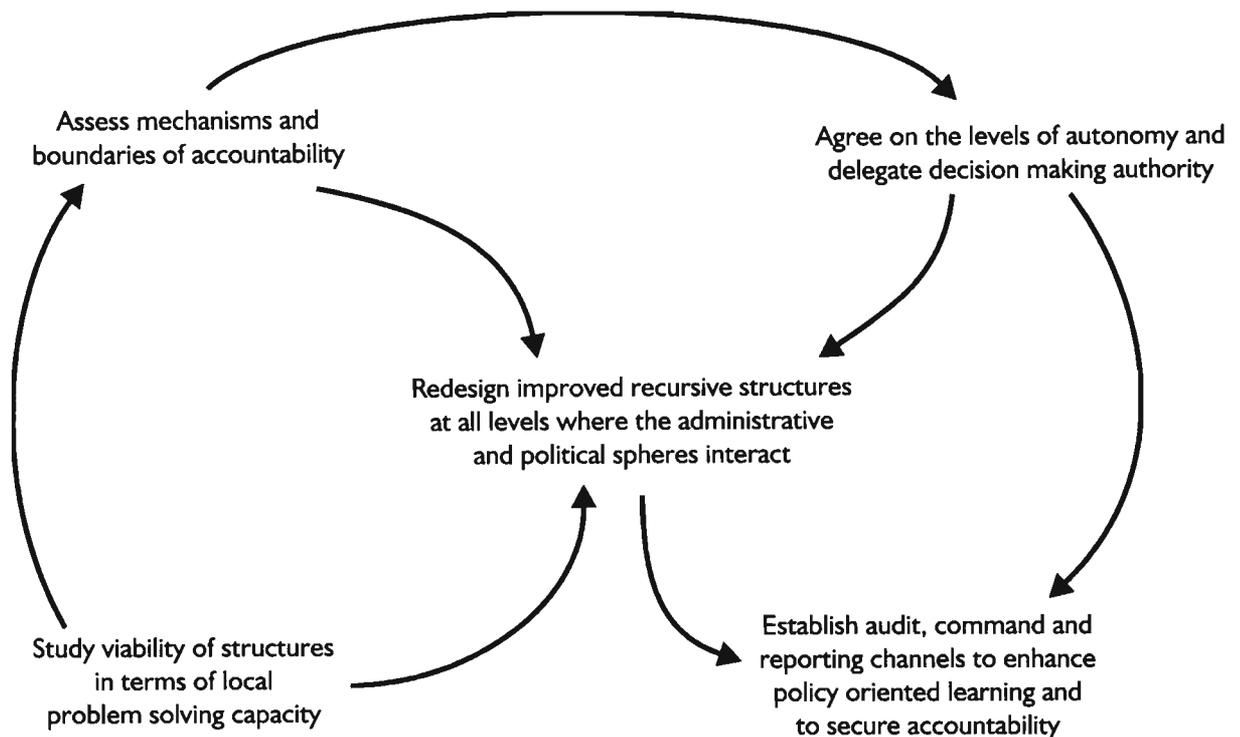


Fig. 4. An HAS model for Dynamic 5

The modelling did not only lead to the identification of the core activities, which are necessary to achieve the transformations described by the BATWOE analysis, but it also brought to the fore the interdependencies and the overlaps that exist between the seven ‘systems’ that were defined in the Root Definitions and chosen as ‘relevant’ to the problem situation. The value of mapping these interdependencies in the form of a ‘whole system model’ has been highlighted by Gregory and Midgley (2000).

System 1 is dependent on: System 3, which provides the support systems and the operating procedures that are required to manage the district-based health care delivery; System 4, which provides the generic skills and the competence to manage the change at district level and to carry out ‘development projects’ if necessary; System 5, which provides the structural conditions and the delegated authority needed to reduce the dependency from the

'centre' and to improve the capacity for local problem-solving and self-transformation; and System 7, which provides the institutionalisation of the decentralisation through the transfer of health care delivery to local government.

System 2 is dependent on: System 1, which provides the regulatory functions required to develop the PHC services and to sustain the policy-oriented learning; System 3, which provides some of the support systems and operating procedures to run PHC services; System 7, which provides the political environment and the institutional conditions that facilitate the participation of the communities in the planning of the health care services.

System 3 is dependent on: System 1, which provides the information about service needs; System 4, which provides the OD/MD skills and competencies required to re-engineer the processes and design the support systems; System 5, which provides information about the structural principles that need to be reflected in the design of the processes and systems;

System 4 is dependent on System 6, which provides the bargaining arenas for strategy development and planning, and the lines of communication and reporting that are needed to keep the public and the entire sector informed about the plans and the progress and to secure the coordination of the implementation activities.

System 5 is dependent on: System 4, which provides the skills and the competence to carry out the organisational analysis and redesign; and, System 7, which provides the political and institutional context in which the restructuring is taking place.

System 6 is dependent on System 5, which provides the organisational structure in which the communication and consultation channels should be embedded.

System 7 is dependent on System 6, which provides the bargaining arenas and the communication channels required to make the negotiation processes more effective.

The integration of the systems is shown in figure 5.

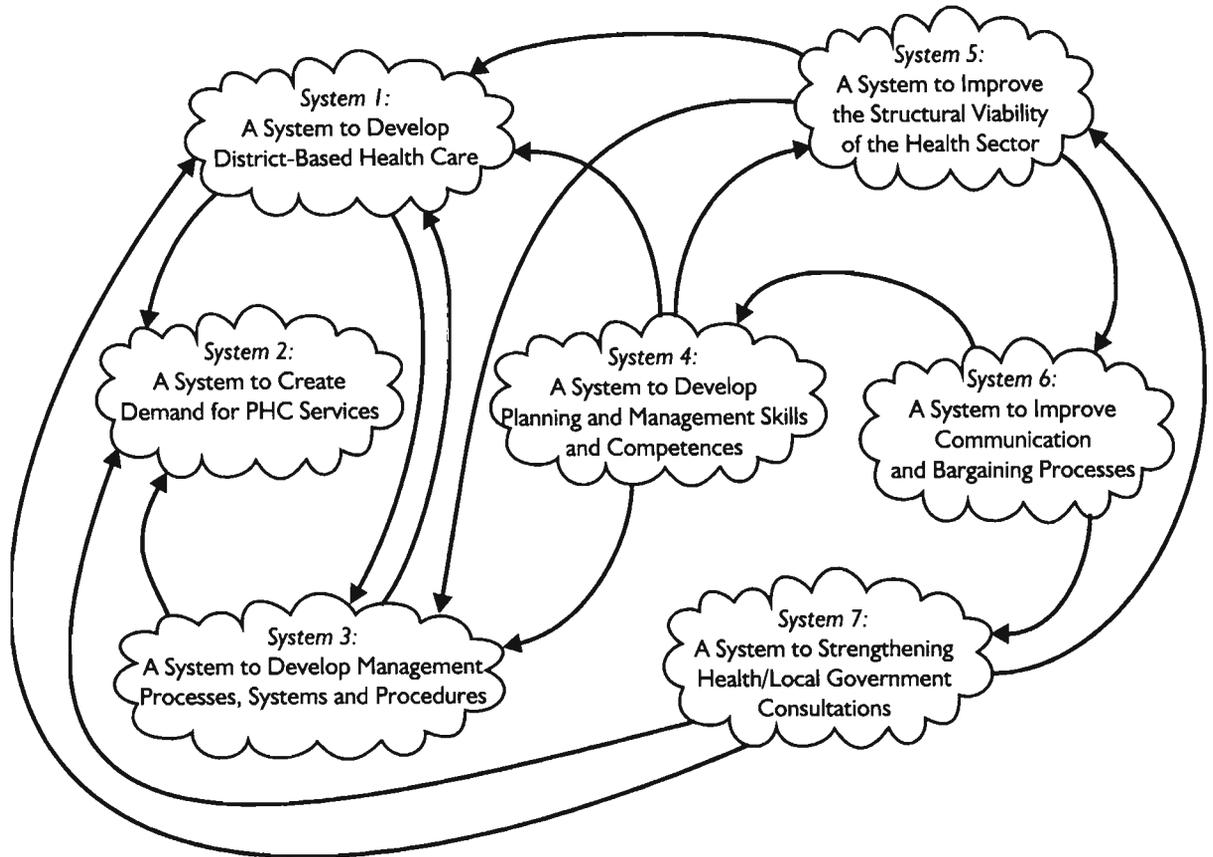


Fig. 5. Integrating the 7 HAS models into one 'whole system model'

5. CONTINUING THE INTERVENTION PROCESS

The purpose of the next step of the inquiry process - which has not been part of this intervention - is to compare the conceptual models with what is perceived to exist in the 'real world'. By comparing 'models' with what is currently going on in a problem situation, often unquestioned, informal and intuitive perceptions of reality are brought up against the 'system' constructs. The comparison between the 'pure' models, which pursue a clear purpose from a declared point of view ('Weltanschauung'), and 'real world' activities, which are much messier, should therefore help to structure a debate in which different perceptions of the facts and the logic of the situation, and different value positions and interests can be revealed and discussed leading to action to improve the problem situation. What is looked for in the debate is not to 'improve' the models, but to find an accommodation between different viewpoints and interests in the situation, and to identify those changes, which, to those taking part in the debate, appear to hold potential for improvements in the problem situation.

6. REFLECTION ON THE INTERVENTION AS A SYSTEMIC PROCESS

In spite of the fact that the intervention process is not yet concluded we may usefully reflect on the intervention as a systemic process, and in so doing draw some (tentative) conclusions about its impact.

Three aspects were considered to be important for maintaining the ‘systemicity’ of the intervention: firstly, the conscious employment of ‘boundary critique’ as an ongoing and integral part of the process; secondly, the combination of methodologies/methods; and, thirdly, the awareness of the cultural and cognitive context of the inquiry. The major learning from this intervention, in terms of designing and implementing systemic intervention, was the realisation of how closely the three aspects are interlinked; therefore the ongoing management of the relationships between them became an essential part of the process. Examples of these relationships are discussed in turn.

6.1. The ‘methodology design – boundary judgements’ relationship

A ‘sweep-in’ process that is driven by an interpretive methodology produces a different boundary of the problem situation to one that would be produced using an emancipatory methodology. We were aware that if we had used Ulrich’s twelve critical systems heuristics questions we would have identified different participants to those that we mobilised through employing a ‘rolling programme of interviews’, and therefore different Concept Maps and SgDs would have been produced.

The enquiry logic and consequent methodology design highlights certain features of the problem situation and ignores others. If the enquiry had been based on a structural methodology such as the Viable System Model, instead of just using it to inform some of our questions, little would have become known about the political issues involved in the transformation.

We were able to consider and accommodate many diverse perspectives in the problem situation because of the interpretive logic of SSM. It is reasonable to assume that consensus and agreement in regard to the way forward is possible amongst those (health authorities/local government) who are entrusted with the immediate implementation of the new policies. However, if we had included lower level staff, and the public, deeper disagreements and oppositional views, that may have emerged, would have required a more ‘polemical’ debate.

6.2. The ‘inquiry context – boundary judgement’ relationship

The reading of the ‘politics’ and the ‘culture’ of the inquiry context is determined by the participants who are ‘swept’ into the process, i.e., in this intervention, by the decision to concentrate the inquiry on those who are immediately entrusted with the implementation of the policies. If the intervention had focussed on the perceptions of the public or the politicians the perception of the ‘political’ and ‘cultural’ dynamics would have been different.

6.3. The ‘methodology design – inquiry context’ relationship

The cognitive and the cultural context, determined by the experiences, competencies, personalities and preferences of the participants and the researchers, and the political circumstances characterising the problem situation, had a significant influence on our judgement regarding which systems methodologies and methods would be acceptable and effective. Essential for the intervention was that, right from the beginning, most of the participants indicated a great interest and willingness to reflect on the problem situation in new ways, and to engage in a process of reflection that would challenge current assumptions.

The perceptions of the context (cognitive, cultural and political) develop gradually as the intervention proceeds. A methodology, or combination of methods, based on an interpretive logic was justified as it facilitated the development of new insights, captured in the seven dynamics, for the participants. This is not to imply that the use of SSM as a governing framework was necessarily the ‘best’; other interpretive approaches could have produced equally useful insights. However, we can claim that the combination of methods was successful in the sense that new ideas emerged about the context for the participants. It, in the words of one of the participants, “came at the right time to get the transformation process unstuck!”

7. CONCLUSION

In conclusion, this paper contributes to the growing critical systems literature by reflecting on an intervention that employed SSM as a ‘governing’ methodology. We demonstrate the value of using Concept Maps and Sign-Graph diagrams, instead of the usual Rich Pictures as a basis for deriving the Root Definitions and purposeful human activity system models. Stakeholders (or, more precisely, problem owners) who gained fresh insights into the dynamics of the very complex context in which they were operating, confirmed the value

of this particular combination. In our concluding reflections on the intervention as a 'systemic process' we note the importance of the interrelationship between three aspects of the intervention: boundary critique, the combination of methods and the inquiry context.

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PAPER 3:
**Towards a Critical Systems Approach to
Policy Formulation in Organizations**

Towards a Critical Systems Approach to Policy Formulation in Organizations

Author: S. Lockett

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ABSTRACT

This paper develops a critical systems approach to organizational policy formulation and in so doing, contributes to the literature on critical systems thinking (CST). For, whilst there is, in the literature on systems theory and practice, much written on the subject of strategy in organizations, there is very little on organizational policy and nothing from within the critical systems paradigm. CST is typified as a paradigmatic approach to systems thinking alongside the functionalist and interpretive paradigms, but unlike the latter two, there is considerable disagreement as to what constitutes CST. Therefore, there is some discussion in the paper on paradigms, systems thinking paradigms, and CST in particular. A definition of CST is developed out of this discussion. The paper then proceeds to discuss policy as used by systems thinkers. Key contributions in this area, namely by Beer (1979, 1981, 1984, 1985) and Vickers (1995) are critiqued as being functionalist and interpretive respectively and, on the basis of this critique, a critical systems approach to the formulation of organizational policy is developed.

1. INTRODUCTION

The origins of this paper lie in an intervention undertaken by the author to develop a process for the (re)formulation of policies for a nature conservation organization. The KwaZulu-Natal Nature Conservation Service (KZNNCS) is a parastatal service in the KwaZulu-Natal province of South Africa. This organization has a rich heritage of nature conservation in the province extending back more than 200 years. In 1947 formal conservation in the province was taken over by the then newly established Natal Parks Board (NPB). In the 1970s the continuity of the heritage was fractured when the South African government split the NPB into two agencies in line with its apartheid policy. The NPB was given the responsibility of conservation in the 'whites only' Natal province and the Department of Nature Conservation (DNC) allocated the responsibility for KwaZulu, that portion of the original Natal which was designated a Zulu 'homeland'. In 1997, after the first democratic elections, the NPB and DNC were amalgamated. This amalgamation entailed a massive restructuring exercise and posed a challenge relevant to this paper, namely, the development of an organizational vision, mission and a set of policies for the new organization.

In the initial stages of the intervention to formulate policies for KZNNCS, help was sought from systems literature on the subject of systems approaches, i.e., methodologies, methods, models and techniques, to organizational policy. However, it was discovered that whilst there is much written on the subject of strategy in organizations in the systems literature and a vast amount of general literature on policy in the public sphere, i.e., on public policy making and analysis, there is very little on organizational policy making in systems literature. This paper therefore aims to contribute an understanding of the role of policy and policy making in organizations through the construction of a critical systems approach to policy formulation and development in organizations and, in so doing, to contribute to the literature on critical systems practice by incorporating a hitherto neglected aspect of CST applications, namely, organizational policy.

The paper has six parts. The first is this introduction. In the second is a discussion on systems thinking paradigms. As this discussion indicates, although there are differences regarding the understanding of the concept 'paradigm', it is possible to provide a definition, distilled from Kuhn's (1962) original usage that most systems thinkers would find uncontroversial. Using this definition, there is arguably considerable agreement

amongst systems thinkers on what are known as the functionalist and interpretive paradigms; however, there are significant differences between systems thinkers as to what constitutes a third, 'critical' systems paradigm. These differences are discussed in the third section of the paper where an understanding of Critical Systems Thinking (CST) is set out, and thereafter the key features of all three paradigms is summarized. In the fourth section, organizational policy, as understood and used by systems thinkers is summarized with the aim of producing a definition of organizational policy. In the fifth section policy-making in organizations is dealt with and there it is shown that the two systems approaches that consider the issue of policy in organizations in some detail, namely, Beer's Viable System Model (VSM) and Vickers' Appreciative System, may be typified, respectively, as functionalist and interpretive. In this fifth section, suggestions for a critical systems approach to policy-making are made. Finally, the sixth section of the paper draws the paper to conclusion by typifying the intervention as action research. Some of the learnings that resulted from this action research are presented in this paper, namely, a contribution to CST literature through the development of a critical systems approach to understanding the role and formulation of policy in organizations.

2. SYSTEMS THINKING PARADIGMS

The concept 'paradigm' has been used in different ways by systems thinkers. (Jackson, 2000; Midgley, 2000; Yolles, 1996). This should not surprise us, for, as Masterman (1970) points out, Kuhn (1962) who popularised the concept, used it in at least 21 (non-contradictory) ways. According to Masterman these can be divided into three categories: metaphysical (or philosophical), sociological and "construct" (Masterman, 1970:65). For the purposes of this paper an understanding of the term is distilled from Kuhn's metaphysical and sociological usages. Metaphysically, a paradigm is a set of shared beliefs, questions that may "legitimately be asked" (ibid.: 66) and models of procedures for investigating these questions. Sociologically a paradigm consists of "recognised achievements" which are "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity [and] sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve" (Kuhn, 1962 as cited in Masterman, 1970: 62).

Jackson's (2000) *tour-de-force* of systems approaches to management provides a suitable place to start a discussion on systems thinking paradigms. His purpose is to develop a typology of paradigms of systems approaches to organizational management and to

provide a set of ‘constitutive rules’ for each of the paradigms in this typology. He begins this task by establishing a framework of social-theoretic paradigms that are relevant to systems thinkers. For a framework of social-theoretic paradigms to be useful to systems thinkers it should highlight the significant differences between social theories when applied to real-world practice. A key assumption here is that the different paradigms of systems approaches are nested in social-theoretic paradigms and therefore that systems thinking is not a paradigm in itself. According to Jackson, Burrell and Morgan’s (1979) well-known typology of sociological paradigms meets the criterion of real-world applicability.

Burrell and Morgan developed a framework consisting of four paradigms, namely, Radical Structuralism, Radical Humanism, Functionalist Sociology and Interpretative Sociology. These sociological paradigms arise from superimposing two key conceptual dimensions, regarding the study of society, on one another: on the one hand social science is seen as either a ‘subjective’ or an ‘objective’ enterprise and, on the other, the study of the status quo vs. the study of change. Using these dimensions as axes on a two dimensional grid as shown in figure 1. Burrell and Morgan locate all sociological theories within the four paradigms.

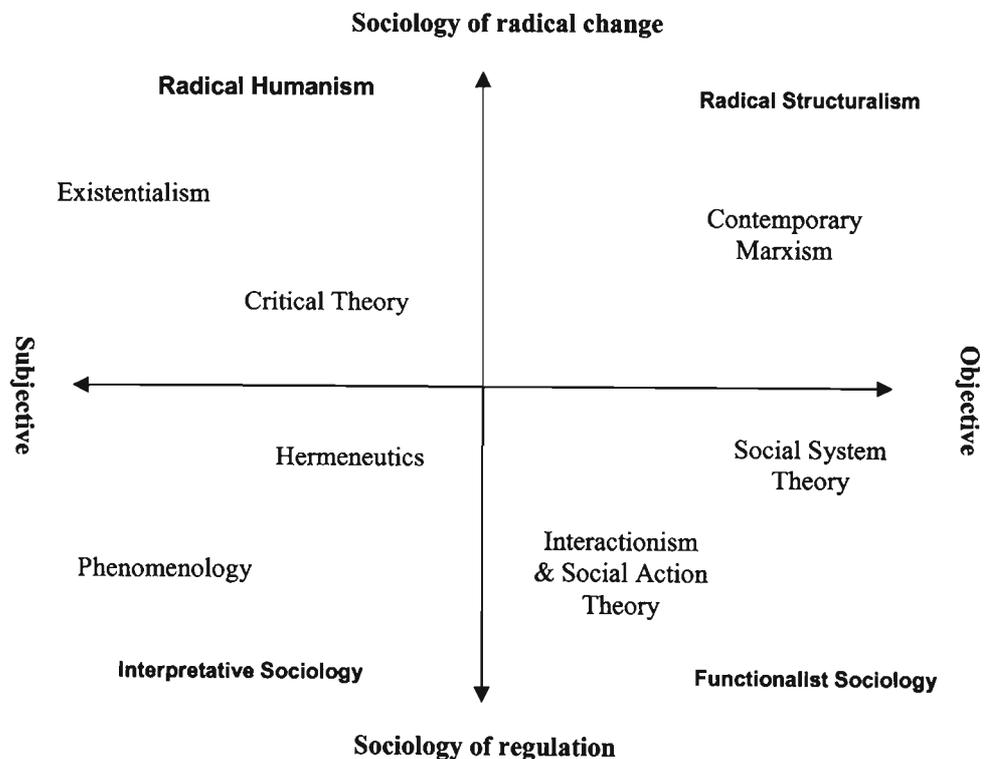


Fig. 1. Burrell & Morgan's four sociological paradigms

This typology has appealed to many organizational theorists because it provided a “sense-making device to account for and locate” (Clegg and Hardy, 1996: 2) the different approaches to organization studies. It also provided a framework for those systems thinkers who were giving attention to the multiple methodologies that had been, and were being developed for interventions to improve the management of organizations. For example, Peter Checkland made use of this classification as a basis for his influential distinction between ‘hard’ and ‘soft’ systems thinking:

For my purposes the most useful typology is that recently advanced by Burrell and Morgan [...] This typology illustrates sharply the difference between hard and soft systems thinking (Checkland, 1999: 80-81)

While their work proved to be significant in breaking the hegemony of the functionalist paradigm in management studies – “the text articulated and legitimated to some extent the voices of those who did not share the functionalist orientation” (Burrell, 1996: 648) – the work was criticised largely because of the notion of paradigm incommensurability that was central to the work. The idea that ‘paradigm could not speak unto paradigm’ was rejected by a number of systems thinkers who challenged the notion that methods were locked into methodologies which in turn were locked into particular paradigms (Mingers and Gill, 1997; Midgley, 2000). Burrell was later to acknowledge their “procrustean approach to stabilizing the field” (Burrell, 1996: 648), and endorsed the more flexible notion of metaphor that Gareth Morgan employed in his book, *Images of Organization* (Morgan, 1986), where a metaphor of organization is a distinctive image of organization produced as a result of using a specific discourse about organization.

For Jackson, however, “systems approaches can be related both to sociological paradigms and to metaphors [where metaphors provide] finer distinctions than do the sociological paradigms” for understanding organizations, which, in particular, are “useful for distinguishing varieties of the functionalist systems approach” (Jackson, 2000: 30). In the present context, however, it is not necessary to make the fine distinctions enabled by the metaphor framework.

Jackson finds Burrell and Morgan’s typology limiting in that its subjective–objective dimension glosses over the distinction between positivist and structuralist epistemologies. He appeals to Keat and Urry to support his claim for such a distinction:

For the [structuralist], unlike the positivist, there is an important difference between explanation and prediction. And it is explanation which must be pursued as the primary objective of science (Keat and Urry (1975) as cited in Jackson, 2000: 25)

This distinction in epistemologies is debatable. Those who employ the scientific method would hardly be content to rest with an explanation that merely shows “instances of well established regularities” as Keat and Urry, and therefore Jackson, seem to assume. According to Brian Fay, “it is through [a positivist epistemology] that one begins to grasp how apparently unrelated phenomena are intimately connected” (Fay, 1975: 21). Be that as it may, Jackson develops his own typology – functionalist, interpretive, emancipatory and postmodern – which he claims “correspond neatly” (Jackson, 2000:41) to the typology developed by Alvesson and Deetz, namely, normative studies (modern), interpretative studies (premodern), critical studies (late modern) and dialogic studies (postmodern) (Alvesson and Deetz, 1996). This correspondence is not immediately apparent since the quadrants in Alvesson and Deetz’s grid are derived from a ‘dissensus-consensus’ dimension and an ‘emergent-*a priori*’ dimension. The former is specifically concerned with “the relation of research practices to the dominant social discourse” (ibid.:195). It is only if one assumes that functionalism is the dominant discourse is there the possibility of arguing that there is a correspondence.

At this point it should be mentioned that Habermas’ Knowledge Constitutive Interests (KCI) was influential in the early development of paradigm typologies for systems methodologies (Flood and Jackson, 1991; Jackson, 2000). The role of KCI in the development of systems thinking is discussed further in the next section. What is important to note here is that Jackson uses the KCI theory to provide further support for his distinction between functionalist, interpretive and emancipatory systems thinking paradigms. Irrespective of the doubt cast by Midgley on Jackson’s foundational theoretical foundations for the different paradigms, the existence of the functionalist and interpretive paradigms of systems approaches, and their key features, are relatively unproblematic amongst systems thinkers. These features are summarized in table 1.

There is, however, some disagreement regarding the remaining categories (of paradigms) that systems approaches fall into. As noted above, Jackson (2000) uses the categories ‘emancipatory’ and ‘post-modern’ to delineate the others with the critical approach being ‘meta-paradigmatic’, while Midgley (2000) includes those approaches that Jackson categorises as ‘emancipatory’ as falling within his ‘third wave’ (of systems thinking),

which is effectively another way of describing ‘critical systems thinking’. Midgley remains silent on the issue of where to locate those approaches that Jackson calls ‘post-modern’.

As shown below in section 4.2, those systems thinkers who have attempted to deal with the issue of organizational policy ‘fit into’ the functionalist and interpretive paradigms. Because this paper is concerned with developing a critical systems approach to policy-making in organizations and because of the lack of consensus about what critical systems thinking is, attention is given in the following section to summarizing this debate.

3. CRITICAL SYSTEMS THINKING (CST)

The dispute over what constitutes CST is typical of the phenomenon that Kuhn refers to as ‘pre-paradigmatic’ (Masterman, 1970: 73). In this case there are some ‘recognised achievements’ that have attracted a group of people but there is, as yet, no explicit set of ‘shared beliefs’. Jackson warns that:

The attempt to tell the story of the more recent developments of critical systems thinking is fraught with danger ... the story could be told in a variety of different ways, all of which would have some legitimacy (Jackson, 2000: 375)

Midgley makes much the same point when, in response to the question, “What is CST?”, he says “There is no one such thing.” (Midgley, 1996:11).

My attempt to ‘tell the story’ of CST for the purposes of this paper will of necessity be very brief and, therefore, be all the more ‘dangerous’ because it oversimplifies the issues involved.

Jackson and Midgley are arguably the most influential of contemporary critical systems thinkers. However, they take different positions on the nature of CST. The biggest single issue that divides them is that whereas Jackson (2000) distinguishes between *critical* and *emancipatory* systems approaches, for Midgley (1996, 2000) there is only one paradigm, CST, which incorporates Jackson’s emancipatory approaches. Closely related to this issue is the debate around methodological pluralism. The discussion that follows centres around Jackson’s and Midgley’s positions.

3.1. Fundamental Commitments

Midgley summarizes Jackson’s view of CST as containing three interlinked principles or “fundamental commitments” (Midgley, 1996:11): critical awareness (or, critical reflection), emancipation and methodological pluralism (or, complementarism). Jackson (1997, 2000) no longer sets out his position in these terms. He prefers to speak of nine

“constitutive rules” (Jackson, 2000:393). It is arguable, however, that the constitutive rules can be conflated to the three commitments and since the three commitments are so well entrenched in the literature, they form the basis for reconstructing the characteristic features of CST here:

CST can be seen as an evolving debate around [these three] themes [which are] considered important by a significant number of systems practitioners. The term “debate” is central here as it emphasizes dynamism and continued development rather than the stasis of a final definition (Midgley, 1996:12).

Each of these themes are discussed in turn below and in each case an attempt is made to give Jackson’s (1999, 2000) most recent position and then briefly set out critiques – largely, but not exclusively, Midgley’s – of this position.

3.1.1. Critical awareness

Jackson (1999, 2000) argues that although Checkland did not articulate an argument for critical awareness, it was implicit in Checkland’s (1981) critique of functionalist approaches (which he called ‘hard systems thinking’). An explicit argument for critical awareness was later articulated by Flood, Jackson, Mingers, Oliva and Ulrich – during the period 1982-1991. They identified three interrelated forms of critical awareness: (a) critique of the assumptions that different approaches make about social reality; (b) understanding the social context (in particular, unequal distribution of power) of the intervention; and, (c) understanding the strengths and weaknesses of different systems approaches.

Although Jackson (2000) no longer appeals to the principle of critical awareness, he does emphasize the need to understand the theoretical rationales underpinning any approaches that might be used, as well as the strengths and weaknesses of these approaches so that they may be used in a complementary way (ibid.:393). It is the desire to use different approaches in this way that gave impetus to methodological pluralism. This is discussed further below.

3.1.2. Emancipation/Improvement

It is common cause amongst those who regard themselves as critical systems thinkers (Flood, Jackson, Gregory, Midgley, Mingers, Ulrich, amongst others) that interpretive systems approaches, e.g., Soft Systems Methodology, are not suited for contexts in which there is an unequal distribution of power between the stakeholders.

It is around the theme of ‘emancipation’ from such contexts that Jackson argues that two closely intertwined, yet distinct, strands in systems thinking have developed, namely emancipatory systems thinking and CST. The difference, for him, is that whereas emancipatory systems thinking is concerned with the development of approaches that aim to liberate the marginalized from the effects of the exercise of power by the powerful – he gives as an example, Ulrich’s (1983, 1996, 1998) Critical Systems Heuristics – CST is committed to a broader project of “human improvement” (Jackson 2000: 376). A further, key, difference for him is that CST is ‘meta-paradigmatic’. It is meta-paradigmatic in the sense that it provides a mechanism for assessing the suitability of approaches, including from different paradigms, for particular contexts and also combine methodologies/methods within the same intervention. CST is in other words able to put approaches from all the different paradigms to work together in a problem situation.

It is this claim that CST is meta-paradigmatic that is the most contentious feature of Jackson’s version of CST. This is the topic of section 3.1.3. However, before turning to that section two issues remain to be discussed in this section, namely, Jackson’s understanding of the role of Critical Systems Heuristics (CSH) (alluded to above) and, closely linked to this, the issue of emancipation vs. improvement.

In Jackson’s (2000) typology of methodological paradigms, CSH is located within the emancipatory paradigm because it is a methodology that is only appropriate for use in contexts of coercion/alienation. (Note that Ulrich himself does not use terminology such as ‘the exercise of power’ or ‘coercion’, instead, following Offe, he uses the more nuanced terminology of “institutional selectivity” (Ulrich, 1983:395).) Midgley (1997, 2000) raises a couple of problems with this: (a) how is the intervener to know beforehand which are contexts of alienation/coercion – these are often only discovered during an intervention; and, (b) the use of CSH is not adequate for situations of genuine coercion.

If we accept Midgley’s definition of coercive situations as those where coercive forces have the power to close off debate (Midgley, 2000:208) then his argument that the use of CSH is not able to secure emancipation has some merit. This is because its use is premised on the possibility of rational communication and where there is ‘closure of debate’ there is no rational communication. For Midgley (1997,2000), this is true for all systems approaches as currently conceived. His ‘solution’ is, therefore, to broaden the definition of what constitutes systemic intervention to include “political action and campaigning” (ibid.:210). (This kind of action appears to subsume Ulrich’s (1983, 1996a, 1988)

“polemical employment of boundary judgments”). In my view this is no solution as it detracts from the specificity of the idea of systems approaches’. Therefore, the limitation on systems interventions, including on emancipatory (in Jackson’s terms) and critical (in Midgley’s terms) systems interventions, holds. There is, in my view, a deeper problem and that is the premise of rationality *per se* in systems approaches. Ulrich seems to be aware of this: “methods may sometimes help us to find or support ideas and values, but they cannot replace the spirit that moves a person” (Ulrich, 1996a: 176). However, he but does not further develop this line of thinking.

For Midgley, the value of CSH is that it is a methodology that clarifies the underlying values of any intervention, program or project and therefore is appropriate in a wide range of situations and can be used with other approaches. In Midgley’s terms it is a ‘value clarification’ methodology and is therefore particularly appropriate for the exercise of ‘boundary critique’ (discussed further below.)

Midgley is in agreement with Jackson that improvement is a more appropriate concept than emancipation for CST – of course Jackson still reserves the term for emancipatory systems thinking – but for different reasons. Firstly, as argued above, there is no systems approach which can secure emancipation. Secondly, it widens the ‘boundaries’ of consideration to include the natural world of which human beings are part: “the term ‘human emancipation’ will usually be interpreted as the promotion of human well-being *separate from* consideration of the ‘environment’”(Midgley,1996, italics in the original). Thirdly, the term emancipation carries the possible connotation of universal value judgements especially if the proponents of human emancipation agree with Habermas from whom the notion of emancipation, for systems thinking, is derived. For Midgley, the concept ‘improvement’ has the possibility of being ‘defined temporarily and locally’ recognising, after Churchman, that “every improvement assumes boundaries defining what consequences of intervention are to be taken into account, and what are to be ignored or regarded as peripheral” (Midgley, 2000:130). Ideally, for Midgley, a CST approach should widen the boundaries even further and be committed to ‘sustainable improvement’: “gearing improvement to long-term stability is essential if future generations are to be accounted for” (ibid.:130). This issue of the widening of the boundaries is discussed further in section 3.2.

3.1.3. Methodological pluralism

Methodological pluralism in the broadest sense means the use of different methodologies and/or parts of methodologies, i.e., methods, models or techniques, from different paradigms in combination (Jackson, 1999, 2000).

The main difficulty with pluralism is the idea of ‘paradigm incommensurability’. This is a key feature of Burrell and Morgan’s typology of sociological paradigms (See section 2.) For Kuhn this occurs when “two groups of scientists see different things when they look from the same point in the same direction” (Kuhn as cited in Jackson (2000:366)). Before discussing the development of Jackson’s proposals for pluralism and how he deals with the incommensurability critique, it is important to note that alternatives to pluralism have been advanced by systems thinkers, namely ‘isolationism’, ‘pragmatism’ and ‘imperialism’ (Jackson, 1999, 2000; Midgley, 2000). Briefly, isolationism is the view that ‘my own methodology is adequate for all circumstances’; pragmatism is the use of ‘anything that works’, where ‘what works’ is the (subjective) judgment of the agent; and, imperialism reconstructs or incorporates methodologies or components of methodologies from other paradigmatic approaches into its own methodology. Jackson suggests that Checkland’s SSM is an example of the latter since Checkland sees ‘hard systems thinking’ as a special case of SSM. Jackson (1999, 2000) rejects all these alternatives.

Two ‘landmarks’ in the early development of pluralism (1984-1991) were the System of System Methodology (SOSM) developed by Jackson and Keys and the Total Systems Intervention (TSI) developed by Flood and Jackson. (See Jackson (2000: 355-382) for details of this development.) SOSM and TSI are, according to Jackson, meta-methodologies able to select methodologies from different paradigms appropriate to the context of the intervention. Whilst SOSM is simply a grid that provides criteria for the selection of a systems methodology for the range of possible application contexts, TSI is a fully developed ‘meta-methodology’ which both operationalizes the key ideas of, and extends, SOSM in that it provides guidance for the use of a combination of methodologies.

TSI is underpinned by Habermas’ theory of fundamental human interests, also known as knowledge-constitutive interests (KCI). According to this KCI theory, the human drive to acquire knowledge (cognitive interest) is based on two ‘quasi-transcendental’ necessities for the existence of the human species: ‘work’ and ‘social interaction’. The first results in the interest in ‘technical control’ of the natural world and the second in ‘communication’ or inter-subjective understanding. The KCI further postulates that communication is

distorted by the exercise of power and therefore humans have a third, derivative (because it stems from conditions in which the other two interests are not able to be realized) interest in freeing themselves from the effects of the exercise of power. This is known as the 'emancipatory interest (Jackson, 2000:30-34; Ulrich, 1983:106-113). . Corresponding to these three 'interests' are, according to Jackson (2000), the three paradigms of systems thinking: the technical interest underpins the functionalist paradigm, the communicative interest underpins the interpretive paradigm and the emancipatory interest underpins the emancipatory paradigm.

The use of the KCI theory to support Jackson's claim that TSI is meta-paradigmatic has been vigorously criticised by a number of systems thinkers most notably by Midgley (1996), Mingers(1997) and Spaul(1997). It is beyond the scope of this paper to elaborate on these critiques, suffice it to say that Jackson has modified his position in that in his most recent works his meta-methodology, i.e., his version of methodological pluralism, no longer appeals to the KCI. However, no social theory seems to have taken its place and Jackson (1999,2000) accepts a degree of paradigm incompatibility. Going hand-in hand with this is his insistence that emancipatory systems thinking is a separate identifiable paradigm and CST a meta-paradigm:

It is an advantage of critical systems thinking, and its use of pluralism, that it ensures the protection of the emancipatory option without committing us to the emancipatory practice [...] in every case. To repeat, pluralists must learn to live with and manage a degree of paradigm incommensurability [...] *Pluralism needs to take maximum advantage of the benefits to be gained from using methodologies premised upon alternative paradigms together, and also encourages the combined use of methods, models, tools and techniques [...] to ensure maximum flexibility in an intervention* (Jackson, 2000: 386-387 italics in the original)

To summarise, for Jackson, pluralism must be flexible, be able to use methodologies/methods from different paradigms in the same intervention, and be able to manage a degree of paradigm incommensurability.

Midgley's position is that methodological pluralism cannot logically be meta-paradigmatic. Any attempt to stand above the paradigms, he argues "must inevitably involve making new paradigmatic assumptions" (Midgley, 2000:251). The key to his version of methodological pluralism is the emphasis that he places on mixing methods(Midgley, 1997) and interpreting these methods (possibly from a methodology located in another paradigm) through the framework of a governing set of methodological principles:

It is because I do not believe that paradigmatic thinking can be transcended that I stress the mixing of *methods*, not methodologies [...] we can detach methods from their original methodological principles in order to use them in new ways (seen through the eyes of our own methodology) (Midgley, 2000: 248)

For Midgley the development of the theoretical framework is an ongoing learning process (ibid.:243-268) as is the mixing of methods. The agent chooses from a full range of methods available to meet the purposes of a particular intervention, bearing in mind that the purposes themselves may change, and therefore also the methods, during the course of the intervention (ibid.:172) where the purposes of the intervention are determined by the boundaries of the intervention. More of this in the following (sub)section.

3.2. Boundary Critique

In discussing the three commitments, I have referred to boundaries and the making of boundary judgments almost in passing. ‘Boundary critique’, i.e., an ethical reflection on (implicit and explicit) boundary judgments, is central to Midgley’s vision of CST. For this he draws his inspiration from Churchman’s and Ulrich’s work, “both of whom have explored the concept of boundary in depth” (Midgley, 1996:17).

The boundary concept is central to systems thinking, because systems thinking is synonymous with a holistic approach to problems (Capra, 1996). However, herein lies what is arguably the most important dilemma facing systems thinkers: where do we locate the boundary of a problem? Ulrich, following Churchman, points out that,

Whenever we apply the systems concept to some section of the “real world,” we cannot help but make strong a priori assumptions about what is to belong to the system and what is to belong to its environment. We call such assumptions *boundary judgments*. The problem is that there is no such thing as ‘objectively necessary’ or ‘right’ boundary assumptions, yet all subsequent investigation of ‘the problem’ and suggestions for its ‘improvement’ depend on them. (Ulrich, 1988: 418, italics in the original)

Because of this socially constructed nature of boundary judgments, Churchman proposed a process of ‘sweeping in’ various different viewpoints in the quest for the most comprehensive understanding possible of the problem situation. (Ulrich, 1988: 419; Midgley, 2000: 35-36). For Ulrich this striving for comprehension is ‘heroic’, but he correctly points out that the process of ‘sweeping in’ cannot go on forever, and what is critical therefore is “not what our boundary judgments are but how we treat them [that] determines the quality of our systems thinking” (Ulrich, 1988: 420). Consequently, one should not aim for comprehensiveness but rather for a ‘critical employment of boundary

judgments' or, in other words, for a rigorous 'boundary critique', where boundary critique is the recognition and questioning of the values that underpin any boundary judgment.

In his *Critical Heuristics of Social Planning*, Ulrich (1983) develops a set of practical guidelines to operationalize this concept of 'boundary critique' and in his later works (Ulrich, 1996, 1998), he contextualises these guidelines for different purposes. The main attraction of this concept for Midgley, in spite of some criticisms that it has attracted, is that it is "possible to translate it into a methodology" (Midgley, 1996: 19) and therefore Midgley employs it in various aspects of his CST. It is central to the conceptualisation of the inquiry context and the methodology design. (For examples of this link, see Midgley (2000) and Lockett and Grossenbacher (2003)). It is central, too, to his understanding of the (im)possibility of emancipation in coercive contexts, and related to this, his conceptualisation of improvement as discussed above in section 3.1.2.

From this discussion CST may still be viewed as pre-paradigmatic and therefore for the position taken here regarding the key aspects of CST is set out in the following section.

3.3. A Synthesis of the Key Elements of CST

The following are, for the present author, the key characteristics of CST. These have been synthesized from the foregoing discussion.

3.3.1 Situation improvement and intervention values

The view adopted here is that no systems approach is sufficient, in itself, to ensure emancipation in coercive situations. This is because all systems approaches are premised on rationality. Midgley's 'solution' to the problem of coercion, namely, a definition of systems approaches broad enough to encompass protest and political action, is in my view not a solution as it broadens the definition in such a way as to empty the notion of systems approaches of any specific and useful meaning. Therefore, the most that we can hope for from the use of CST approaches is 'situation improvement'. This is a term which is preferred by both Midgley and Jackson, though for different reasons. (See the discussion on emancipation/improvement above.) One should be careful here however, because both functionalist and interpretive approaches aim for the improvement of situations. The difference between them is the understanding of what constitutes improvement. For functionalist approaches it is effectiveness and efficiency in achieving explicit, pre-determined goals. For interpretive approaches, improvement happens when all key stakeholders agree that there has been an improvement. What makes CST different in this

regard is the issue of the place of values in the intervention. For a systems approach to be regarded as critical it should at very least provide both a mechanism to clarify the values of the stakeholders as well as be explicit about the values that underpin the social and environmental improvement. This links closely to the idea of 'boundary critique'.

3.3.2. Boundary critique

Boundary critique, as understood by Midgley, as the ethical reflection on boundary judgments is a key feature of CST. This incorporates a critical reflection on the scope and purposes of an intervention, i.e., the intervention context, as well as on the methodologies and/or methods used. Key here is to be aware of and incorporate the concerns of marginalized individuals or groups as well as include the natural environment.

3.3.3. Methodological pluralism

Methodological pluralism as understood here follows Midgley in that the emphasis is placed on the combination of methods (rather than methodologies). It also means, following both Midgley and Jackson, that an intervention should be flexible enough to employ different approaches, even from different paradigms, during the course of an intervention.

Having discussed our understanding of CST, we are now in a position to summarize the key features of the three paradigms of systems approaches relevant to the purposes of this paper, namely, the functionalist, interpretive and critical paradigms. This summary is set out in table 1.

Table 1. Systems thinking paradigms

	Functionalist	Interpretive	Critical
Ontological assumptions about systems and the world.	A system exists in the real world as an objective entity which obeys laws that can be discovered through a scientific enquiry process	A system is a subjective construct by an observer of a complex real world situation	A system is a subjective construct by an observer of a complex real world situation
Purpose of intervention	Improve the performance (efficiency and efficacy) of a system	Learning amongst participants in order to reach accommodations regarding improvement in a problematic situation.	Improvement towards social and environmental sustainability, based on a clear set of values.
Derivation of measures of improvement	Pre-determined	Derived through a consensus building process involving all stakeholders in the problematic situation.	Based on the clarification of and commitment to social and/or environmental values.
Intervention process	Analysis of the relationship of system elements through the use of formal models of the system. These are either representative of the system or generic templates.	Facilitation of a systemic learning cycle involving stakeholders as determined by the client. Models of purposeful human activity are constructed to explore stakeholder perspectives and to “structure debate about changes which are feasible and desirable”. (Jackson, 2000, 282)	Critical reflection on the inquiry context as well as critical employment of methodologies/methods in combination.
Intervention agent	Expert systems analyst/engineer	Facilitator, participants	Facilitator, participants

4. A DEFINITION AND ROLE OF ORGANIZATIONAL POLICY AS UNDERSTOOD IN SYSTEMS APPROACHES TO MANAGEMENT

In this section, a definition of policy is developed based on various definitions forwarded in the literature on systems approaches to management and, secondly, policymaking (i.e., the role and formulation of policy in organizations) is discussed.

4.1. A Definition of Organizational Policy

As noted in the introduction, an aim of the paper is to develop a critical systemic approach to policy formulation in organizations. In order to do this it is necessary, firstly, to establish what organizational policy is. There are many ways of approaching this task; the way that it is done here is to contrast it with organizational strategy since policy and strategy are so

closely linked. It will become clear that the understanding of the role of policy is very much dependent on the overarching ‘paradigmatic framework’.

There is a paucity of literature on organizational policy – in contrast to the wealth of literature on public policy (Parsons, 1995) – relative to the body of literature on organizational strategy. A scan of the index of Clegg et. al’s. (1996) monumental compendium of organizational studies (a volume of over 750 pages) does not turn up any references to the word ‘policy’. This is even more significant given that the intention of the authors is “to reflect the ways in which studies of organizations have expanded, broadened and diversified” (p.xxi). In contrast to this lack of reference to policy, there are numerous references to ‘strategy’ in the index.

A similar pattern – very little or no attention given to policy while some attention is given to strategy – can be found in three important general surveys of systems thinking/methodologies, namely, Jackson’s (2000) *Systems Approaches to Management*, Midgley’s (2000) *Systemic Intervention* and Rosenhead and Mingers’ (2001) *Rational Analysis in a Problematic World Revisited*. All three refer to strategy because there are specific systems methodologies that deal with strategy and strategic planning, namely, Mason and Mitroff’s (1981) *Strategic Assumption Surfacing and Testing* (SAST), Eden’s *Strategic Options Development and Analysis* (SODA) summarised in Eden (1989) and Eden and Ackerman’s (1998) *Jointly Understanding, Reflecting, and Negotiating Strategy* (JOURNEY). This does not mean that there are no systems thinkers that give attention to policy in organizations. Wilson (1990) briefly refers to policy and both Beer and Vickers reflect on the role of policy in organizations. De Greene’s (1993) collection, *A Systems-Based Approach to Policymaking* (1993) should also be noted, but, with the exception of Emery’s contribution, the chapters in this volume deal either with global issues or with certain theoretical aspects of systems thinking and/or policy-making such as policy in a nonlinear world, adaptive control, field-theoretic principles, systems dynamics, and whole-system concepts.

The word strategy had its origin in early Greek military and usage. ‘Strategos’ was either “a general set of manoeuvres carried out to overcome the enemy” (Eden and Ackerman, 1998:3) or “the skill of employing forces to overcome opposition and to create a unified system of global governance” (Mintzberg and Quinn, 1991). The original idea remains, but in organizational management the ‘enemy’ is replaced with the notion of an obstacle or difficulty that must be overcome, i.e., an ‘objective’ that must be attained, through the

careful marshalling of forces at the disposal of the strategist. Thus for Eden and Ackerman strategy is a

Coherent set of individual discrete actions in support of a system of goals, and which are supported as a portfolio by a self-sustaining critical mass, or momentum, of opinion in the organization. (1998: 4)

For Wilson it is “a particular pattern of actions intended to attain desired ends” (1990:161) and similarly for Emery strategy is “an interdependent set of activities convergent on an objective” (1993:179)

Although it has not been a significant focus of systems thinkers, there are those individuals who have given some attention to the notion of organizational policy. The following is a brief discussion of the definitions of policy in the writings of these individuals.

Both Forrester and Wilson have given very brief generic definitions that are applicable to organizational as well as public policy. Forrester is a pre-eminent systems dynamicist and to him policy is a “formal statement giving the relationship between information inputs and the resulting decision stream” (1994:58). Essentially, policy is simply a conversion rule: when a management unit receives a specific bit of information it should do XYZ given a policy (conversion rule), P. This ‘rule’ may be useful in the context of a Systems Dynamics model, but is not very helpful in the ‘real-world’ where information is not presented to management as objective ‘data’. Wilson takes a similar approach to Forrester and defines policy as “a static guideline for repeated decisions or a preplanned decision waiting to be activated by the occurrence of the situation for which it was intended.” (1990:161).

Although, Wilson’s ‘static guideline’ is similar to Forrester’s ‘rule’, they differ in that for Wilson it is not simply objective information that triggers the application of the ‘guideline’, it is a ‘situation’ that triggers it. Clearly, a situation does not present itself as objective information to all people alike; it has to be interpreted. It is evident, here, that the paradigmatic framework has influenced the definition: Forrester’s Systems Dynamics falls within a functionalist paradigm, while Wilson is a proponent of Checkland’s (1981) Soft Systems Methodology, an explicitly interpretive systems approach.

Stafford Beer (1970, 1981, 1984, 1985), whose work on the Viable System Model (VSM), assigns an important place to policy making within the functioning of an organization. (See further below.) However, he neither defines policy beyond stating, “policies are guidelines” (Beer, 1979:1550) nor attempts to distinguish it from strategy.

Emery is one of two systems thinkers that have given some attention to policy. The other is Vickers. Both of them specifically contrast policy with strategy. Each of these are dealt with in turn.

For Emery (1993), both policy and strategy are tools that modify the complexity faced by decision-makers. However, there is (for him) a fundamental distinction. The domain of strategic planning is “the choices that are made with respect to which goal or objective one should pursue” while policy formulation is concerned with “a bias that an organization wishes to introduce with respect to a whole range of choice of means that might be made by those acting as agents of the organization” (Emery, 1993:175).

Emery elaborates on this distinction. Firstly, a strategic plan has measurable objectives, usually together with a set of sub-objectives, and a time frame and resources required to achieve the hierarchy of objectives. “The logic of causes and effects is relevant to the pursuit of strategic objectives” (ibid.:186) A policy, on the other hand, aims to create the necessary conditions for the achievement of strategic objectives. “A policy is argued on the grounds that if the policy, A, is not in place then B will not occur” (ibid.:186). Secondly, an organizational decision-maker will use a strategy to modify the (competitive) social environment within which the organization operates to the benefit of the organization. An advertising campaign is a prime example. A policy, on the other hand aims to modify the internal organizational ethos/culture. A “policy is needed [when] sufficient people have not already seen the sense of behaving in a desired fashion” (ibid.:181). Thirdly, the constituent activities of a strategy are interdependent and convergent on the objective. Since the activities are interdependent, failure in any one of the activities will result in failure to achieve the objective whilst the activities set in motion by the implementation of a policy are not dependent on one another and are divergent.

Although, according to Parsons (1995), Sir Geoffrey Vickers has made a significant contribution to the study of policy and decision making his writings have been neglected by systems thinkers, with the exception of Peter Checkland who finds in Vickers’s idea of ‘appreciative systems’ a set of ideas that provide a theoretical framework for his Soft Systems Methodology (Checkland, 1999).

In *The Art of Judgement* Vickers’s sets out in some detail his understanding of policy. The concept of regulation drawn primarily from cybernetics, i.e., “the science of control and communication in the animal and the machine” (Jackson, 2000:68) is the basis for this

understanding. Vickers then makes a conceptual distinction between two forms of regulation that are found in human affairs, namely, regulation by means of the setting of 'governing relations' (or norms) and regulation by means of goal-setting. For him policy is about the regulation of human activities in accordance with decided-upon norms.

“I have described policy-making as the setting of governing relations or norms rather than in the more usual terms as the setting of goals, objectives or ends. The difference is not merely verbal; I regard it as fundamental. I believe that great confusion results from the common assumption that all course holding can be reduced to the pursuit of an endless succession of goals [...] Those who recognise the difference should not, I think, be content to mask it by giving to goal setting and goal seeking a meaning wide enough to include norm setting and norm holding; for goal setting is a distinct form of regulation, with its own specific mechanisms; a form less important in my view than norm setting but important enough to be separately distinguished. (Vickers, 1995:45-46).

It is important to note that for Vickers regulation of an organization (or society) happens even without the intervention of a deliberate policy, or for that matter of an intended strategy. The point of policy-making is to “regulate relationships at some level more acceptable to those concerned than the inherent logic of the system would otherwise provide” (ibid.:43)

Vickers is however clear that the setting of policy is not a simple matter and although the model of regulation of machines, as set out in cybernetics, with its feedback loops is his starting point for the discussion of the regulation of human organizations, he is fully aware of the limitations of the machine metaphors which support most cybernetic models. Unlike the regulation of machines the regulation of human organizations and institutions involves multiple norms in an unpredictable interpreted environment often with considerable time delays between decisions and their 'feedback'.

A definition of organizational policy is proposed here; it is a synthesis of important elements of the foregoing. Firstly, policy places a restriction on what members of an organization may or may not do. It is a normative framework within which all organizational activity, including organizational strategies, should take place. Secondly, policy aims to create the kind of organizational ethos that facilitates or enables organizational strategies. In summary then, organizational policy may be precisely defined as *a normative framework that both restricts and enables organizational strategies and actions.*

The relationship of organizational policy to organizational vision, mission, strategies and operational plans now becomes clear. If organizational mission is defined as that

(distinctive) thing that an organization does and organizational vision, the desired future state of the organization (or, of the ‘world’ within which it operates, i.e., its environment) then the relationship between vision, mission, policy, strategy and operational plans may be depicted as in Fig. 2 below.

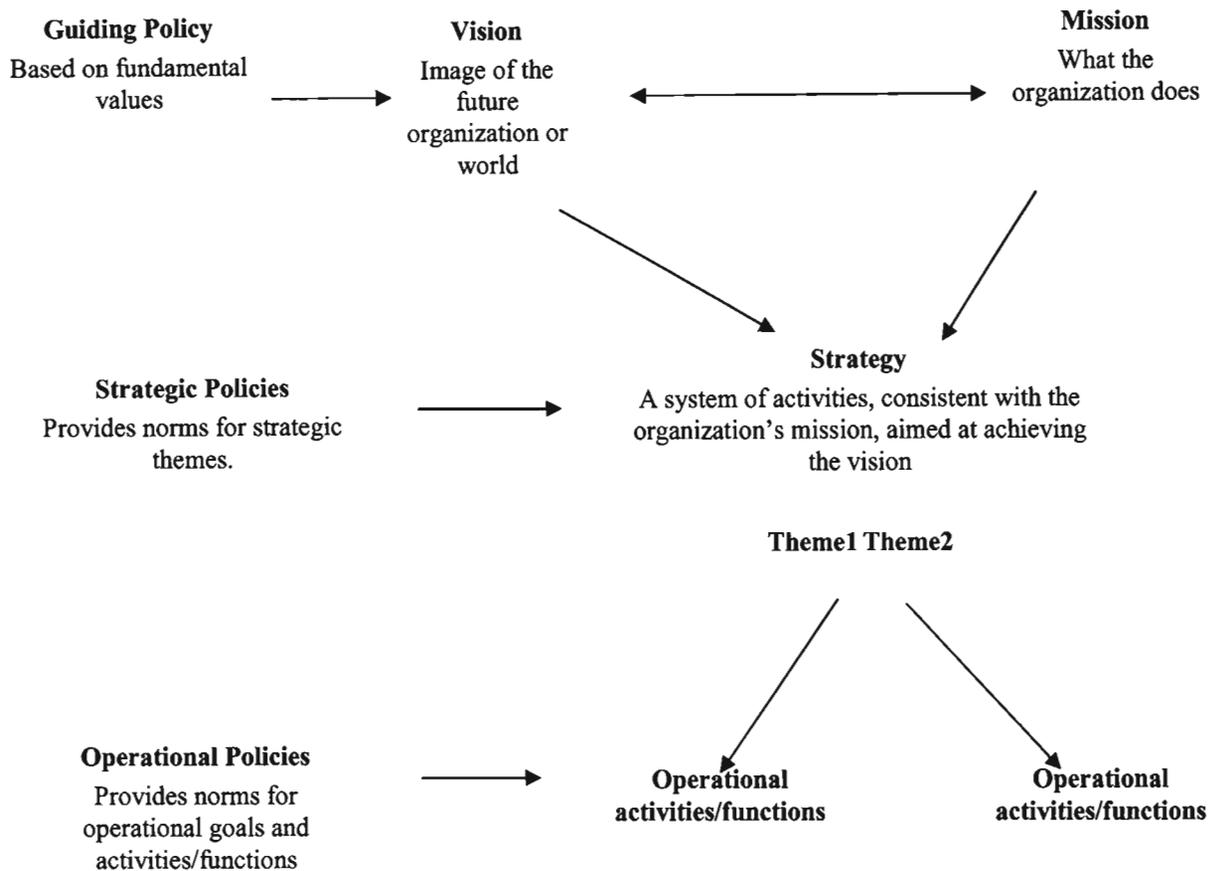


Fig. 2. The relationship between policy, strategy, vision & mission

4.2. Policy-making within Organizations

Having defined policy and located policy in relation to strategy, a systems approach to policy-making within organizations is discussed in this section. There are only two systems thinkers who attempt to deal comprehensively with policy-making in organizations: Stafford Beer (a functionalist approach) and Geoffrey Vickers (an interpretive approach.)

Stafford Beer's *Viable System Model* (VSM). VSM is based on the science of cybernetics and central to cybernetics is the issue of 'control' of organizations. Therefore in the VSM the function of 'policy-making' occupies a significant position. The literature on the VSM is vast and there is only space to summarize some of its key aspects here.

4.2.1. Beer's Viable System Model: A functionalist approach

For Beer the fundamental problem of management is the problem of complexity (Beer, 1981:3). More specifically it is about the management of the complex relations, in an unpredictable environment, between the various functions of an organization, so that the organization remains viable, i.e., is able to survive and maintain its existence as an independent entity.

The quest became to know *how systems are viable*, that is, how they are capable of independent existence (Beer, 1984: 8)

Beer's aim in developing the VSM was to discover what organizational principles are necessary for a system to be viable and then on the basis of these principles develop a model of *the organization* of any viable system.

Beer uses the central nervous system of the human body to illustrate the VSM, because for him the "human body [being] perhaps the richest and most flexible viable system of all" (Beer, 1981: 75). However, the VSM was not developed as an analogy of the central nervous system, it is based on cybernetic first principles which he sets out in *The Heart of the Enterprise* (Beer, 1984).

Before going into the details of the model it should be noted that the model is one of systems and sub-systems and not of structures. It should not be likened to an organogram (organizational chart) which is used in the machine metaphor (Morgan, 1997) to depict the reporting lines of the various *structures* within an organization. In fact Beer is quite dismissive of the value of the organogram: for him its only use is that it "offers a procedural method for blaming somebody for whatever has gone wrong" (Beer, 1985: i). Thus to avoid this narrow concept of structure it is better to think of the systems within an organization, their functions and their inter-relationships, even though Beer himself often uses the word 'structure'.

The discussion of the model is divided into two parts: (a) the systemic functions, and (b) control and communication in the model.

The model is set out in figure 3.

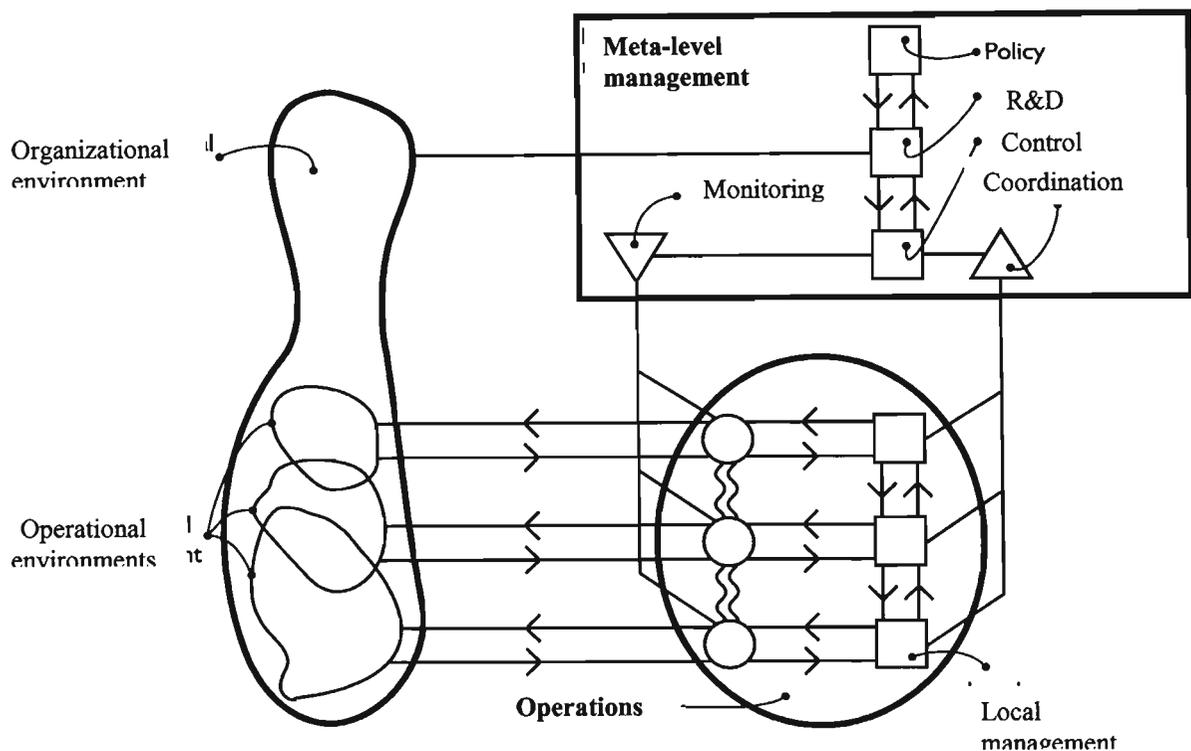


Fig. 3. *The Viable System Model (after Beer)*

Beer argues that a viable system consists of two main functions: a management function, which he called the meta-level management or simply the meta-system (represented by the large rectangle), and an operational function (represented by the oval), together with the information channels between these functions (represented by the lines in the figure.). The meta-system “exists to undertake whatever functions are required to procure coherence”(Beer, 1979: 120), while the operational function produces the system (Beer, 1984: 16), i.e., “the collection of all the operational elements in the viable system exhaust its basic activities, namely those which exist to do what the system does.” (Beer, 1979: 116).

For the purposes of this paper, it is not necessary to go into the details of the components of the VSM, excepting to point out that the policy function, usually referred to by Beer as “System 5” (Beer, 1985: 123-134) maintains the ‘identity’ of, and ‘represents’, the organization (system-in-focus) to a wider environment (or supra-system). It is also responsible for setting the direction of the organization and reviews it in the light of information received from the control and intelligence functions. In giving direction it

needs to balance environmental pressure with internal demands. It must, in other words, ensure that the organization maintains an advantageous strategic relationship with the external environment while at the same time maintaining stable internal relationships.

Control and communication in the model is based on the following three principles: (a) The “Law of Requisite Variety”, (b) autonomy, and (c) recursion.

The core issue is variety and its management, where variety is a measure of complexity – more precisely defined by Beer, following Ashby, as “the number of distinguishable states of some item” (Beer, 1981: 41). According to Ashby’s “Law of Requisite Variety”, a system can only manage the variety of its environment if it has the capacity to absorb the variety of its environment (Ashby, 1958). Put in simple organizational terms, an organizational decision maker has ‘requisite variety’, when he/she/it has the capacity to produce responses that keep the values of essential variables within an acceptable range when environmental disturbances threaten to take these values out of this range and consequently result in the dissolution of the organization. For Beer this law is key and has the same status as a scientific law.

I consider that this law stands in the same relation to management as the law of gravity stands to Newtonian physics. It is equally central to an understanding of why things are as they are. And it is just as impossible to ‘repeal’ the one law as the other. Thus both laws inevitably assert themselves, and may not be ‘disobeyed’ (Beer, 1979: 89)

Beer constructed the VSM in such a way that it is a model of a system which obeys this law and therefore successfully manages variety. It is a sophisticated model that manages variety through the attenuation of the variety facing the system and the amplification of the system variety in order to ensure that the control, intelligence and policy systems only have to deal with what is known as the ‘residual’ variety, i.e., only those states that the other systems are not able to deal with. It is not necessary to go into the details of this variety management here. Suffice it to say that key to this model is the notion of the autonomy of the operational subsystems, namely that each of these subsystems should have as much autonomy as possible in determining the levels of the variables under its control, subject to the constraints that are necessary to maintain the viability of the system. This issue of autonomy is according to Beer “one of the most vexed questions in modern management” (Beer, 1981: 75). The issue is how to enable the different units of the organization to take initiatives in a rapidly changing environment without, at the same time, allowing the system to fragment and thus cease to be a system. Beer claims to have solved this problem

in the recursive structure of the VSM: “in a recursive organizational structure, any viable system contains, and is contained in, a viable system” (Beer, 1984: 15). All viable systems will therefore contain the “five necessary and sufficient subsystems”(Beer, 1984: 15) for the management of the internal variety of the organization together with the variety of its environment. It is, in the context of this paper, worth pointing out that one of the implications of this model is that the information requirements of the policy makers should be minimized – they do not need information from, and consequently expertise for, the day-to-day running of the organization.

4.2.2. Critique of Beer’s VSM

Beer’s VSM satisfies all the characteristics of a functionalist system as set out in table 1. The VSM assumes that organizational systems have an objective existence and that for an organization to be viable these systems must obey a scientific law, namely Ashby’s ‘Law of Requisite Variety’. Furthermore the VSM assumes that the performance of organizational systems can be improved through a diagnosis which uses a generic model of a viable system. Finally, it is an expert that carries out this diagnosis (Beer, 1979, 1985; Espejo and Harnden, 1989; Espejo et al., 1996; Jackson, 2000). Because it is functionalist, it is subject to the criticisms levelled at all functionalist approaches. Jackson (2000: 172-177) sets out, in some detail, the strengths and weaknesses of the VSM and it is not the place to review these details here, instead select criticisms will be referred to where they are helpful in highlighting the shortcomings of the model from the perspective of the policy formulation process.

Even though the VSM does not “tightly prescribe a particular structure” (Jackson, 2000: 172), the emphasis placed on logically designed functions (systems) and channels of communication between these, underplays what for Jackson is “ the most important feature of socio-cultural systems: human purposefulness and self-reflectiveness” (ibid.:176). Similarly, Checkland and Scholes state that:

facts and logic have a part to play in human affairs [however] the feel of them, their felt texture, derives equally (or more) from the myths and meanings which human beings attribute to their professional entanglements with their fellow beings (1990: 44).

From this (interpretive) perspective, Beer trivialises the communication that is necessary for a viable organization: for him communication is about the delivery of information and as long as the lines of communication as set out in the model are in place then

communication is taken care of. There is no scope in the model for a range of meanings to be attributed to the ‘information’.

This shortcoming suggests that the policy formulation process, which is so dependent on the logical relationship between the policy, intelligence and control functions (Figure 3) in particular and on the communication channels between them, could be seriously flawed in real-world organizations that follow the prescripts of the model to the exclusion of the above-mentioned insights regarding organizational culture.

4.2.3. *Vickers' Appreciative Systems: An interpretive approach*

Vickers did not set out to develop a systems methodology, method or model for organizational policy-making. Rather, he set himself the task of understanding the process of policy-making in organizations and society. His framework of ideas is summarized here.

Vickers (1984) makes it clear that culture and communication cannot be separated. Communication requires shared epistemological and ethical assumptions. It is within a shared culture (in organizations and society at large) that policymaking is an ‘appreciative’ and relationship maintaining process.

Vickers devotes a chapter in *The Art of Judgment* to developing his notion of appreciation and it is worth quoting extensively from it.

This book, then being chiefly concerned with policy making will focus attention primarily on [...] the evolution and modification of the course, the norm, the standard, the governing relation that is inherent in every policy and the selection and ascertainment of the facts relevant to it [...] I need first a word to describe it, and as I cannot find one in the literature, I must invent one. I will call it appreciation, following the ordinary usage in which we speak of “appreciating a situation” (Vickers, 1995: 54)

An appreciative judgment has two interacting components: a reality judgment and a value judgment. The former is a judgement about what is the problem, what is or was the situation and predictions about the future situation. This involves the selection and representation of information about ‘reality’. The value judgment is an evaluation of whether the judged ‘reality’ is good or bad, relevant or irrelevant and what values and norms to use in doing so.

An appreciation involves making judgments of fact [...] I will call these reality judgments [...] It also involves making judgments about the significance of these facts [...] These judgments I will call value judgments [...] The relation between judgments of fact and of value is close and mutual; for facts are relevant only in relation to some judgment of value, and judgments of value are operative only in

relation to some configuration of fact. Judgments of value give meaning to judgments of reality (ibid.:54-55)

These judgments call forth action judgments – what Vickers calls ‘instrumental’ (ibid.:103) judgments – as soon as questions about a desirable future are posed. It is relevant to note that these action judgments can include policy-making.

The value and reality judgements are based on what Vickers calls an *appreciative system*, i.e., “a *set of readinesses* [which] distinguish some aspects of the situation rather than others and classify and value these in this way rather than in that.” (ibid.:82). They are a system because they are interrelated and organized as a whole.

In the definition of policy given above norms are central. It is therefore important to note that for Vickers, and Checkland, who finds in Vickers’s appreciative system a set of ideas to underpin his Soft Systems Methodology (Checkland, 1981), the norms and standards that are part of an appreciative system derive from the historical path that the appreciative system has taken. In other words past reality, value and action judgments together with the actions that flow from the action judgments will inform the present judgments. And so we have a feedback loop built into the system: “an appreciative system is a process whose products – cultural manifestations – conditions the system itself” (Checkland, 1995: 82)

4.2.4. Critique of Vickers’ Appreciative Systems

Vickers did not set out to operationalize his Appreciative Systems approach into a methodology for policy formulation in organizations; he claims only to develop a set of ideas that enable an understanding of the process of policy formulation. However, it may be operationalized through Checkland’s SSM (Checkland, 1999), for in Checkland’s own words, “The use of soft systems methodology (SSM) [...] is a way of making practical use of the notion of an appreciative system” (Checkland, 1995: 84)

For Vickers an Appreciative System is a subjective construct, being a “set of readinesses to distinguish some aspects of a situation rather than others and to classify and value these in this way rather than in that (Vickers, 1995:82). As already noted, Vickers did not operationalize framework of ideas about Appreciative Systems. It was Checkland who did **this in his SSM and he is quite explicit** about the interpretive nature of SSM:

There are many parallels between the operations within the methodology and the philosophical/sociological tradition of an interpretive social science (Checkland, 1999: 279)

They, together and singly, therefore fall into the interpretive paradigm. The following critique of approaches within this paradigm is therefore applicable to both Vickers' Appreciative systems and Checkland's SSM. Burrell and Morgan have argued, interpretive social science is essentially regulative rather than promoting radical change (See section 2.)

As Jackson has it,

Checkland's SSM is designed to allow clients to engage in a learning process so that they can change their appreciative systems [however] the kind of change that can be considered will be limited by the historically determined attitudes and behaviour patterns (Jackson, 2000: 287)

Vickers acknowledges this inherent conservatism: "Changes that would shake this [appreciative system] are resisted with vehemence proportional to the threat" (Vickers, 1995: 83). Although Checkland is not as explicit about the conservative nature of SSM, he implicitly acknowledges it:

It is now necessary to unpack the process of appreciation. From Vickers's writings we take the notion of perceiving reality selectively and making judgments about it [...] the model also tries to capture Vickers's most important point and greatest insight, namely that there is normally no ultimate source for the standards by means of which what is noticed is deemed good or bad, important or unimportant, relevant or irrelevant, and so on. The source of standards is the previous history of the system itself [...] An appreciative system is a process whose products – cultural manifestations – condition the process itself (Checkland, 1995: 82)

It is this (almost) closed loop of the system that ensures its inherent conservatism. In the next section I develop a proposal for a critical systems approach to policy and policy-making that overcomes this conservatism.

5. AN OUTLINE OF A CRITICAL SYSTEMS APPROACH TO POLICY FORMULATION AND THE ROLE OF POLICY IN ORGANIZATIONS

5.1. Some Generic Considerations

As is argued above (in section 3.3) any critical systems intervention should: (a) be committed to improvement based on a clear set of values; (b) allow for pluralism of methods; and, (c) reflect (ethically) on the boundary judgements relevant to the intervention. The latter includes both a reflection on the inquiry context, i.e., the scope and purpose of the intervention, as well as on the methods/methodologies used. These two, as demonstrated elsewhere (Lockett, 2003), are closely intertwined: the choice of methods/methodologies is both dependent on and influences the initial perception of the inquiry context. With regard to the choice of methods/methodologies there is sound reason

for choosing a ‘governing’ approach and one or more dependent approaches (Flood and Jackson, 1991; Jackson, 1997; Jackson, 2000) and furthermore, as Jackson argues, “an interpretive systems methodology, such as SSM, should always be chosen initially as the dominant methodology” (Jackson, 1997: 374) because interpretive methodologies facilitate ‘buy-in’ from the various stakeholders.

5.2. A Policy-focussed Intervention

Any systems intervention which has as its focus organizational policy must be based on a clear definition of policy and this definition should incorporate an understanding of the role that policy plays in the organization. Such a definition is developed above (in section 4.1). To repeat: organizational policy provides a normative framework that both restricts and enables organizational strategies, organizational functions and the activities of organizational members (individually or as groups).

The intervention should also establish a clear set of values on which all policies are founded. These values should be ethically sound and as far as possible be a consensus view within the organization, or more precisely, within the designated boundary of the organizational intervention. The validity of individual policies is dependent on their being based on one or more of the values from this set. A policy may neither contradict any of the values nor may it be underpinned by values that are not part of the value set. If it is deemed necessary for an organization to have a policy based on values other than in the value set, then the value set should be revised to include such values. Furthermore, following Vickers, any perception of ‘reality’ which makes the policy necessary should be made explicit. Being explicit about the reality and value judgments is an essential aspect of making critically aware boundary judgments (boundary critique).

One final point needs to be made regarding the use of VSM. Since organizational policies provide a normative framework for organizational functions it may be useful to make use of an approach such as VSM to locate the policy-making function in relation to the operational (and other) functions of the organization. But care should be exercised in doing so. VSM should not be used as a template to diagnose organizations viability and in the functionalist paradigm. Rather it should be used as a (‘brain’) metaphor or a source for generating relevant questions. Examples of this usage of VSM can be found in Jackson (2000), Lockett (2003) and Midgley (1998).

6. CONCLUDING COMMENTS

The research/intervention process undertaken by the author which resulted in the production of this paper occurred during the process of amalgamation and restructuring of a KZNNCS, a nature conservation organization in the KwaZulu-Natal province of South Africa. Interventions of this nature are best conceptualised as action research (Checkland And Holwell, 1998; Checkland, 1999), in which the researcher enters a real world problem situation with a declared framework of ideas and a specified methodology. The researcher then participates in action in the situation, which enables reflection on the intervention based on the framework of ideas and the methodology (Checkland, 1985) and which in turn results in learnings about the situation, the framework of ideas or the methodology. In this particular case, the situation was the process of restructuring which required, amongst others, a new set of policies for the organization. The framework of ideas used was CST as defined in section 3.3, and the methodology used was a critical systemic approach to policy formulation.

What are the learnings? In order to obtain a comprehensive picture of the learnings, a detailed account of the intervention is necessary. However, due to space considerations, this is not possible here and the reader is referred to (Lockett, 2004a) for further details. However, it should be pointed out that the values clarification required by the definition of CST given here, and which was enabled by a framework of environmental paradigms developed in Lockett (2004b), proved both necessary and useful for the intervention.

The specific contribution of this paper lies in the methodology used for the intervention. The understanding of organizational policy given in section 4.1 expands on and develops the work of Emery and Vickers. This paper develops an approach to organizational policy formulation within a CST framework of ideas (something that has not been done before in the CST literature.) In this approach, organizational policies are related to the organizations vision, mission, strategies and activities. In the intervention itself, the policies were also related to the core values, which underpinned its new vision and mission and to its functions, i.e., bounded systems of activities, as developed by a Business Process Review and Restructuring exercise that the organization underwent as part of its amalgamation process. In general, it may be claimed that the process of policy formulation within an organization (which includes a definition of policy) within an organization, as opposed to public policy formulation, makes a contribution to the CST literature.

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PAPER 4:
Environmental Paradigms, Biodiversity Conservation and
Critical Systems Thinking

Environmental Paradigms, Biodiversity Conservation and Critical Systems Thinking

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ABSTRACT

This paper takes as its starting point Midgley's (1994) distinction between 'humanism' and the 'ecological perspective'. Midgley's contribution is important because, in foregrounding the link between boundary judgments and ethical values, it demonstrates how environmental concerns may be 'profaned' (marginalized). However, it does not go far enough. Just as an uncritical acceptance of 'humanism' profanes nature, so an uncritical acceptance of Midgley's 'environmental perspective', which glosses over distinctions within this perspective, runs the risk of profaning elements within nature.

The framework developed here enables one to be critically aware of a range of possible ecological perspectives and therefore better meets the CST requirement for values clarification in an intervention than does Midgley's simple dichotomy between 'humanism' and the 'ecological perspective'. In attempting to classify the different environmental paradigms, this framework builds on work done by environmental ethicists by distinguishing between what is 'good' (i.e., has moral worth) and what is the 'right thing to do' about the 'good'.

The matter is not merely theoretical. Some of the practical implications for nature conservation are discussed.

1. INTRODUCTION

In 1994 Gerald Midgley, drawing on Werner Ulrich (1993), explored the relationship between Critical Systems Thinking (CST) and ecological thinking in a paper titled *Ecology and the Poverty of Humanism: A Critical Systems Perspective*. In that paper, Midgley's addresses the issue of the boundary implications of two different paradigms of thought about the relationship between humans and their natural environment, namely, "humanism" and "the ecological perspective" (Midgley, 1994, p.67). The paper is useful in drawing attention to the implications of the two different paradigms for human interaction with nature. However, it is the contention here that Midgley's bi-polar categories are not sophisticated enough for many interventions involving the environment and/or biodiversity conservation.

This paper builds on Midgley's work by developing a more sophisticated and usable typology of environmental ethics paradigms and does so by bringing together a wide range of environmental thinking in a simple framework. This framework is a useful tool that may be employed in any critical systems intervention involving environmental or biodiversity management as an aid to clarifying the values of stakeholders in particular problem situations. This paper is theoretical in nature. The practical use of the framework is demonstrated in another paper (Luckett, 2004) that reflects on a critical systems intervention involving policy development in a nature conservation organization.

This paper has six parts, the first being this introduction. A section that clarifies some fundamental concepts used in environmental literature in general and conservation literature in particular follows this. The third section is a discussion and clarification of key concepts in ethics, in order to lay the foundation for what is really the heart of the paper, namely, the explication of the conceptual framework in section four. This conceptual framework takes as its starting point the work of Eckersley (1992) an environmental ethicist. Section five sets out and critiques Midgley's bi-polar environmental paradigms. It also briefly summarises the paper by Ulrich on which Midgley builds. This is followed by a conclusion (section six) that summarises the critiques of both Midgley and of Eckersley and also serves as a pointer to the practical application of the conceptual framework proposed in section four.

2. 'ENVIRONMENT' AND 'NATURE': A CONCEPTUAL CLARIFICATION

The concept, 'environment' is not unambiguous; therefore, some discussion on this and the related concept 'nature' is necessary at the outset.

In systems thinking the word environment has a very precise meaning: it is that which is outside the boundary of a system (whether that boundary is conceived of as 'real' or as a 'construct' is irrelevant) and which is able to impact on the dynamics/operation of the system. Literature on 'the environment' doesn't normally use the term in the systems sense; it is normally used to refer to 'nature' apart from, or outside of, human beings and human society. A good example of this usage is the definition given in the National Environmental Management Act of the Republic of South Africa (Republic of South Africa, 1998). There it is defined (Section 1(ix)) as:

The surroundings within which humans exist and that are made up of :(i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and, (iv) the physical, chemical, aesthetic and cultural properties¹ and conditions of the foregoing that influence human health and well-being

Sometimes the term 'environment' is also inclusive of what is physically constructed, however, in this wider sense it is usually referred to as the 'built environment'. The European Union's definition of the environment as "the combination of elements whose complex interrelationships make up the settings, surroundings and the conditions of life of the individual and society" (Gilpin 1996, p.74) is an example of an inclusive definition.

However, in this paper it is the more restricted sense of the 'environment' that is pertinent. But there is a problem with this restricted usage. Much of the literature that has as its subject environmental ethics, environmental ideologies or environmental politics (Connelly & Smith, 1999; DesJardins, 1993; Eckersley, 1992; Guerrier et. al., 1995; Merchant, 1994; Rolston, 1988; Sterba, 2000; Thompson, 1995; VanDeVeer & Pierce, 1994, 2003; Worster, 1993) advocates, or at least discusses, the view that humankind is part of the environment. Another way of putting this is that humans are part of nature. This would be consistent with the way in which some (Merchant, 1994; Rolston, 1988; Worster, 1993) of the above-mentioned authors and others (Botkin,

¹ Whether it can be said that (i), (ii) & (iii) have aesthetic and cultural 'properties' is not an issue that will not be pursued here as it is not central to the purpose of this chapter.

1991; Budiansky, 1995) slide between the words 'environment' and 'nature', implying that they are synonymous. Eckersley is one author who is explicit about the synonymy between 'environment' and 'nature'. In a footnote she gives her understanding of 'nature': "to encompass both the human and the nonhuman worlds and avoid the juxtaposition 'human vs. nature', which misleadingly suggests that humans are not part of nature" (Eckersley, 1992, p.187).) However, using the words 'environment' and 'nature' synonymously also poses problems. 'Nature' is often understood to be the world of plants and animals undisturbed by humans. Indeed the Concise Oxford Dictionary reflects this common usage: 'nature' is defined as "thing's essential qualities" or as the "uncultivated or undomesticated state of plants or animals". And yet, many authors (Adams & McShane, 1992; Botkin, 1991; Budiansky, 1995; Leach & Mearns, 1996) argue that pure nature undisturbed by human beings is a myth.

In order to avoid any ambiguity, in this paper the word 'nature' is used to refer to the biotic (all living creatures and the relationships between them) together with the abiotic elements (soil, water, air and the various formations of these) which sustains the biotic, irrespective of whether the biotic and/or the abiotic has been domesticated and/or cultivated.

In this paper, the term 'environment' is defined as nature apart from human beings. There is a related concept, namely, 'biodiversity' which following Miller is defined here as:

The variety of different species (species diversity), the genetic diversity among individuals within each species (genetic diversity) and, the variety of ecosystems (ecological diversity). (Miller, 1996)

Much of the debate around how humans should interact with other organisms, biological communities, species and ecosystems revolves around the questions: Are these elements of the environment, and the various possible combinations thereof, to be valued for what they are, or are their values dependent on their value to humans? How are humans to respond to these values? Different environmental paradigms have emerged to address these, and other questions. A discussion of the concepts key to these paradigms follows in the next section.

3. ENVIRONMENTAL PARADIGMS: A DISCUSSION OF KEY ETHICAL CONCEPTS

Unfortunately, there is very little consistency in the use of some of the central concepts of the debate about the value of the environment and the appropriate human response to it. A large part of the problem is that there are different genres of writings dealing with the issue of human interaction with the environment. Some are political in intent, some attempt to develop thoroughgoing ethical theories and yet others are religious or spiritual. For the purposes of this paper consideration is restricted to those writings that set out a coherent system of ideas and/or beliefs that motivate, or give rise to, individual or social action with respect to the environment. These different approaches are sometimes referred to as “environmentalisms” (Eckersley, 1992; Attfield, 1994; Merchant, 1994) a term that, according to Eckersley, has its origin in Bill Devall’s (1979) manuscript, “Streams of Environmentalism” (Devall, 1979, p.195). However, this is an awkward word, and because these environmentalisms exhibit the traits of paradigms (See Lockett, 2004), they are referred to here as environmental paradigms.

3.1. Moral Worth, Intrinsic Value and Extrinsic Value

Since the focus of this paper is on moral action in relation to the environment, the issue of what value to attach to the components of the environment is of prime importance. However, due to the inconsistent use of concepts regarding the idea of value in the literature on environmental paradigms, there is a definitional problem around this idea of value that needs to be resolved. Three examples will suffice to illustrate this conceptual confusion. Connelly and Smith (1999) make the distinction between *extrinsic value*, *intrinsic value* and *inherent value* where extrinsic value is the use-value of an entity to humans, intrinsic value is the aesthetic value of an entity to humans and inherent value is the value of an entity in itself. Secondly, in Taylor’s conceptual framework an entity has *inherent worth* if: (1) “the entity is deserving of moral consideration, or, in other words, that it is to be regarded as a moral subject; and, (2) “all moral agents have a prima facie duty to promote or preserve the entity’s good as an end in itself” (Taylor, 1986, p.75). Thirdly, DesJardins’ (1993) conceptual schema has the following three terms, *instrumental value*, *intrinsic value* and *inherent worth*, where the first two coincide with Connelly & Smith’s distinction between extrinsic value and intrinsic value. DesJardins goes on to argue that these concepts are dependent on ‘human valuing’ and consequently finds it necessary to introduce the term *inherent*

worth to describe value that is “independent of any human valuing” (DesJardins, 1993, p.47).

DesJardins’ definition of inherent worth (as opposed to Taylor’s definition of that concept) is untenable for the following reason. Meaning, including ascriptions of value, is inseparable from human discourse (Habermas, 1993, 1996). Even if non-human discourses existed, these discourses would be inaccessible to humans, and it is human valuing with which we are concerned, because it is with human behaviour and its impact on the environment that any moral discourse of the environment is concerned. Or, as Ulrich has it,

Norms may of course address the needs of non-human species or of nature in general, but they still need to be articulated, and respected by humans. In that sense, norms belong not to ‘the’ phenomenal world of nature but to ‘our’ world of society [...] For instance, when ecological issues are at stake, nature (e.g., some endangered species) does not speak for itself; it is through the awareness of responsible men and women that systems design will respect nature as a value in itself. (Ulrich, 1993, p. 596-7)

Therefore because of the likely confusion in using the term ‘inherent worth’, it is avoided here.

Another candidate for use here is a widely used concept, namely, *moral considerability* or *moral standing* (Elliot, 1993; VanDeVeer and Pierce, 1994) which carries a meaning similar to Taylor’s version of inherent worth. However, in this paper, the more general term, *moral worth* is used: an entity has moral worth if it is worthy of moral consideration, whether ‘in itself’ or for another entity.

Any entity that has moral worth may then be described as having either *intrinsic value* or *extrinsic value*. An entity has intrinsic value if any action relevant to that entity is pursued for the sake of that entity itself; and, has extrinsic value if action relating to that entity is pursued only for the sake of some other entity.

This set of definitions of moral worth on the one hand and intrinsic/extrinsic value on the other, is based on the idea of the two dimensions of moral theories: ‘the good’ and ‘the right’ discussed in the next section.

3.2. ‘The Good’ and ‘the Right’

According to Pettit (1991), moral theories have two components: firstly, they have a view or a theory, known as a theory of value, about what is good or of value; and,

secondly, a theory about what moral agents should do by way of responding to what is good or valuable and this is known as a theory of right. Rawls makes essentially the same point:

The two main concepts of ethics are those of the right and the good ... the structure of any ethical theory, is then largely determined by how it defines and connects these two basic notions (Rawls, 1971 as cited in Davis, 1991)

The idea of 'the good' corresponds with the definition, given above, of moral worth and the issue confronting any moral agent is what entities have moral worth. As may be expected there is a spectrum of perspectives on this and these different perspectives are central to the different environmental paradigms. They may be summarized as follows:

1. Anthropocentric – if X is a human then X has moral worth;
2. Animal-centric – if X is a sentient being then X has moral worth;
3. Bio-centric – if X is a living organism then X has moral worth;
4. Species-centric – if X is a species then X has moral worth;
5. Ecosystem-centric – if X is a community or an ecosystem then X has moral worth; and,
6. Eco-centric – if X is a living organism or a community or an ecosystem then X has moral worth.

Three important points need to be made with respect to these perspectives.

Firstly, to assign moral worth (or, moral standing) to animals does not imply that all animals are of equal value (Elliot, 1993). Moral criteria other than moral worth need to be taken into account in particular contexts when it comes to a decision that might demand the killing of one animal to save another. Likewise, species-centrism does not imply that all species are of equal value.

Secondly, animal-centric and bio-centric ethics imply the consideration of individual animals and living organisms and not of the species to which an animal or organism belongs. "What happens to the species is only of indirect concern insofar as it affects individual animals" (Elliot, 1993, p.286). And, conversely, a species-centric ethic implies the consideration of species and not of individual living organisms. The worth of an individual organism is secondary to that of a species. As Russow puts it, "[only] some of the actions normally thought of as obligations with respect to vanishing species

can be recast a possible duties to individual members of that species” (Russow, 1994, p.478). We may make this point in another way. Whilst animal-centrism may be thought of as a widening of the boundaries of anthropocentrism, and likewise, biocentrism the widening of the boundaries of animal-centrism (in that in each case more species are brought into moral consideration), species-centrism should not be thought of as a widening of the boundaries of biocentrism. The relationship between anthropocentrism, animal-centrism, bio-centrism, species-centrism, ecosystem-centrism and eco-centrism is illustrated in Figure 1.

The relationship between individuals, species and ecosystems are discussed further in Section 4.

In this section the implications of the theory of value for environmental paradigms has been considered. In the next section the theory of right is discussed. With regard to the latter, there are two major traditions, namely, the deontological tradition and the teleological tradition. Because of their importance, they are set out in some detail in the following (sub)section.

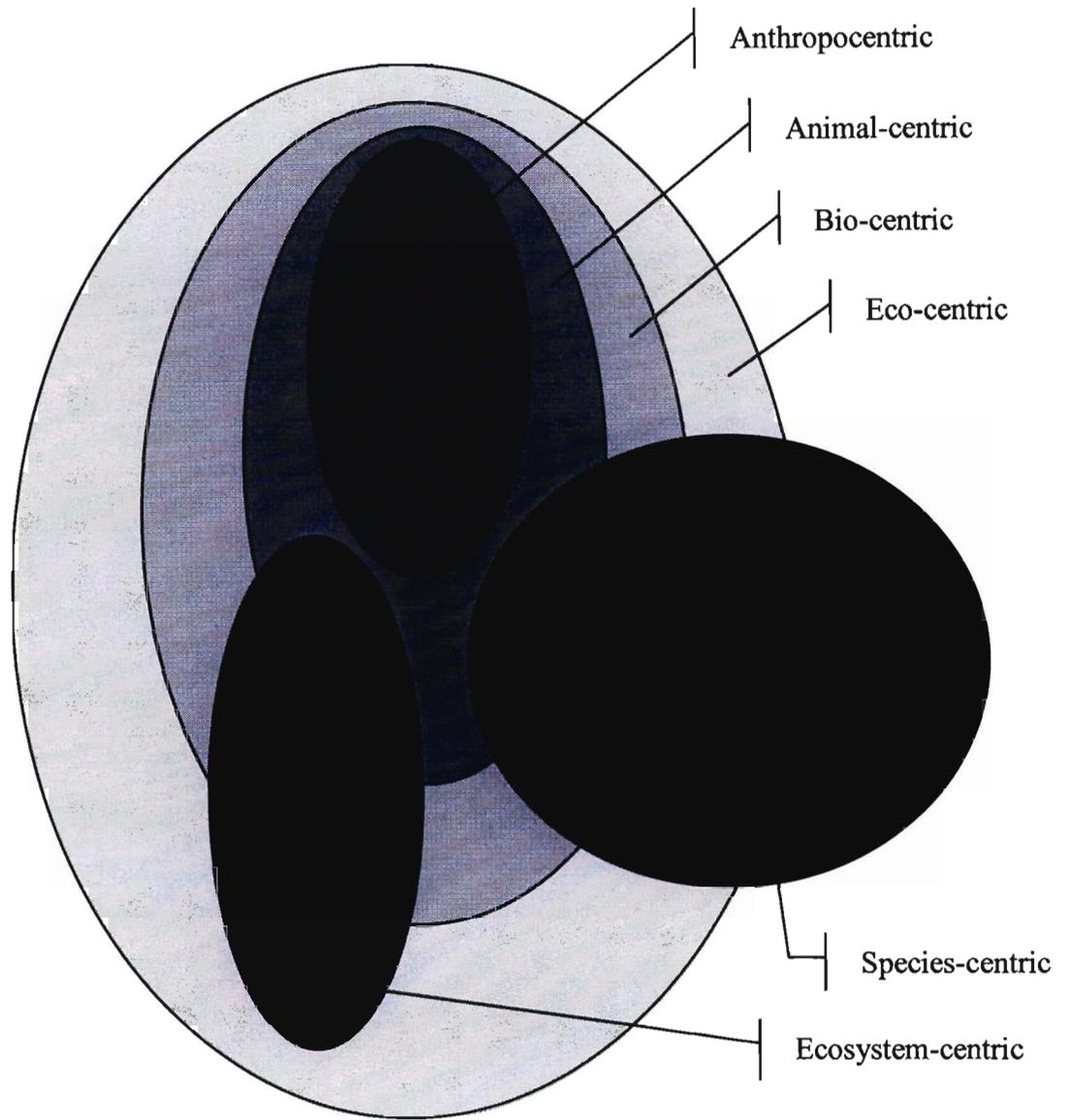


Fig. 1. Nested boundaries of concern implied by the different categories of moral worth

3.3. Deontology and Teleology

On the one hand is the tradition that argues that certain sorts of acts are right or wrong in themselves. This is known as the deontological tradition (from the Greek, *δεον*, 'duty'). The other, known as the teleological (from the Greek, *τελος* meaning 'goal') judges actions to be right or wrong on the basis of an assessment of their consequences. It is therefore also known as the consequentialist tradition (Davis 1991; Palmer 1997; Pettit 1991; Van DeVeer & Pierce, 1994). Some authors opt for three categories, namely, the deontological, teleological (or Aristotelian) and utilitarian (Desjardins, 1993; Sterba, 2000). However, Rawls argues that the two categories of theories of right, namely, the deontological and the teleological are sufficient for exhausting all the possibilities for theories of right action. Utilitarianism as a distinct tradition may be dispensed with as it is simply a subcategory of the teleological (consequentialist) tradition: it judges the rightness of an action based on its consequences for the pleasure, happiness, well-being or satisfaction of preferences of sentient beings.

The origin of utilitarianism is to be found in the writings of Jeremy Bentham. Bentham's position is neatly summarised in the following quote:

Nature has placed mankind under the governance of two sovereign masters, pain and pleasure [...] by the principle of utility is meant that principle which approves or disapproves of every action whatsoever, according to the tendency which it appears to have to augment or diminish the happiness of the party whose interest is in question (Bentham as cited in Rachels and Tillman, 1972, p.125)

John Stuart Mill a disciple of Bentham, wrote a classic text, *Utilitarianism* (1861) in which he summarized utilitarianism in the following words, "actions are right in proportion as they tend to promote the happiness, wrong as they tend to promote the reverse of happiness" (Mill, 1861, as cited in Palmer, 1997, p.9)

There is textual support for the claim that these classical utilitarians included animals in their version of utilitarianism. This is discussed further in Section 4.5.

Deontological ethics stresses the importance of considering an action in itself rather than the consequences of the action. Immanuel Kant's (1785) *Fundamental Principles of the Metaphysics of Morals* is the classic treatise on deontology.

An action done from duty derives its moral worth, not from the purpose which is to be attained by it, but from the maxim by which it is determined...in what then can their worth lie [...] it cannot lie anywhere but in the principle of will without

regard to the ends which can be attained by the action. (Rachels and Tillman, 1972, p.131)

The starting point for Kant, therefore, is that moral action is action that is based on principles (“maxims”). The issue then is, “What are these principles?” For Kant the answer is contained in his *categorical imperative* (a universalisable ethical principle based on the assumption that human beings are rational, can form intentions and can choose to act on those intentions) which loosely stated says: a person should act in such a manner that s/he will want the underlying principle of her/his action to be regarded as a universal principle.

Modern deontology posits that “to act rightly, agents must first of all refrain doing the things that can be said (and known) to be, before the fact, wrong ... [these things] are variously called rules, laws, deontological constraints, prohibitions, limitations, or norms ... generally [referred] to ... simply as ‘deontological constraints’” (Davis, 1991, p. 206). How does one know what these deontological constraints are? Kant’s categorical imperative is one source of derivation for the constraints. For religious people the sources are Holy Scripture, whilst for others, the existence of common moral intuition is posited.

Common moral intuition recognizes several types of [deontological constraints] ... there are special obligations created by promises and agreements; the restrictions against lying and betrayal; the prohibitions against violating various individual rights, rights not to be killed, injured, imprisoned, threatened, tortured, coerced, robbed ... there may also be a deontological requirement of fairness, even-handedness or equality in one’s treatment of people. (Nagel (1986) cited in Davis, 1991, p.211)

It is not necessary here to delve into the debate around the appropriate source of the deontological constraints; it’ll suffice to point out that there are different theories of ‘legitimate’ constraints. It is however important to note that implicit in Kant’s, Nagel’s and Davis’ deontologies is that right action is only with reference to the treatment of humans and not any other life forms. In other words, deontological constraints are constraints of action only insofar as the treatment of human beings are concerned. By implication, only humans have intrinsic value and therefore the theories are anthropocentric. However, there is no logical reason why the constraints on human action cannot be extended to the treatment of all life forms. Indeed, it is an explicit tenet of many social institutions that there should be constraints on the treatment of animals by humans. If deontological constraints can be extended to animals, then why not to plants and even to ecosystems?

In the following section, examples are given of deontological environmental paradigms which parallel those of the teleological paradigms.

4. A FRAMEWORK OF ENVIRONMENTAL PARADIGMS

The different typologies of environmental paradigms given in the literature (Connelly and Smith, 1999; Eckersley, 1992; Thompson, 1995) are too one-dimensional as well as being insufficiently comprehensive. Therefore in this section a new framework is developed which enables a more comprehensive and systematic classification of environmental paradigms.

Eckersley's typology is arguably the most comprehensive in the literature. For her, the main distinction to be made in the contemporary debate about approaches to the environment² is that between ecocentrism and anthropocentrism. However, it is important to note that her definitions of these terms are different to those that I have given above.

For her the distinguishing features of anthropocentrism are:

The nonhuman world is [...] a storehouse of resources and is considered to have instrumental value only (Eckersley, 1992, p.26)

The belief that humans are the pinnacle of evolution and the sole locus of value and meaning in the world (Eckersley, p.28).

And, the distinguishing features of ecocentrism are:

It values the all (or, at least some) of the multilayered parts of the biotic community, i.e., species, communities, ecosystems, for their own sake. (p.26, 28)

It is noted for its readiness to advocate the setting aside of large tracts of wilderness, regardless of whether such preservation can be shown to be useful in some way to humankind.(p.29).

She then subdivides these categories into a number of others, e.g. Anthropocentrism into Resource Conservation, Human Welfare Ecology, Preservationism, etc., and Ecocentrism into Autopoietic Intrinsic Value Theory, Transpersonal Ecology, Ecofeminism, etc. However, this range of categories is one dimensional: there is a linear progression from Resource Conservation at the extreme end of anthropocentrism to Ecofeminism at the far end of Ecocentrism.

The typology framework given in Table 1 has the advantage over Eckersley's typology in that it provides a more systematic basis, in ethics, for the comparison of the various environmental paradigms, by linking 'the good' and 'the right'. It is therefore able to highlight the components of 'the good' and 'the right' in the various environmental paradigms that have been identified in the writings of Eckerley and others.

Table 1. Environmental paradigms

	A.) Teleological	B.) Deontological
1. Anthropocentric	Productionism Resource Conservation / sustainable agriculture Preservationism Stewardship (farming)	Human Welfare Ecology
2. Animal-centric	Animal Liberation (Singer)	Animal Rights (Regan)
3. Bio-centric		Respect for Nature
4. Species-centric		Species Preservation
5. Ecosystem-centric		Ethical Holism/ Land Ethic Stewardship (WCC)
6. Eco-centric		Deep Ecology

The typology is also robust in that it is able to include the components (environmental paradigms) of different typologies that have been constructed for a variety of purposes. In order to demonstrate this robustness, in addition to Eckersley's, the components of Connelly and Smith's, Thompson's, and VanDeVeer and Pierce's typologies are included. These four have been chosen because the purposes of these writers are very different. Connelly and Smith are interested in relating environmental paradigms to a broader political context. Eckersley's objective is to sketch out a viable Green political programme. Thompson is concerned to relate environmental to agricultural ethics. VanDeVeer and Pierce are concerned to develop an understanding of a feasible environmental ethics. The following is a summary list of their typologies.

Eckersley (1992): Resource Conservation, Human Welfare Ecology, Preservationism, Animal Liberation, Autopoietic Intrinsic Value Theory, Transpersonal Ecology, Ecofeminism

² There is a long history of humankind's perspective on the 'natural world' which lies behind the contemporary environmental paradigms (Sarre, P. and Reddish, A. (1996)) The details of this history are beyond the scope of this paper.

Thompson (1995): Productionism, Resource Conservation (Ecological Sustainability), Stewardship, Holism.

Connelly and Smith (1999): Utilitarianism, Stewardship, Respect for Life

VanDeVeer and Pierce (1994): A list of environmental paradigms is not provided, however, a typology is implicit in the chapter headings, namely, Ecological Sustainability, Animal Liberation, Animal Rights, Land Ethic, Deep Ecology, Ecofeminism, Species Preservation.

Table 1 sets out the environmental paradigms in terms of their axiological components in the following format. The rows are theories of value, i.e., what entities have moral worth, and the columns indicate theories of right, i.e., teleological and deontological respectively. This may be formally stated as follows. If X is a set of elements x_1, x_2, x_3, \dots (i.e., $x_n \in X$) then the headings of the rows are given in the form, X -centric, where moral worth is ascribed to the set X . In the first (teleological) column are those paradigms in which the value of an action directly affecting elements x_m, x_n, \dots is assessed on the basis of its aggregate value to X , i.e., the actions are judged on the basis of the balance of their consequences for the good of X . In the second (deontological) column are those paradigms in which the value of an action affecting an element, x_n , is assessed on the basis of whether it is consistent with the duties to all the elements of X .

In other words, according to the definitions given in Section 3.1., intrinsic value is indicated in the deontological column and extrinsic value in the teleological column.

4.1. Productionism

This is a paradigm considered only by Thompson. It is debatable as to whether it should be classified as an environmental paradigm as it does not explicitly consider environmental or conservation issues.

Production is “the intentional transformation of materials from a less valued to a more valued state”(Thompson,1995, p.11). Consequently, Productionism is a paradigm in which production is the sole norm for evaluating human activity: “make two blades of grass grow where one grew before” (p.50) is an oft-quoted aphorism of this paradigm. It is therefore perhaps more appropriate to see it as an agricultural rather than an environmental paradigm, because agriculture is a human activity that is concerned with the transformation of plants and animals into usable food and fibre.

Nonetheless, it is included here for two reasons.(a) because it is supported by the ‘myth of the garden’; and, (b) it has important consequences for the biodiversity of the Earth.

The ‘myth of the garden’ was very influential in the development of agriculture in Europe and North America in the 19th Century. In essence it assumes that “the paradigmatically natural environment is a garden, brimming with plants and animal species selected and managed by the gardener.”(p.57). If nature is regarded as a garden where plants and animal species can be harvested and transformed into more valued states, then the greater the extent of cultivation the better and conversely, “untamed and untended lands are examples of lands in a state of decline and disarray” (p.57). The consequences of this myth for biodiversity are obvious: ploughed fields and cattle ranches justifiably replace the world’s indigenous forests and grasslands.

Human beings are the only focus of concern and human activity is judged on the basis of the extent to which wants and needs are satisfied. Therefore this ideology falls into block A1.

4.2. Resource Conservation & Sustainable Agriculture

This paradigm is rooted in the modern³ notion of conservation, attributed to Gifford Pinchot who is described by Devall as the “prototype figure in the [conservation] movement” (Devall, as cited in Eckersley 1992, p.35). At the root of the notion of resource conservation is a utilitarian ethic that values the non-human world only in terms of its actual or potential satisfaction of human material needs. This is implied in by using the concept, ‘resource’ when referring to the environment.

Resource Conservation therefore embraces economic development and lays emphasis on “achieving the maximum sustainable yield of natural resources” (Eckersley, 1992, p.37), i.e., a sustainable development through the elimination of waste and maintenance of the ‘stock’ of natural resources.

Similar to Eckersley’s Resource Conservation is the Sustainable Agricultural paradigm discussed by Thompson (1995). In the latter, human consumption and production processes should only utilise the ‘yield’ only from the ‘stock’ of natural resources.

³ The origins of the idea of conservation can be traced back to ancient Greek and Roman philosophers such as Plato and Cicero and to the ‘stewardship’ ideals of the Judaic and Christian theologies as expressed in the Old and New Testaments.(Eckersley, 1992: 35).

As in the first, this paradigm is both anthropocentric and teleological.

4.3. Human Welfare Ecology

Eckersley distinguishes between Human Welfare Ecology and Resource Conservation on two counts. Firstly, the former foregrounds the soft variables that are neglected by the resource conservation paradigm. Thus the major preoccupation of this stream is for a cleaner, safer and more amenable environment for humans to live in and is encapsulated in the phrase, “environmental quality”. (Eckersley, 1992, p.36). Secondly, a good quality environment is something that is owed to all people. Elsewhere, (Wenz, 1994) this paradigm is referred to as an Environmental Justice paradigm.

Therefore, this paradigm is anthropocentric and deontological.

4.4. Preservationism

Like the Human Welfare Ecology paradigm, Preservationism has as its central concern the soft variables. But unlike the former, which focuses on the environment in which people live, Preservationism is concerned to preserve wilderness areas from human intervention. Wilderness is preserved for its experience and knowledge value, its aesthetic, recreational, scientific and spiritual value to human beings.

Any actions, therefore, which advance the preservation of wilderness are ultimately therefore for the benefit of humans and the (only) difference between conservation and preservation is the difference between saving it “for development” and saving it “from development”(Eckersley, 1992, p.39)

John Muir (1838-1914) is probably the best known early proponent of wilderness preservation: for the aesthetic⁴ value of wildernesses and for their spiritual value. Fox quoted in Eckersley has identified a range of reasons that have been given for the preservation of wilderness areas including, life support systems, laboratories for scientific study, stockpiles of genetic diversity. In all of these examples the only entities that have intrinsic value are human beings. The arguments for the preservation of wilderness areas are therefore anthropocentric and teleological.

⁴ The early 19th Century landscape painters had a significant influence in the social construction of the aesthetic value of wilderness areas and, interestingly, it was the painter Joseph Caitlin who first used the term “a nation’s park” in 1832 (Neumann,1998)

4.5. Animal Liberation & Animal Rights

Both the Animal Liberation and Animal Rights paradigms have their roots in Jeremy Bentham's famous dictum, "The question is not, Can they *Reason?* nor, Can they *Talk?* But, can they *Suffer?*" (Bentham, 1948, Chapter 17, footnote). Both Singer's (1990) Animal Liberation paradigm and Regan's (1982) Animal Rights paradigm take this as their starting point. On the basis of their capacity to suffer, both paradigms ascribe moral worth to all sentient beings (animals). "No matter what the nature of the being, the principle of equality requires that its suffering be counted equally with the like suffering – insofar as rough comparisons can be made – of any other being" (Singer, 1990, p.8). Even though Eckersley (1992, pp.42-47) does not recognise any differences, there is an important distinction to be made between the two. Singer uses the concept of rights, but only for strategic purposes: "the language of rights is a convenient political shorthand" (Singer, 1990, p.8). The Animal Liberation paradigm is, however, utilitarian, albeit a "sophisticated version of utilitarianism, namely, preference utilitarianism" (Gruen, 1993, p.349), whereas the Animal Rights paradigm is deontological. Lori Gruen neatly summarises the difference between the two:

Those who agree with the rights argument as well as those who adhere to utilitarianism will not eat animals, but for different reasons. The former will be vegetarians, and perhaps vegans (those who avoid all animal products, including milk and eggs), because to use animals in such a way is not consistent with treating them as beings with inherent worth. To a person who holds the rights view, using an animal as a means to an end, in this case as food for the dinner table, is a violation of that being's *right to treated with respect* [italics mine]. A utilitarian will abstain from eating animal products as long as the process that is used to raise them involves a net balance of suffering. If the animals live happy, stress-free, natural lives before they are painlessly killed, the utilitarian may not object to their use as food. (p. 349)

Table 1 takes note of these similarities and differences by assigning both paradigms to the animal-centric row and the differences by locating the Animal Liberation paradigm to the teleological column and the Animal Rights paradigm to the deontological column.

4.6. Respect for Nature

The Respect for Nature paradigm has its origin in Albert Schweitzer's "reverence for life" (Schweitzer cited in DesJardins, 1993, p.49). For Schweitzer the "most fundamental fact of human consciousness is the realization that 'I am life which wills to live, in the midst of life which wills to live'" (p. 50). Schweitzer did not, however,

develop an environmental ethic, his concern was that humans should develop a “character trait” (p. 50) which held nature in awe and reverence.

Taylor (1986, 1994) developed this attitude into a thoroughgoing environmental ethic. Central to Taylor’s Respect for Nature are four basic principles of a belief system which together form what he calls the “biocentric outlook”(Taylor, 1986, p.99): (1) the scientific hypothesis that the natural world is a complex organic system of interdependent living organisms; (2) every living organism is a “teleological center of life”(p.100); (3) humans are members of “Earth’s community of life” (p. 99); and, (4) humans, as a species, are not in any way superior to other species.

The second of these principles, namely that all organisms are teleological centers of life establishes a necessary condition moral worth being attributed to every living organism (DesJardins, 1993). To say that an organism has a teleological center of life means that it “[strives] to preserve itself and realize its good in a unique way” (Taylor, 1986, p.121). Having a good of its own establishes the possibility of an organism having moral worth. The sufficient condition is established by accepting the other three principles. (DesJardins, 1993)

Taylor’s ethical system is completed by arguing for a moral attitude and a set of rules and duties. The ethics of respect for nature is made up of three basic elements: a belief system, an ultimate moral attitude, and a set of rules of duty and standards of character [...] one makes a moral commitment to abide by a set of rules of duty [...] one makes that moral commitment because one considers those rules and standards to be binding on all moral agents. They are seen as embodying forms of conduct and character structure in which the attitude of respect for nature is manifested (Taylor, 1986,1994.)

This paradigm is therefore biocentric and deontological

4.7. Ethical Holism/ Land Ethic

Ethical Holism, a term used by Eckersley (1992, p.61), is based on the view that: (a) the environment can be represented as “an integrated set of structures in dynamic equilibrium, maintained in such an equilibrium by negative feedback processes” (Callicott, 1999, p.8), i.e., the biosphere and individual parts thereof are ecosystems in

homeostasis⁵, and (b) that this whole has moral worth. Aldo Leopold's (1887-1948) Land Ethic is arguably the most well known strand in ethical holism. (Another is James Lovelock's Gaia Hypothesis.)

Whilst there are passages in *A Sand County Almanac* (1949), Leopold's most widely known work, that take account of individual animals – “a land ethic implies respect for fellow members and also for the community as such” (Leopold as cited in Callicott, 1999, p.67) – it is the holistic dimension (Callicott, 1999; Connelly and Smith, 1999; DesJardins, 1993; Eckersley, 1992; Thompson, 1995) that has come to be identified with the Land Ethic. This dimension is succinctly set out in Leopold's well-known maxim:

A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold as cited in Thompson, 1995, p.118)

DesJardins points out that:

The moral extensionism that is at work in Leopold's writing does not ask that we simply make room in our moral deliberations for yet another type of individual moral subject. Leopold asks that we make a radical category shift away from individuals. We now ought to grant moral standing to communities, symbolically represented as the “land”. (DesJardins, 1993, p.192)

It is important to note that the implication of Leopold's maxim is that individual living organisms may be sacrificed for the good of an ecosystem or community:

Preserving the integrity of a biotic community often requires reducing the populations of some component species, be they native, non-native, wild or feral (Callicott, 1999, p. 68)

Therefore, intrinsic value is ascribed to communities or ecosystems and not to individual organisms. In Table 1 this paradigm is listed as ecosystem-centric and deontological

⁵ This is an assumption which has been challenged by conservation biologists such as Botkin (1991) and Buidinsky (1995). Donald Worster succinctly summarises this new perspective: “Each and every plant association is nothing but a temporary gathering of strangers, a clustering of species unrelated to one another, here for a brief while today, on their way somewhere else tomorrow [...] nature seems, in contrast to all our previous theories to be chaotic” (Worster, 2000:163, 166). The debate has not been concluded and may best be resolved through a re-definition of the term ecosystem (Allen, 1992; Gunderson, 2002).

4.8. Stewardship

The Stewardship paradigm is one of the three major categories used by Connelly and Smith (1999) in their typology. However, they do not provide much information on this paradigm. According to the information that they, together with Thompson (1995) provide this paradigm should be placed in the Ecosystem-centric deontological box, together with the Land Ethic.

The Christian Stewardship tradition⁶ draws its inspiration from the Biblical passage: “Yahweh God took the man and settled him in the garden of Eden to cultivate and take care of it” (Gen. 2:15). The exegesis of this passage suggests that human beings are obligated to “act responsibly and with consideration towards the natural world” (Connelly and Smith, 1999, p.12) or, as Thompson argues, human beings have a “religious duty to protect and foster the beauty and integrity of God’s creation” (Thompson, 1995, p.76). The paradigm therefore uses the language of duty and ascribes intrinsic value to the integrity, i.e., the wholeness, of creation. .

This tradition that regards human beings as trustees of God’s creation for all created beings and for future generations, is endorsed and propagated by the World Council of Churches and is therefore here referred to as the Stewardship (WCC) paradigm.

There is, however, another version of the stewardship paradigm, one that is associated with pre-industrial small-scale family farming in the USA. In this paradigm, as trustees and stewards of God’s creation, human beings are permitted “wise use” (p.74) of nature. This teleological anthropocentric position is, in Table 1, labelled Stewardship (Farming).

4.9. Autopoeietic Intrinsic Value Theory

Autopoeietic Intrinsic Value Theory (AIVT) is classified as a distinct environmentalism by Eckersley (1992). It does not, however, fulfill all the conditions of the definition of a paradigm (as set out in Lockett (2004)) and therefore it may better be described as a “virtual paradigm” (Yolles, 1996, p.568). Specifically it does not (yet) have the an enduring group of adherents which have been attracted away from competing paradigms. Alternatively it may be regarded as a constituent of the Deep Ecology

⁶ There is another Christian tradition, which is closer to productionism, and which also has its origin in the book of Genesis. See White (1967) for a discussion of this tradition.

paradigm discussed below, as is implied by VandeVeer and Pierce's (1994) description of Deep Ecology.

The word, autopoietic, derives from the Greek words *αυτος* (self) and *ποιειν* (make) and is taken to mean 'self-making' or 'self-producing'. For Maturana and Varela (1987) it is this property of self-production that defines living organisms: "What is distinctive about [living organisms] is that their organization is such that their only product is themselves, with no separation between producer and product" (Maturana and Varela, 1987, pp.48-49). Or in the words of Warwick Fox, they are "primarily and continuously concerned with the regeneration of their own organizational activity and structure" (Fox as cited in Eckersley, 1992, p.60). Therefore, "autopoietic entities are *ends in themselves*" (p.61). Consequently AIVT may be regarded as deontological.

Furthermore, the focus on autopoiesis enables AIVT to overcome the restrictions of the Land Ethic to considering only communities and ecosystems because individual organisms communities and ecosystems are included in the ambit of the definition of autopoietic entities, in other words, it simply and extends the boundaries of bio-centrism to include communities and ecosystems⁷.

4.10. Deep Ecology / Transpersonal Ecology

Eckersley (1992) doesn't mention Deep Ecology – a paradigm inspired by Arne Naess (Connelly and Smith, 1999; VanDeVeer and Pierce, 1994, 2003) – and by implication equates it with Transpersonal Ecology, whereas VandeVeer and Pierce (1994) understand Transpersonal Ecology to be a variant of Deep Ecology where the emphasis is placed on the realization of self. In VanDeVeer and Pierce's scheme, "biocentric egalitarianism" (VanDeVeer and Pierce, 1994, p.211) is essentially equivalent to Fox's AIVT. Bill Devall and George Sessions, two proponents of Deep Ecology, contend that it "is based on two ultimate norms [namely] *self-realization* and *biocentric equality*" (Devall and Sessions, 1994, p.216).

Self-realization, the foundational theme in Transpersonal Ecology, is about extending the boundaries of human consciousness so that the "sense or experience of self [...] extends beyond one's egoistic, biographical or personal sense of self to include all living things" (Eckersley, 1992, p.62). Eckersley refers to this as the realization of the

⁷ As in the Land Ethic, the assumption here is that ecosystems exist in the real world.

“ecological self”(p.62). Devall and Sessions use the phrase, “self-in-Self” (1994, p.217) to convey the same idea. Ultimately, “It is the idea that we can make no firm ontological divide in the field of existence: That there is no bifurcation in reality between the human and non-human realms ... to the extent that we perceive boundaries, we fall short of deep ecological consciousness” (Fox cited in Devall and Sessions, 1994, p.216). It is argued then that if we as humans achieve this state of self, no moral exhortation is needed to care for other living things, for after all, “you care for yourself without feeling any moral pressure to do it” (Devall and Sessions, 1994, p. 213). Deep Ecology, on the other hand, does have a moral component, namely, biocentric equality (or, biocentric egalitarianism).

Biocentric equality is the claim that all living things have “an equal right to live and blossom and to reach their own individual forms of unfolding and self-realization within the larger Self-realization”(p.217). Therefore by implication “all living things are of equal moral worth or equal intrinsic value” where the phrase, ‘living things’ is used in a very broad sense to include “rivers (watersheds), landscapes, ecosystems” (VanDeVeer and Pierce, 1994, p.211).

It may be concluded therefore that Deep Ecology, but not Transpersonal Ecology, if it may legitimately be separated from Deep Ecology, is an eco-centric, deontological paradigm.

4.11. Ecofeminism

Ecofeminism (or ecological feminism) is a label for a range of ideas/theories and inevitably there are disagreements between some of the proponents (Connelly and Smith, 1999; Eckersley, 1992; Merchant, 1994; Sterba, 2000). However, central to this range of ideas is the theme that “women are better placed than men to identify with non-human beings, ecological processes and the larger whole” (Eckersley, 1992, p.66). In all cases this assertion is based on one or both of the following claims: (a) that there is a special link between women and non-human nature because of their reproductive/nurturing capabilities; and (b) that women like other non-human beings are oppressed in patriarchal societies. Ecofeminism doesn’t develop an axiology because its concern is with the development of the essentials of a feminist understanding of the world, “the way in which we experience the world” (p.63). And, in some cases “we find

an ecophilosophical orientation that is almost indistinguishable from that of transpersonal ecology” (p.70), with its emphasis on expanding the boundaries of self.

Because it does not concern itself with the theory of value it does not have a place in Table 1.

4.12. Species Preservation

This paradigm is not separately listed in any of the writings considered but it may be inferred (as a paradigm) from the consideration that VanDeVeer and Pierce (1994) give to contributions on the nature and importance of species (Gould, 1994; Johnson, 1994; Rolston, 2003; Russow, 1994), in a section on preserving biodiversity.

The debate around the existence of species is not one that will be gone into here⁸. It is assumed that species exist as distinct entities, and may be defined as a “diagnosable cluster of individuals within which there is a pattern of phylogenetic ancestry and descent” (Eldredge and Cracraft, cited in Rolston (1986, p.210)).

Pace Peter Singer and Tom Regan, Rolston argues that, just as there are duties to individual animals, so there can be duties to species.

In an evolutionary ecosystem, it is not mere individuality that counts, but the species is also significant because it is a dynamic life form maintained over time by an informed genetic flow [...] the dignity resides in the dynamic form; the individual inherits this, instantiates it, and passes it on. To borrow a metaphor from physics, life is both a particle (the individual) and a wave (the specific form) [...] we may be tempted to say that specific-level processes cannot count morally. But each ongoing species defends a form of life [therefore] duties to a species are not duties to a class or category, not to an aggregation of sentient interests, but to a lifeline. (Rolston, 1986)

If this were only a philosopher’s musing, no matter how cogent, it would not count as a paradigm, but there is a very significant movement worldwide for the preservation of species which focuses particularly on endangered species. It is, furthermore, an aspect of this movement that the well being of a species often takes precedence over the well being of individual animals: “The individual [animal] represents (re-presents) a species in each new generation. It is a token of a type, and the type is more important than the token” (Rolston, 1986, p.212). A highly emotive contemporary example of the debate around species vs. individuals is evoked by the culling of elephants.

⁸ See Gould (1994) and Rolston (1986, 1994) for an introduction to this debate

The paradigm of ‘species preservation’ uses the language of duty and clearly, from the above argument, regards species as having moral worth. It is therefore both species-centric and deontological.

5. CRITICAL SYSTEMS THINKING (CST) AND THE ENVIRONMENT

As discussed in Lockett (2003), the key (conditional) elements of CST are: (a) it provides an intervention methodology for social or environmental improvement which provides a mechanism for stakeholder values clarification and is also explicit about the values that underpin this improvement; (b) it incorporates a critical reflection on the intervention context as well as on the methodologies/methods used; and (c) it allows for the flexible use of different approaches (methodologies and/or methods) in combination. These key elements may be summarized, respectively, as situation improvement, boundary critique and methodological pluralism.

There is a considerable and rapidly growing literature (Daniel et al., 1997; Midgley and Reynolds, 2001) on the use of Operational Research (OR) in environmental applications, but the bulk of OR approaches are techniques/methods/models to support decision-making in situations where problems are well-defined with clear goals that need to be achieved. Where these approaches make use of systems ideas they are in the domain of the functionalist systems paradigm and not in the interpretive or critical paradigms (Jackson, 2000). However, since CST embraces methodological pluralism some of the methods and techniques of OR may be incorporated into a critical systemic intervention, but this is not relevant to the focus of this paper, which is CST *per se*. In contrast to the OR literature, there is a dearth of CST literature that deals directly with environmental issues and/or ecological thinking. It is only Midgley (1994), building on Ulrich (1993), who has attempted to link CST to environmental issues.

Ulrich (1993) is himself not concerned with the application of CST to environmental issues, rather he addresses the “quest for comprehensiveness” as is for example manifested in the “fashionable call for ‘holistic’ or ‘systems thinking’” (Ulrich, 1993, p.583) in environmental discourse. He argues that such a quest is misplaced and that the problem faced by ecologists is similar to that faced by systems thinkers and therefore that ecologists should not be looking to systems thinkers for the answer.

Practically speaking, such an understanding of the systems idea requires us to go through a never ending process of expanding the boundaries of our problem definition, to the point where it might encompass God and the World [...] the

holistic imperative of ‘considering everything relevant’ is philosophically as inescapable as it is impracticable. Systems thinking, because it shares this dilemma with ecological rationality, can thus hardly be a remedy for the difficulties of ecological thinking (p.584)

The way forward for Ulrich is a “critical holism” (p. 587), i.e., an approach which, for practical reasons, recognizes that boundary judgments have to be made. Critical holism (a) uncovers the values upon which alternative boundary judgments are premised, and (b) “provides operational tools for critical reflection and cogent argumentation on disputed normative validity claims” (p.587), i.e., it provides a method for critical reflection on the values underpinning the boundary judgments made in an intervention. He claims that his Critical Systems Heuristics does just this through its twelve “critically heuristic categories” (p. 594)

Building on Ulrich, in his *Ecology and the Poverty of Humanism: A Critical Systems Perspective* (1994), Midgley critiques the widespread uncritical acceptance of boundaries around the concerns of humans and human societies – he calls this “humanism” – because this uncritical acceptance marginalizes concerns about the environment⁹. He therefore suggests that critical systems thinkers should give preference to an alternative environmental paradigm, namely, the “ecological perspective”(Midgley, 1994, p.67). Neither of the two paradigms is clearly defined, but he suggests that the essential difference between them is that “humanism places people at the centre of discourse, while the ecological perspective allows us to decentre ourselves”(p. 68)

The distinction between the two becomes clearer in the application of the concepts “sacred” and “profane”(p. 70). Because humanism uncritically accepts a system boundary around the human element, i.e., individual human beings and/or human society, the human element is made sacred and the environment correspondingly profane. In other words:

the non-human world comes to be regarded as either untamed wilderness full of potential danger or as a ‘natural resource’ for human control and consumption (or possibly both) (p.73)

For Midgley the ecological perspective is to be preferred – “is the most legitimate” (p.67) – over the humanist perspective. However, he does point out that although “the

⁹ Midgley’s use of the term is consistent with the definition given in Section 2.

ecological perspective allows for a decentring of human beings [it] does not prescribe it in every case” (p. 68).

Midgley’s simple dichotomy of approaches to the environment, namely ‘humanism’ and the ‘ecological perspective’ is useful because, by highlighting the link between boundary judgements and ethical values, it demonstrates how environmental concerns may be marginalised or ‘profaned’. However, the exposition of ethical paradigms in this paper shows that Midgley’s dichotomy is not subtle enough to take account of the possible range of value conflicts that are generated by the different environmental paradigms, as for example given in Table 1. The implications of Midgley’s dichotomy are that is that the boundary of concerns implicit in humanism are nested within the wider boundary of concerns implied by the ecological perspective (as is shown in Midgley’s figure 2 (Midgley, 1994, p. 72).) But as Figure 1 illustrates, the matter is not that simple. The hierarchically nested nature of Midgley’s two paradigms glosses over the possible areas of mutual exclusion and therefore conflict in the concerns between the animal-, bio-, and eco-centric paradigms on the one hand and the species- and ecosystem-centric paradigms on the other. In Midgley’s simple dichotomy all of these paradigms would be lumped together in his ‘environmental perspective’. For example, concern for the integrity of ecosystems may override any concern for individual animals if the ecosystem-centric paradigm is given *uncritical* – because of a lack of differentiation between the two – precedence over any of the animal-centric paradigms, likewise concern for the preservation of a species would be given precedence over concern for individual animals if the species-centric paradigm dominated over the animal-centric paradigm.

The issues are even more subtle than Fig. 1 is able to capture, because there are conflicts between a teleological animal-centric ethics and a deontological animal-centric ethics as is illustrated in the quote by Lori Gruen in Section 4.5

This may sound all very theoretical but there are practical consequences. The options available to conservationists could be considerably narrowed if all the differences in the concerns implied by the paradigm in Table 1 namely the animal-, bio-, species-, ecosystem-, and eco-centric paradigms were glossed over by an all-embracing environmental perspective. A simplistic environmental perspective might for example imply an uncritical prioritization of concerns for individual animals. This is by no means a farfetched scenario given the widespread ‘sentimentality’ – this term is used

with caution here – around the killing of animals. Such a perspective would imply a prohibition on the culling of all animals in a protected area resulting in the real danger that certain species, such as elephants, would dominate to such an extent that many other species, e.g., certain plants and the animals that feed off those plants, would be exterminated. Another (common) example: the loss of biodiversity that would result from a policy (consistent with the ecological perspective) that no plants should be eradicated. Such a policy would result in the destruction of the habitat of indigenous species by uncontrolled invasive alien species. The list of examples is almost endless. (See Botkin, 1991; Buidiansky, 1995; Noss and Cooperrider, 1994) for further discussion on the complexity of biodiversity management)

6. CONCLUDING COMMENTS

Midgley's differentiation between 'humanism' and the 'ecological perspective' is both innovative and important. It is the first systems approach that explicitly draws attention to the boundary implications of an uncritical acceptance of 'humanism' (in Midgley's terminology) in systems interventions. However, it is argued here that Midgley does not go far enough. Just as an uncritical acceptance of 'humanism' profanes nature, so an uncritical acceptance of Midgley's 'environmental perspective', which glosses over distinctions within this perspective, runs the risk of profaning elements within nature. Profaning plants if an animal-centric perspective is uncritically accepted, or of profaning individual animals if a species-centric perspective is uncritically accepted, or of profaning species if an animal-centric perspective is uncritically accepted, and so on.

The framework developed here enables one to be critically aware of a range of possible ecological perspectives and therefore better meets the CST requirement for values clarification in an intervention than does Midgley's simple dichotomy between 'humanism' and the 'ecological perspective'. In attempting to classify the different environmental paradigms, this framework builds on work done by Eckersley but is more systematic and therefore also easier to use than Eckersley's typology, because it clearly distinguishes between what is 'good', i.e., has moral worth, and what is the 'right thing to do' about those things that are 'good'. Consequently a two dimensional framework is developed whereas Eckersley's typology is one-dimensional, focussing only on the 'good'.

In sum, therefore, it is argued here that in order to facilitate a more comprehensive critical systems intervention in environmental management and/or biodiversity conservation there is a need for a more nuanced set of possible boundary judgments together with an awareness of the possible conflict between these, than that provided by Midgley. Such a framework is proposed here by building on the work of Eckersley and other environmental ethicists.

The matter is not merely theoretical it has practical implications. Some of the implications for nature conservation are discussed above and a more thoroughgoing application of the use of the framework is developed in a further paper by the present author (Lockett, 2004).

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PAPER 5:

**A Critical Systems Intervention for Policy Development within
a Nature Conservation Organization**

A Critical Systems Intervention for Policy Development within a Nature Conservation Organization

Author: Sidney Lockett

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ABSTRACT

Organizational policy-making is a complex undertaking at the best of times. The complexity is compounded in socio-economic and political environments that are in a state of flux. Whilst traditional reductionist management approaches have very limited use in such contexts, Soft and Critical systems approaches have proved to be more useful. Neither of these two approaches has, however, directly addressed the issue of organizational policy formulation. This paper reports on a Critical Systems Intervention (CSI), facilitated by the author, for policy formulation in Ezemvelo KZN Wildlife, a parastatal nature conservation agency in a complex transitioning country setting, namely the KwaZulu-Natal province of South Africa.

1. INTRODUCTION

Organizational policy-making is a complex undertaking at the best of times. The complexity is compounded in socio-economic and political environments that are in a state of flux. Whilst traditional scientific management and operational research approaches have very limited use in such contexts, Soft and Critical systems approaches have proved to be more useful (Ackoff, 1979; Checkland, 1999; Jackson, 2003; Rosenhead and Mingers, 2001). Neither of these two approaches has, however, directly addressed the issue of organizational policy formulation. This paper reports on a Critical Systems Intervention (CSI), facilitated by the author, for policy formulation in Ezemvelo KZN Wildlife, a parastatal nature conservation agency in a complex transitioning country setting, namely the KwaZulu-Natal province of South Africa.

Any CSI is underpinned theoretically by a set of characteristics which, taken together, form the basis of Critical Systems Thinking (CST). These characteristics are: (a) Social and environmental improvement which clarifies stakeholder values and makes explicit the values underpinning the improvement; (b) Boundary critique, i.e., an ethical reflection on 'boundary judgments' (Ulrich, 1994; Midgley, 2000), which includes reflection on the intervention context as well as on the methodologies and/or methods used; (c) Uses a combination of methods, including from approaches which are located in different paradigms

The paper shows how policy formulation for a nature conservation organization takes account of different environmental paradigms (Luckett, 2004a). The policies were developed using an action research process that builds on some theoretical insights into organizational policy developed by Luckett (2004b). (These insights as well as the environmental paradigms are briefly discussed in the paper.) The paper therefore provides a simple model for the construction of biodiversity policies that may be used by managers and other would-be problem solvers located within nature conservation organizations.

This introduction is the first section of the paper. Section 2 is a discussion of an action-research framework for this intervention – CSIs are essentially action-research processes – which consists of four phases, namely 'appreciating', 'connecting', 'implementing' and 'reflecting'. This is followed by Section 3 which recounts the process of negotiating the research brief. Sections 4 through to 6 are the heart of the paper; in them I respectively discuss the 'appreciating', 'connecting' and 'implementing' phases of the action-research

process. Section 7, is part of the final ‘reflecting’ phase of the action-research cycle. It reflects on some of the boundary judgements made regarding the role of policy and policy principles. The ‘reflecting’ phase continues with Section 8, the conclusion.

2. AN ACTION-RESEARCH FRAMEWORK FOR THE INTERVENTION

A CSI should satisfy the three conditions of Critical Systems Thinking (CST) spelt out in Section 1 and may be conceptualised as an action research process (Levin, 1994; Checkland, 1999; Checkland and Holwell, 1998). Kolb’s LC provides a sophisticated and useful framework for identifying the phases of an action research process with its four phases: Diverging, Assimilating, Converging and Accommodating (Kolb, 1984; Lockett and Grossenbacher, 2003). These phases may be characterised as follows:

- a) **Divergence:** Becoming aware of meaning and values in a situation; viewing situations from many perspectives; generating alternative ideas relevant to a situation.
- b) **Assimilation:** Creating theoretical models; assimilating disparate observations into integrated explanations.
- c) **Convergence:** Debating & decision making; applying theoretical models.
- d) **Accommodation:** Carrying out planned tasks.

The phases in Jackson’s (2003) critical systems practice are similar in some respects to these. He has the following:

- a) **Creativity:** Highlighting significant concerns, issues and problems
- b) **Choice:** Choosing appropriate methodologies/methods in combination
- c) **Implementation:** Deciding on and implementing specific proposals for change
- d) **Reflection:** Producing learning about the problem situation and the methodologies/methods used

Jackson insists on the necessity of working in and across different systems thinking paradigms, namely, functionalist, interpretive, emancipatory and postmodern. For example, for the ‘creativity’ phase he highlights the importance of employing ‘devices’, i.e., methodologies, methods, models and metaphors, that “ensure that the perspectives of the four paradigms receive proper attention” (Jackson, 2003: 312). This is easier said than done because a “paradigm is a set of shared beliefs, questions that may legitimately be

asked and models and procedures for investigating these questions” (Lockett, 2004b: 2). These characteristics of paradigms do of course enable people to make sense of the world, however, because the beliefs, models and procedures become embedded in our cognitive structures, “we fail to see how [a paradigm] creates a particular way of seeing” (Brocklesby, 1997: 198). Consequently, the very power of paradigms blinds us to alternative ways of seeing; to alternative possibilities and issues. Therefore, in order to be able to use devices from different paradigms it is necessary to become conscious of the paradigm that we have embraced, i.e., become ‘paradigm conscious’. But that is not all.

Brocklesby, goes on to argue that there are further obstacles that must be overcome before one is able to use these ‘devices’ with any skill. The first is the “severe, even traumatic, philosophical and values dislocations” (*ibid*: 204, citing Guba). Further, even if an agent manages to make the ontological leap required for the acceptance of a new paradigm, acting effectively within different paradigms is dependent to a large extent on the skills and disposition of the agent. For example, the functionalist paradigm requires technical skills and a disposition to seek out ‘ultimate causes’ in order to make systems work more effectively and efficiently. Whereas the interpretive paradigm is best suited to those whose skill is the facilitation of intersubjective understanding and whose disposition is to find some sort of accommodation between people that leads to action which is both effective and ethical.

For these reasons I believe that Jackson is requiring too much by insisting on working in and across different paradigms. It still remains for me to compare Jackson’s CSP process, stripped of its paradigm literacy requirement, with Kolb’s LC.

Both Kolb’s ‘diverging’ and Jackson’s ‘creativity’ imply the need to take account of the meaning and values of a situation and as pointed out in Section 1, clarifying values is in any case a requirement of CST. To this end it is useful to introduce Vickers’ (1995) concept of ‘appreciating’ which is a better description of the first phase than either Kolb’s ‘diverging’ and Jackson’s ‘creativity’. The importance of this concept was recognised and appropriated by Checkland (1981, 1999) to provide a theoretical underpinning for his Soft Systems Methodology (SSM). Integral to the idea of ‘appreciation’ is the close interconnection between facts and values (a nexus that is particularly relevant to understanding policy making.)

The relation between judgments of fact and of value is close and mutual; for facts are relevant only in relation to some judgment of value, and judgments of value are operative only in relation to some configuration of fact (Vickers, 1995:54)

Our previous experiences have created for us certain ‘standards’ or ‘norms’ usually, tacit [...]; the standards, norms and/or values lead to readinesses to notice only certain features of our situations, they determine what ‘facts’ are relevant; the facts noticed are evaluated against the norms, a process which both leads to our taking regulatory action and modifies the norms and standards, so that future experiences will be evaluated differently (Checkland, 1999: 262-263)

In this paper, therefore, the first phase is characterised as an ‘appreciation’ phase.

This phase, following Mingers (1997), consists of three closely interlinked activities: (i) appreciating the real-world situation of concern; (ii) appreciating the available methodologies and methods; and, (iii) appreciating the role-players, i.e., who are those who have a sense of unease about the situation and those who are willing to get involved in changing the situation, the “problem-owners” and would-be “problem-solvers” (Checkland, 1989:85), respectively.

Kolb’s ‘assimilation’ and Jackson’s ‘choice’ phases are very similar. However, Kolb’s conceptualisation has one advantage over Jackson’s in that Kolb anticipates the need for the construction of new theoretical models and by implication new methodologies rather than simply choosing between methods and/or methodologies. Here I follow Kolb, but rename this phase the ‘connecting’ phase because disparate observations need to be integrated through the employment of theories, methodologies or methods. This leaves open the question as to whether it is existing methodologies/methods that are used or new ones created.

Before undertaking the intervention, I had thought to use Kolb’s framework without any significant change, both because it is theoretically rigorous and because it has ‘worked’ for me before (Lockett and Grossenbacher, 2003). However, during the process of the intervention it became increasingly difficult to disentangle the decision-making from the implementation of the decisions, therefore conceptualising these activities as two distinct phases (namely, the ‘convergence’ and the ‘accommodation’ phases) was practically artificial albeit theoretically well founded. It is true that the LC does not require a step-wise process and does allow for an iteration between phases, but it keeps matters simpler by conceptualising the decision-making and carrying out of the planned tasks as a single phase as is done in Jackson’s framework. Therefore the third phase is, following Jackson, designated as an implementation phase.

Combining Kolb's third and fourth phases into one then leaves the final phase in this intervention as Jackson's 'reflection' phase. At first sight it may seem that Jackson's incorporation of a reflection phase adds a dimension that is missing in the LC. However, this is not so. Because of the cyclical nature of the LC, reflection on the situation and on the intervention itself is incorporated into the first phase (diverging) of the next cycle of the LC. Thus it is not for the reason that Jackson's intervention framework adds another dimension, that I have chosen to include a reflection phase, but because it simplifies the conceptualisation of the intervention framework.

To summarize, the phases of the action research intervention that I followed are conceptualised as 'appreciating', 'connecting', 'implementing' and 'reflecting' and I discuss them in detail in sections 4 through to 7 respectively. It is important to note that although the relationship between the phases is broadly sequential, this relationship should not be understood to be exclusively so. In other words, activities in one phase may overlap with activities in a prior phase in the list.

Prior to the intervention proper, and therefore prior to the appreciation phase, I negotiated the research brief with officials in the organization. This negotiation may be conceptualised as part of entering a real world situation of concern (Checkland 1981, 1989) where it is important to establish who the client is and what his/her expectations are. This process is described in the next section.

3. NEGOTIATING THE RESEARCH BRIEF

As mentioned above the organization was, at the time of my approach to it, undergoing a massive restructuring exercise. The time taken up by this exercise impacted negatively on the process of negotiating the research brief. In mid-May 2001 I had my first discussion with the CEO of the organization about the proposed research project. However, it was only in October of that year that the research project was finalized.

Once the project was registered, given the fullest support and cooperation by the relevant officials within the Biodiversity Conservation Cluster (BCC) of the organization. (There are two other clusters within the organization, namely, Ecotourism & Marketing, Finance and Human Resources.) I was assigned as 'supervisor', the Manager of Strategy and Business Transformation (MSBT), who reported directly to the CEO. With his assistance I had an initial set of meetings with senior officials in the BCC, many of whom had seen my

proposal, to explain the project and elicit their concerns about the project. In spite of the support received, progress remained slow.

However, the process of consultation resulted in a couple of outcomes that were very welcome. The senior BCC staff began to appreciate the potential value of my research intervention but they requested that I shift the original focus of the project from policy implementation to policy development within the organization. Normally clients initiate interventions and consequently their needs are fore-grounded from the beginning. However, I was happy to adapt the intervention to meet the needs of the organization. Doing so would at very least ensure buy-in by key decision makers within the organization. The second outcome was that the three most senior BCC staff members (apart from the CEO), namely the Head of Conservation, the Head of Conservation Partnerships & Planning and the Head of Scientific Services, together with the MSBT manager formed a project steering committee (PSC) which would have direct oversight of the research project. The project was thereby given considerable status within the organization.

The organization had previously identified policy review as a key issue. Policy and issues relating to policy surfaced in various ways in official internal documents of the organization. For example, a strategic thrust of the Biodiversity and Planning division was “enhancing strategy and policy development” (Ezemvelo KZN Wildlife, 2002: 16) and the office of the CEO, in the same document, tasked with the “review of all policies and procedures” (Ezemvelo KZN Wildlife, 2002: 20). One of the problems that members of the PSC were grappling with was that the present set of organizational policies was being ignored by a large number of the staff of the organization. The reasons for this are discussed more fully in Section 4.3.1. As a result of the concern for policies in general I was requested to develop a user-friendly policy format, make recommendations on the role that policies should play in the organization as well as the issues/areas that should be covered by policies (Manager: Strategy and Business Transformation, 2002). This redefined project became the thrust of the intervention that is described in Sections 4, 5 and 6.

4. APPRECIATING

In this section I discuss the appreciation phase which, following Mingers (1997) consists of three interlinked themes, namely, available theories and methodologies, real world situation of concern and role-players and their perspectives.

4.1. The available methodologies/methods

There is a range of systems approaches available for interventions in the management of organizations and there is considerable debate around the question of methodological pluralism, i.e., the use of systems methodologies and/or methods in combination (Mingers and Gill, 1997; Midgley, 2000; Jackson, 2000; Jackson, 2003). In this debate, there is widespread consensus that methodologies and/or methods from different paradigms¹ of systems approaches may be combined. This is all very well as far as it goes. But the debate does not foreground the restrictive nature of the propositional format of methodologies/methods. This limitation is particularly relevant to soft (interpretive/critical) approaches.

Effective soft [interventions] involve working directly with people, and responding, often in real time, to the exigencies of whatever situation develops. Unfortunately these relationship-managing skills are difficult to capture in propositional format. (Brocklesby, 1997:207).

There is an added complication in the suggestion by Flood, Jackson and Midgley (Flood and Jackson, 1991; Jackson, 1997; Midgley, 1997; Jackson, 2000; Midgley, 2000) that a governing methodology be used to guide the initial stages (at least) of the intervention. The problem is that they do not clarify what constitutes the 'initial stages'. This leaves unresolved the question as to when it is permissible for the agent to break off from the governing methodology. As a possible example of a governing methodology, take either the seven-step or four-activities versions of SSM (Checkland, 1999): is it possible to break after the first step/activity and still claim that SSM is being used as a governing methodology?

Given these difficulties, it is better to conceive of a 'governing paradigmatic mode of operation' rather than a governing methodology.

In the intervention being reported here, I had originally considered using SSM as a governing methodology, because the problem situation demanded an interpretive approach

¹ For a discussion on these paradigms in the context of the present intervention see Lockett, S. (2004b).

and I felt more comfortable using SSM in this role as I have had some success with its use (Lockett et al., 2001; Lockett and Grossenbacher, 2003). Some of the methods and guidelines embedded in SSM such as the intervention analysis (i.e., identifying the client, problem owners and problem solvers) and rich picturing were appealing and were in fact used. However, given the considerations above, it is not appropriate to identify SSM as a governing methodology for the intervention; it is better to conceive of the intervention as being governed by an interpretive mode.

After completing the appreciation phase, it became apparent that there were no existing tools, methods or methodologies available for the facilitation of what was needed for this intervention. Therefore, I had to develop the appropriate 'instruments' namely the framework for the clarification of environmental values and a method for constructing policies. These are described in Section 5.

4.2. The real world situation of concern

From the available documentation, I was able to gain an understanding of the historical context of nature conservation in KwaZulu-Natal, the current (at the time of the intervention) legislative context and the process of transformation that the organization was going through. These three dimensions of the context are summarised briefly in what follows.

4.2.1 A brief history of formal nature conservation in KwaZulu-Natal

The following is a brief history of formal conservation in KwaZulu-Natal culminating in the formation of the KwaZulu-Natal Nature Conservation Service (KZNNCS), otherwise known as Ezemvelo KZN Wildlife (EKZNW), a parastatal organization responsible for biodiversity conservation in the KwaZulu-Natal province of the Republic of South Africa.

Indigenous peoples (first the San followed by the Nguni) had been living in KwaZulu-Natal area for approximately 2500 years before the first European (British) settlers landed in what is now known as Durban in 1824. Before the arrival of these settlers there was a relatively sustainable use of wildlife in the area; various Nguni chiefs had introduced the first conservation laws as early as the beginning of the 19th Century (Hughes, 2002).

The arrival of the British settlers brought an end to this balance. Durban grew into a thriving trading centre where wildlife products such as ivory, rhino horn and buffalo hides were traded resulting in the decimation of many species with rhino becoming virtually

extinct. However, public sentiment in Britain and her colonies began to turn against the slaughter of animals resulting in the establishment of the first five game reserves in that area. More were to follow and after the formation of the modern South African state in 1910, more than 70 reserves and parks were added.

Until 1947 when a parastatal conservation authority, the Natal Parks Board (NPB), was established in the then Natal province, national and/or provincial governments directly administered the parks and reserves in South Africa. The conservation policy that prevailed across the world during this period and beyond is typified by Wells et.al. (1992) as a 'fences and fines' approach, i.e., conservation took place in reserves from which people were removed and fences erected to keep them out. As a result of this approach "nature conservation became a foreign concept to all indigenous peoples as access to living natural resources, especially large animals, became ever more remote" (Hughes 2002, 69). This was exacerbated in South Africa by the Land Act of 1913 according to which indigenous Africans were only allowed to own land in 13% of the geographic area comprising South Africa. The result was that many millions of people were forcibly removed from their ancestral land. The conservation policy – but not the land segregation policy – began to change only in the mid 1950s when wild animals were donated to landowners. This practice marked the beginning of wildlife utilisation as a commercial enterprise in the province and was a deliberate measure taken to develop "repositories of wildlife and biodiversity outside the protected area network" (Goodman et al., 2002).

The 1970s saw the development of diverging conservation policies and strategies in the different parts of the province. This divergence of strategies was the direct result of the political dispensation of the Apartheid government. In the 1960s a small pieces of discontinuous land fragments were partitioned off into a 'homeland', known as KwaZulu, for the Zulu people of Natal. During this dark period of South African history, millions of Zulus were forcibly removed into KwaZulu from the 'whites only' Natal, resulting in enormous pressure on the biodiversity in KwaZulu. The KwaZulu government established its own conservation authority, the Bureau of Natural Resources (BNR), which because of the pressure on the protected areas now under its jurisdiction from impoverished neighbours, developed a conservation path quite distinct from that of the NPB.

The BNR introduced two policies to counter the threat to biodiversity. The first was the *Policy of Sharing*, i.e., the right of communities "living adjacent to a proclaimed area to have access to that area for their specific needs" (Elliot & Steel 1993, 43) subject to the

wildlife being harvested on a sustainable basis. The second policy involved giving adjacent communities the right to a portion (25%) of the gross tourist revenue from any tourist facility in the protected areas.

During the same period the NPB developed a number of strategies to bring conservation concerns to the people of Natal. Special liaison committees were established with hunters, coastal fishing, traditional healers, etc. A conservancy (a voluntary co-operative environmental management of an area by its community and users) system was also started. However, even though there were attempts by the management of individual parks and reserves to involve local black communities in conservation efforts, what was lacking at this stage was a clear policy to involve these communities. This was rectified in 1991 through the development of the *Neighbour Relations Policy* (Natal Parks Board, 1992). This policy aimed to foster the economic and social development of neighbouring communities, enhance the environmental awareness of protected area neighbours and “perhaps, most radically of all, the encouragement of neighbour participation in the management of protected areas” (Luckett et al., 2003, p.9). The latter was accomplished through formal Neighbour Liaison Forums implemented by the officers-in-charge of the protected areas.

Three years after the first democratic elections in 1994, the two conservation agencies (the NPB and the BNR) in the province were formally amalgamated. The amalgamation brought four major challenges to the new organization. Firstly, the development of a coherent bioregional strategy to conservation, as opposed to the former narrow focus on protected areas by the two organizations, albeit with some involvement from neighbouring communities. Secondly, finding effective structures for neighbouring communities involved in the protected areas, as the Neighbour Liaison Forums were largely dependent on personalities. Thirdly, the restructuring of the business functions of the organization to increase the effectiveness and efficiency of the formerly organizationally diverse organizations. And, finally the development of a common culture within an organization that is an amalgamation of two organizations with quite distinct approaches to biodiversity conservation. It was felt that the latter could be done through the development of an organizational vision and mission together with a set of policies and this became a priority strategy of the organization.

4.2.2 The legislative context

In the Constitution of the Republic of South Africa, environmental issues are a 'dual competency', i.e., environment is a responsibility of both the national and the provincial governments and therefore legislation governing the conservation of biodiversity in the province is very complex.

In 1997 the two parastatal organizations operating in the KwaZulu-Natal (KwaZulu-Natal) province, namely the NPB and BNR, were formally amalgamated through the KwaZulu-Natal Nature Conservation Act (1997) (KZNNCA.) This Act established a single publicly accountable body responsible for biodiversity conservation in the province, namely the KwaZulu-Natal Nature Conservation Board with its executive arm, the KwaZulu-Natal Nature Conservation Service (KZNNCS) later to be commercially branded as EKZNW. The KZNNCA also formalised the relationship between the protected areas under the jurisdiction of the Board and neighbouring local communities through the establishment of Local Boards that are required to draw up and monitor the implementation of management plans for the protected areas.

As mentioned above, the affairs of EKZNW are also governed nationally. To this end there are, at the time of writing, one Act of the national parliament and two Bills before parliament that are directly relevant (Republic of South Africa (1998); Department of Environmental Affairs and Tourism (2003a, 2003b)).

As a parastatal, EKZNW also has the obligation to uphold international conventions that the Republic of South Africa is signatory to. The most important of these are: The Convention Concerning the Protection of the World's Cultural and Natural Heritage (World Heritage Convention), The Convention on Wetlands of International Importance (Ramsar Convention), The Convention on Biological Diversity, and The Convention on Trade in Endangered Species of Flora and Fauna (CITES).

4.2.3 Transformation of the organization: Business Process Review and Redesign (BPRR)

A BPRR process facilitated by a reputable business consultancy consortium was completed by January, 2002. Outputs of the process were two substantial documents, namely an 'AS-IS' document (Deloitte & Touche and Southern Focus, 2001), which set out the existing functions of the organization and a 'TO-BE' document (Deloitte & Touche and Southern Focus, 2002), which detailed the desirable functions of the organization, on the

understanding that appropriate structural arrangements would be instituted to support the functions.

The ‘TO-BE’ document assumed further that the governance process would be based on an explicit “Integration Model” (Deloitte & Touche and Southern Focus, 2002: 2-4). This model postulates a linear relationship between the components: (i) a corporate governance framework, which includes political, social and economic variables; (ii) strategic planning, which sets out a five to seven year programme for the organization and would include developing a vision, a mission, goals (in terms of its main functions); (iii) policy objectives for each of the core businesses; (iv) regional (for each of the three regions) three year business plans; (v) management plans for each protected area; and (vi) an operation plan for the head and regional offices. Apart from the staff overload implied by the model – as one senior manager put it to me, “you get really mixed up between vision and mission and policy and strategies and guidelines” – this model is flawed in at least two respects. The assumed linear progression typifies a mechanistic metaphor of organizations (Morgan, 1997), which is appropriate only in stable environmental conditions and, therefore, tends to encourage the development of organizational forms that have difficulty adapting to changing circumstances. . It also assumes that people will fit into the organizational structure and routines unproblematically (Flood and Jackson, 1991)

Progress was made in certain components. Both the vision and mission were established through a consultative process, however, there was some unhappiness within the organization regarding both, which may be attributed to a less than perfect process, as well as differences in conservation values. For many the clause “ensure that the intrinsic value of parks, wildlife, land and seascapes of KwaZulu-Natal are sensitively protected” in the vision statement is too vague, whilst the mission, “sustainable biodiversity conservation and ecotourism management in KwaZulu-Natal in partnership with people” (Ezemvelo KZN Wildlife, undated:1) didn’t sufficiently capture the range of concerns within the organization. During the period of my involvement with the organization, a corporate and divisional strategic plans were drawn up as were operation plans for head office and the regional offices and a start was being made with the protected area management plans which required considerable detail. It is too soon to assess the value of this planning exercise but it was clear to the executive that for a significant number of staff members, the policies posed significant problems. These are further described in the following subsection .

4.3. The role-players and their perspectives

In this section I describe the perspectives of the key role players on a number of issues relating to the policies of the organization pertaining to biodiversity conservation. I began with the role players identified by the Project Steering Committee (see Section 2).

These role-players were chosen by the PSC because, in their judgement, they represented a cross-section of the people in the organization who had previously expressed some concern for the state of the policies of the organization (i.e., they were the “problem-owners” (Checkland, 1999:316). The initial list consisted of 21 people comprising board members, senior executives (including the CEO and the members of the PSC), heads of departments, regional managers, protected area managers, scientists, resource ecologists, a social ecologist, a conservation partnerships coordinator and district conservation officers.

The list provided by the PSC included only officials of the organization and its board. One problematic aspect of this boundary judgement is that there are individuals and organizations who are affected by the policies of the organization, even though they could not be legally enforced on people and organizations outside of the organization. Therefore, as time went on, and with the agreement of the PSC, I included representatives of six organizations concerned with biodiversity conservation in the province, namely, Bergwatch, Crane Foundation, Maloti-Drakensberg Transfrontier Project, Wilderness Action Group, Wildlands Trust and the Wildlife and Environment Society of South Africa. (The full list of the interviewees, together with the dates of the interviews, is given in Appendix 1.)

The concerns that I began probing the interviewees about were those identified by the PSC, namely, policy format, the role of policy and issues to be covered by policy. This boundary was expanded after the early interviews when I uncovered further concerns relating to policy issues held by the interviewees, namely, the policy formulation process, the underlying policy principles, and the integration/coherence of policies.

To discover the issues of concern to the roleplayers discussions were kept open-ended but were initiated around their views on the present policies, the important areas of focus for policies, the policy-making process and the vision and mission statements of the EKZNW Charter and the Strategic Plan as well as three themes that appear repeatedly in these documents, namely, sustainable use of biodiversity, co-management/partnerships and respect for indigenous culture and practices.

In what follows, I summarise the results of the interviews with regard to: (a) policy format, (b) role of policy, (c) underlying principles, (d) issues to be addressed by policies (e) integration/coherence of policies, and (f) the policy formulation process. In this summary the interviewees are identified by their initials – the details are given in Appendix 1.

4.3.1. Policy format

There was widespread agreement that the format of the existing policies is not ‘user friendly’. To quote from some of the interviews:

I don’t think therefore it is a set of documents which are easily understood, and which are given credence by the organisation. (AE)

People are very confused especially when the policies structured the way that they are up to now [...] it’s total chaos (MG)

This observation was reinforced by the recommendations. From many of the interviewees came recommendations to keep them simple.

they might need a change of format [...] but make it simple so that guys out there can understand it (BH)

Only one interviewee that liked the present format and the reason given is that the policies provide background information. .

The format as such, I like it, because it gives you the background information (YN)

The importance of the background information is borne out by other interviewees.

The [format] should give me an understanding of why the policy is there and what should be the result of that policy will be and how can you implement it. (SdJ)

4.3.2. Role of policy

There was widespread agreement that the present set of policies are not used to manage the organization. This was understandably perceived to be an unsatisfactory state of affairs but there were differing views on how policies should be used.

My concern with all these policies is that once they have been agreed by the board, and I am getting away from what you are probably going to ask me, but what I think is a source of direct contention within the organisation, is that once the board has agreed and approved a policy, it is put away into a file and never looked at again [...] We never refer to them, we never take them off the shelf. (AE)

Our policies are a mix of different things [...] there has been a bit of a confusion about what a policy is [...] The existence of the policies is irrelevant to what the organization actually does. (KM)

When questioned as to whether policies should be guidelines, with flexible application, only or whether they should be enforced in some way, there was no consensus amongst the interviewees.

The organization should be run by them, to what strength I don't know. But certainly if I have been operating outside the realms of policy, I should be held accountable. If there is a very good reason I should still be held accountable and if there is a good reason I should explain. I think overall what I'm saying is that they are very important to the organization. (CC)

Honestly speaking, I think there should be other mechanisms of dealing with disciplinary issues. In fact if you've developed your vision and have your policy following your vision, you shouldn't have a problem of having people not subscribing to the policies.. I would like to create an environment where people are able to use their own judgement in taking certain decisions. If there is a good reason for us to deviate from policy we don't need to call a Board meeting... as long as there is a good reason behind the departure from policy, I don't have a problem. But of course you don't want to make a mockery of policy either. (KM)

Those are the Boards policies that are formally adopted, so if someone contravenes those policies they should be disciplined (HS)

Policies should to provide guidance, regulate the behaviour of officials, stipulate procedures (CvT)

How these conflicting views were resolved is described in the Section 5.2.

4.3.3. Underlying principles

The interviews alerted me to the differences between the respondents concerning the underlying principles for biodiversity conservation. As a result of these discussions I constructed the framework discussed in Section 5.1. The purpose of the framework is to assist in the clarification of values, required by any CSI . Where these values were not articulated sufficiently clearly, in terms of the framework, by the interviewees, I conducted a second round of interviews with these individuals. The views of the respondents fit into a wide range of environmental paradigms, identified by the framework, from Resource Conservation through to Deep Ecology. The following quotes give some indication of this range.

Resource Conservation:

We find ourselves in an African context where preservation for preservation's sake is not really going to ensure the survival of island species or the land. So you begin to shift, in my view rightly so, to a much more sustainable resource utilisation process which ranges from selling game to allowing people to come and cut Ncema grass [...] in this province where there are nine million people and the parks are

often in remote rural areas surrounded by impoverished communities [...] So a large part of EKZWN's thinking must lie in sustainable resource utilisation. (WE)

For me biodiversity conservation is not about creating parks it's actually about sustainable living and parks are demonstration plots of sustainable living (KM)

Preservationism:

Wilderness is this intangible thing, nobody can explain what it means. So it's a personal thing to you. But if you haven't walked in these really wild places and been touched by them, you don't understand it. It's a deep spiritual experience [...] it's critically important to maintain these wild places (BB)

[Conservation] is from a personal feeling aesthetic point of view, I just like the look of pristine systems (PG ii)

Respect for nature:

I have a great respect for life and things having a place. I get very cross with people who say "you shouldn't kill snakes because they're good, they kill rats". Well they kill rats but I think that's got nothing to do with it. A snake is an animal, which has the right to live and you shouldn't kill it for that reason, not because it's doing you some good [...] I've got this idealistic belief that all living things are entitled to life.

Species Preservation:

If we can commit ourselves to making sure that whatever we have, we still try to make sure that it doesn't go extinct. (YN)

Land Ethic:

On the culling of elephants, I wouldn't have any hesitation in making a decision on preserving other bits of nature by controlling the thing that was threatening it [but] I'm fascinated by [elephants], I am really over-awed by the animal. Species should be preserved only as far as species make up the system [and] I don't believe every species is necessary to have a full ecosystem (PG ii)

What we are saying is that the integrity of landscapes, which are still thought to be able to function in terms of the natural environmental processes, is what we should be protecting. (RP)

Stewardship (WCC):

God created the earth and said, 'I'm giving it to you to you look after it'. Its our obligation to conserve something of the creation...(SdJ)

Deep ecology:

I was brought up to love the environment [...] I'm worried about the destruction of the environment by people. What I always say is we need to live together, wildlife and people, and for me people aren't that important, honestly! [...] I could probably become one of those Gaia principled people. You could call me a deep ecologist (JG)

A significant observation from the interviews is that for many of the interviewees it is not possible to pin down their values to a specific environmentalism category and any attempt

to do so doesn't do justice to the complexity of the views held by people. For example, I placed a quote from an interview with SdJ into the Stewardship (WCC) box. However, he also said the following which points to the Animal Rights paradigm

It's also important to look at the animal welfare side [...] what is best for the animals (SdJ)

Other quotes, not given above, reinforce the view that some interviewees exhibit tendencies to combine elements from different ethical paradigms. These are demonstrated in the following quotes:

There is nothing wrong with having areas set aside for sustainable resource use, they're not the normal game reserves, they are resource areas. That's different from looking after our biodiversity in natural functioning ecosystems where you don't interfere with natural processes. (MB)

The environment is there to sustain and nourish people. So if its not cared for, then the biodiversity loss and the erosion of resources, whether they be food resources or whatever, will lead to human suffering. But there is also the more aesthetic side of it ... and I must say the idea of animals having an intrinsic right to a decent life does appeal to me (JT)

MB combines the ethics of Resource Conservation and Land Ethic, whilst the quote from JT suggests a combination of Resource Conservation and Animal Rights perspectives.

The fact that some people hold different ethical positions in tension doesn't nullify the framework of environmental paradigms described in Section 5.1. The framework does enable values clarification, the purpose for which it was developed, however, one should be cautious in applying it – one should be careful not to put people into boxes!

4.3.4. Issues to be addressed by policies

For the majority of the interviewees the major issue for which a policy (or, policies) is needed is resource use. The following are some of the quotes from the interviews that support the need for such a policy (or, policies).

Resource harvesting. I'll call it resource utilisation policies, like medicinal plants, firewood, reeds, (inaudible) grass, there are a lot of special muthi plants. Yes but the policy file that we had, I don't think it has been updated [...] The muthi plants and all that, it is getting big. If we see in Durban how they are selling muthi and all that. If we don't get to grips with that we are dead in the water. (GB)

Certainly my feeling, from a biodiversity conservation point of view, is that a key issue with our neighbours is resource use [...] who should get what and under what conditions and how? (PT)

Other issues that were frequently mentioned are: the relationship with neighbouring communities ("That is the major issue because without [involvement of] communities

there is no conservation [...] the reserves which are islands will become deserts” (MG)); problem animals; land transformation (“The land transformation is not only trashing natural systems it is fragmenting them as well (PT)); alien organisms, alien plants and the diseases associated with them (“We’re only beginning to realise the implications of diseases and parasites that are brought in(PT)); disposal of game; and, species introductions and removals from protected areas and the mixing of genes. One interviewee felt that all core activities needed policies: “We need to develop policies and guidelines on core activities to the extent of being almost overwhelmed by them” (DP)

4.3.5. Integration/coherence of policies

A few interviewees commented on the lack of coherence of the policies:

A problem is the fact that they are not coherent. There is a policy here and a policy there, and there is no proper audit of them regularly. (BG)

What we’ve had in the past is simply what we call the policy file, but it hangs in space. Before one even starts with policy, one needs to get very explicit about the principles and the whole matter of principles has not been unpacked for nature conservation in any of the provinces at all and it’s a critical hook on which you hang your policies. If you don’t understand the principles on which the policies are based, you don’t understand the policies. They just waft around unconnected. So that’s the key issue to me – to be very explicit about the nature conservation principles. (RP)

As described in Section 6, coherence was brought about by aligning the policies with the functions as set out in the “TO-BE” document referred to in Section 4.2.3.

4.3.6. Formulation process

A few interviewees commented on the policy formulation process.

Because we are quite a complex organisation, there is no common understanding of the policy process... and the other side of things people don’t know what the approval process is. (HS)

Although it was widely accepted that it is the Board that approves policies, it was clear through informal discussions that I had, that a process leading to the Board’s approval was not well established. It was clear, therefore, that the formulation process had to be attended to. This is further discussed in Section 6.

5. CONNECTING

Soon after beginning the interviews I realised that there is a wide spectrum of value positions held by the interviewees. In order to make sense of these different positions it

became necessary to develop a framework of environmental paradigms. This framework is discussed in Section 5.1. It was also necessary to construct a methodology – because no such methodology exists – that is able to give guidance on organizational policy-making, specifically with regard to policy format, role of policy, and the integration/coherence of policies. This is discussed in Section 5.2.

5.1. Environmental paradigms

The wide range of paradigms discussed in Section 4.3.3 is drawn from a framework which can be used as a tool for the clarification of values underpinning the environmental concerns of individuals. The theoretical background to this framework is given in Lockett (2004a). It is not my intention to repeat the details of that argument, together with the relevant references here, however, in order for the reader to get some insight into the paradigms it is necessary to summarize that argument.

The term ‘environmental paradigm’ is defined as a “coherent system of ideas and/or beliefs that motivate, or give rise to, individual social action with respect to the environment” (Lockett, 2004a:4) . They are, in other words, systems of ethical ideas. All ethical positions have two dimensions, namely, ‘the good’ and ‘the right’, where the former indicates what has value or moral worth and the latter what a moral agent should do by way of responding to that which has value. This distinction is the theoretical cornerstone of the framework that covers a range of environmental paradigms encountered in the literature on the environment.

In the context of environmental paradigms the categories of ‘the good’ are : Anthropocentric, Animal-centric, Bio-centric, Species-centric, Ecosystem- centric and Eco-centric (Lockett 2004a). The following first four indicate respectively that it is all humans, all animals, all living organisms and all species that have moral worth. Ecosystem-centric indicates that it is only biological communities and ecosystems that have moral worth, whereas eco-centric indicates that it is living organisms, communities and ecosystems that have moral worth. ‘The right’ is in turn subdivided into two main categories, namely teleological (or, consequentialist) and deontological. The former position holds that actions are judged to be right or wrong on the basis of their consequences and the latter that actions are judged to be right or wrong in themselves.

In table 1, which sets out environmental paradigms, the ‘good’ is indicated in the rows and the ‘right’ in the columns.

Table 1: Environmental paradigms

	A.) Teleological	B.) Deontological
1.) Anthropocentric	Productionism Resource Conservation /Sustainable agriculture Preservationism Stewardship (farming)	Human Welfare Ecology
2.) Animal-centric	Animal Liberation (Singer)	Animal Rights (Regan)
3.) Bio-centric		Respect for Nature
4.) Species-centric		Species Preservation
5.) Ecosystem-centric		Ethical Holism/ Land Ethic Stewardship (WCC)
6.) Eco-centric		Deep Ecology

The following is a brief discussion of each of the paradigms mentioned in Section 4.3.3.

5.1.1. Resource Conservation

This paradigm is rooted in the modern notion of conservation, which, at root, is a utilitarian ethic that values the non-human world only in terms of its actual or potential satisfaction of human material needs. This is implied in by using the concept, ‘resource’ when referring to the environment. It emphasizes sustainable development through the elimination of waste and maintenance of the ‘stock’ of natural resources.

5.1.2. Preservationism

The preservationist paradigm has at its roots a utilitarian ethic, however, unlike the Resource Conservation paradigm, it is concerned with ‘soft’ non-quantifiable variables. It is concerned to preserve wilderness areas from human intervention for its experience and knowledge value, i.e., its aesthetic, recreational, scientific and spiritual value, to human beings.

5.1.3. Animal Liberation and Animal Rights

There is a difference between the Animal Liberation and Animal Rights paradigms which in not necessary to go into here. However, both of these paradigms ascribe moral worth to all sentient beings based on their capacity to suffer.

5.1.4. Respect for Nature

Central to this paradigm are four principles: (1) the scientific hypothesis that the natural world is a complex organic system of interdependent living organisms; (2) every living organism strives to realize its own interests in its own unique way; (3) humans are members of “Earth’s community of life”; and, (4) humans, as a species, are not in any way superior to other species. The second of these principles, namely that all organisms are teleological centers of life establishes a necessary condition for moral worth being attributed to every living organism.

5.1.5. Species Preservation

The position of adherents to this paradigm is that just as there can be duties to individual animals, so can there be duties to species. This paradigm is at the root of the world-wide movement for the protection of endangered species. It is also a feature of the paradigm that the well being of a species often takes precedence over the wellbeing of individual animals.

5.1.6. Land Ethic

This is summarized in Aldo Leopold’s well-known maxim:

A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold as cited in Thompson, 1995:118)

This is a radical shift away from the consideration of individual organisms to communities and ecosystems with the implication that individual living organisms may be sacrificed for the good of an ecosystem or community.

5.1.7. Stewardship (WCC)

The Stewardship tradition of the World Council of Churches (WCC) draws on the book of Genesis in the Bible to argue that human beings are to act responsible towards the natural God-created world. It uses the language of duty and ascribes intrinsic value to the integrity, i.e., the wholeness, of creation.

5.1.8. Deep ecology

The moral component of Deep Ecology, known as biocentric egalitarianism, is the claim that all living things are of equal moral worth where ‘living things’ is used in a very broad sense to include “rivers (watersheds), landscapes, ecosystems” (VanDeVeer, 1994:211).

5.2. Organizational Policy

The theoretical foundations of a critical systems approach to organizational policy-making are discussed in detail in Lockett (2004b). The conclusions reached in that paper with regard to the role of policy, policy format are summarized here. The integration/coherence of policies for this particular context was based on the outputs of the BPRR process referred to in Section 4.2.3. Each of these is discussed in turn.

5.2.1 The role of policy

Organizational policy is defined as “a normative framework that both restricts and enables organizational strategies and actions” (Lockett, 2004b:13). It should be noted that this definition makes a clear distinction between policies and strategies, where the latter is a coherent set of activities, consistent with the organization’s mission and aimed at achieving the vision. Significantly, therefore there is not a linear, hierarchical relationship between policies and strategies. In other words, policies do not logically determine strategies or actions; they simply put boundaries around the strategies/actions that are acceptable within an organization, in other words they regulate the activities of an organization. Therefore, in the hierarchy, mission leading to strategies leading to operational activities there are policies at each level of the hierarchy. Respectively, they are, fundamental principles (or values), strategic policies and operational policies (Lockett, 2004b). Clearly, operational policies should conform with the strategic policies, which in turn are based on the principles. Any CSI in policy formulation should therefore establish a clear set of principles. Section 6 describes how this was done.

5.2.2. Policy format

From Vickers (1995) we get the notion that a policy should have two components: a reality judgment and a value judgment. The former is a judgement about what is the problem, what is or was the situation and/or predictions about the future situation and the latter an evaluation of whether the judged ‘reality’ is good or bad, relevant or irrelevant and what values should be upheld. These two components interact and are brought together in a rationale/background section of the policy text. The rationale therefore contains perceptions about the situation (‘reality judgments’) as well as the principles to which the policy appeals (‘value judgments’), with the latter being based on a set of decided upon fundamental principles.

A policy should also include a policy statement, i.e., a section that provides the parameters that bound strategy and action.

5.2.3. Integration/coherence of policies

In spite of the weaknesses of the BPRR process discussed in Section 4.2.3, the ‘TO-BE’ map provides a useful structure for conceptualising the relationship between the various policies – thus providing for policy coherence – because it sets out hierarchically the operational functions of the organization. It firstly categorises all the biodiversity conservation functions, namely, ‘manage biodiversity (in protected areas)’, ‘manage integrity of protected areas’, ‘manage cultural heritage’, ‘manage compliance outside protected areas’, etc. It then goes on to establish a hierarchy of sub-functions and activities for each of these main functions, e.g., the function of managing biodiversity in protected areas, has as a sub-function ‘resource use management’ which in turn has an activity, ‘harvesting biological resources’.

6. IMPLEMENTING

In this section, I describe the process that I went through with the organization in reaching and implementing decisions regarding the policy proposals. This process was messy with various iterations of decisions between the different levels of decision-making bodies.

I conducted the interviews between the 28th July 2002 and the 2nd April 2003. The key decisions were taken by the 18th through to the 21st Biodiversity Conservation Forum (BCF) meetings that took place, on a monthly basis, between the 21st January and the 20th May of 2003. The BCF is a forum, chaired by the Director of Conservation, for key staff members to discuss issues directly affecting biodiversity conservation. Decisions taken here are referred to official decision-making authorities within the organization such as the Executive Director’s Committee, the Board or one of its subcommittees, the Biodiversity Conservation Committee (BCC). For the decisions taken regarding this policy intervention process, it was deemed sufficient for the Executive Directors to take the final decision and at a meeting on the 14th July 2003, the decisions reached by the BCF were endorsed.

Before discussing the process that I went through with the BCF, it should be mentioned that I attended a BCC meeting on the 26th July 2002 as part of the appreciating process and on the 27th September 2002 was invited by the BCC to give a progress report of the intervention. At that meeting it was noted that, “a fundamental transformation in the

development and implementation of policies for the Biodiversity Conservation Branch was of critical importance”(KwaZulu-Natal Nature Conservation Board, 2002). A higher decision-making authority than the PSC that was steering the project thus endorsed this policy intervention.

At the 18th meeting of the BCF on the 21st January, 2003 (KwaZulu-Natal Nature Conservation Service, 2003a), I presented a document, “Policies and Policy Development” for discussion. This document set out proposals for (a) the function of policies, (b) a format for policies, (c) policy principles (core values), (d) a process for the review and development of policies, and (e) the layout of the policy file, i.e., a method to hierarchically structure the policies.

The proposal for the function of policies contained three aspects, namely, that policies should provide guidelines, should be consistent with the national and provincial legal framework within which the organization operates and should be relevant to the protected area categories as set out in the KZNNCA. The first of these was based on one of the two positions taken by interviewees, namely that policies should provide guidelines only, thus leaving room for staff initiative. This proposal was rejected by the BCF in favour of a more regulatory role for policies, the alternative position supported by a number of interviewees. (This is also consistent with the role of policy described in Section 5.2). These two positions are further reflected on in Section 7. The other two aspects were accepted by the meeting as was the format proposal.

The seven proposed policy principles are: ‘protection of natural heritage’, ‘sustainable use of biodiversity’, ‘animal welfare’, ‘informed and transparent decision-making’, ‘international treaties and legal responsibilities’, ‘protected area categories’, and a ‘precautionary principle’. The motivation behind the first three was to capture some of the key aspects of the different environmental paradigms that stakeholders held to. This is further discussed in Section 7. The fourth principle attempts to capture the concerns for the inclusion of indigenous knowledge and the capacity building of stakeholders in the management of the protected areas. The fifth and sixth principles relate to the legal obligations and establish general management guidelines based on the protected area categories that are entrenched in the KZNNCA. It should be noted here that these are not the same categories set out in the National Environmental Management: Protected Area Act. This is a contradiction that needs to be resolved at national and provincial government

levels. The seventh, the precautionary principle, is of general concern to people involved in nature conservation.

At that meeting of the BCF the only principles that were contentious were the second (sustainable use) principle, which was rendered less restrictive by a decision to remove its subcomponents, and the precautionary principle. The latter was referred for further consideration and a version proposed by myself was adopted at the Executive Directors Committee meeting of the 23rd June along with all other outstanding matters. A minor change was made to the sixth to cover the management of biodiversity outside of protected areas and the remaining principles were accepted without change.

The proposal for a process for the review and development of policies was left hanging but it was accepted that in the meantime policies could come to the BCF for ratification and onward transmission to the Board on condition that they conformed to the (now) accepted policy format. I was also requested to continue to attend the BCF meetings in an advisory capacity.

I submitted a proposal for a policy development process to the 19th BCF meeting (February) but no decision on it was taken; it was simply affirmed that the policy review process should continue and that policies should be finalised before the end of the year. At the 20th BCF meeting (March) the role of policy was reviewed at the request of the Head of Scientific Services and it was affirmed that policies should have a regulatory role, i.e., they should “provide parameters for the functions and activities of the biodiversity conservation cluster” (KwaZulu-Natal Nature Conservation Service, 2003b, item 6.4). The vision and mission was referred to the Executive Directors Committee for guidance and the remaining matters were referred to a small subcommittee to be convened by myself, to come up with proposals for the 21st BCF meeting. At that meeting all outstanding matters were finalised with the exception of the vision and mission statements and the cultural heritage principle (KwaZulu-Natal Nature Conservation Service, 2003c). I was then asked to draw up a memorandum containing a comprehensive document with the final decisions for the Executive Directors Committee meeting for the 23rd June. This meeting accepted all the proposals contained in the memorandum, which included a principle on cultural heritage, bringing the total number of principles to eight. However, it should be mentioned here, that the issue of the process for the development of policies was re-opened later and that it has, at the date of writing, not been finalised.

However, before this meeting, and therefore before the process for formulating policies was finalised, some of the executive directors asked me to assist with the formulation of various policies. These included one on the ‘Use of indigenous plants and/or plant materials from protected areas’ – this is given in Appendix 2 as a succinct example of a policy. The latter was adopted at the 22nd BCF meeting (KwaZulu-Natal Nature Conservation Service, 2003d). By the time that my involvement with the organization ended, i.e., the end of June, further policies were about to be submitted to the BCF for approval.

7. REFLECTIONS ON BOUNDARY JUDGEMENTS

Key boundary judgements were made with regard to the role of policy and the underlying policy principles.

7.1. Role of policy

If we define organizational structure as the (semi) permanent arrangements for the coordination and control of organizational activities, then the role of policy in an organization is intimately linked to the structural model that the organization adheres to. There are a range of possibilities for possible structural models, from a rule-based hierarchical bureaucratic design to a minimalist approach to rules as in a Mintzberg-type adhocracy where the cultural norms and values of the organization steers decision-making at all levels (Flood, 1999). The strength of the former is that it provides clarity in what is expected from members of an organization, and consequently gives members a ‘comfort-zone’, whilst the strength of the latter is that it allows for considerable space within which to make decisions and therefore encourages initiative.

The debate within EKZNW, as reflected in the interviews and positions taken at BCF meetings, regarding the extent to which policies should be enforced, reflects the relative positions of the protagonists with regard to the structural model of organization that they feel comfortable with. It might have been helpful to formulate the issue of the role of policy in these terms, but at the time of the discussions, I didn’t feel that there was sufficient willingness or time available to probe the structural issues. (One needs to bear in mind that many members of the organization had been through a lengthy BPRR process and were currently also occupied with drawing up strategic and management plans). The decision reached at the BCF, namely that policies provide the parameters within which action is to be taken, rather than providing guidelines for action, and that they should be

enforced reflects a position, found (through the interviews) at all levels of the organization. Clarity of expectations is what was wanted and by implication, it was assumed that this would result in the most effective way to run the organization.

This position is in itself a boundary judgment and those views (including the views of the CEO) which supported the alternative position, namely that members of the organization should be encouraged to take their own initiative when faced with difficult decisions were 'marginalised' (Midgley, 2000) by the judgement. The judgement is clearly underpinned by tacit assumptions and preferences about the effective management of organizations since it is not a matter that can be resolved 'objectively'.

7.2. Policy principles

The three principles that illustrate the making of boundary judgements most clearly are the natural heritage, sustainable use and animal welfare principles. The final wording adopted for these three are:

Natural heritage. The indigenous biodiversity of KwaZulu-Natal is for the benefit of all the people of South Africa, both present and future generations. Therefore the indigenous species and genetic diversity are conserved, the integrity of ecosystems maintained and the wilderness areas protected.

Sustainable use. Biodiversity conservation shall place the people of South Africa and their needs at the forefront of its concern, and serve their physical, psychological, cultural and spiritual interests.

Animal welfare. No harm may be inflicted on any animals unless it is necessary to do so to enable the effective conservation of indigenous biodiversity.

The definition of biodiversity underlying these three is not specified in the document adopted by the Executive Directors Committee, however, EKZNW adopted a definition, based on the Keystone Dialogue (1991) (Noss, 1990; Noss and Cooperrider, 1994) and provided by its Scientific Services as part of EKZNW's strategic planning process in 2001/2002. This definition is:

The variety of living organisms on earth, the genes they contain, populations, communities, habitats and ecosystems, ecological processes and landscapes of which they are integral parts. Biodiversity thus refers to the life-support systems and natural resources on which we depend.(Brooks, 2001)

The principles therefore place the needs of humans, in this case the people of South Africa, at the forefront of concern – 'the indigenous biodiversity of KwaZulu-Natal is for the benefit of all the people of South Africa'. However, this concern is not the materialistic interest of the Resources Conservation paradigm; it includes psychological, cultural and

spiritual values. The three principles accommodate the Preservationism, Species Preservation, Land Ethic and Stewardship (WCC) paradigms, by referring to the importance of wilderness areas, indigenous species and ecosystem integrity. The Animal Liberation paradigm is included but the concern that animals may not be harmed ranks beneath the concern for preserving the integrity of ecosystems. The environmental paradigms of some of the interviewees that are marginalised are the Resource Conservation, the Respect for Nature and the Deep Ecology paradigms.

8. CONCLUSION

In this paper (Section 2) I demonstrate how I developed an action research cycle by drawing on the work of Kolb (1984), Jackson (2003) and Vickers (1995). The cycle incorporates four phases, namely, ‘appreciating’, ‘connecting’, ‘implementing’ and ‘reflecting’ and the first three of these are discussed in some detail (Sections 4, 5 and 6) in the context of a policy-making intervention for EKZNW, a parastatal nature conservation organization. The reflection phase that begins in Section 7, includes a discussion on the boundary judgements made in the intervention. I now conclude the reflection phase by highlighting the significant outcomes of the intervention for EKZNW as well as pointing to some issues that require further investigation.

For EKZNW, the intervention achieved the following. The simple policy format given in Section 5.2 was accepted without any difficulty by the BCF and by mid-2003, policies using this format were formulated and approved. At the same time, proposals for the role of policy, underlying policy principles and a framework for the integration/coherence of policies, which also indicated areas that needed policies, and the policy formulation process, were all accepted by the BCF and the Executive Committee. However, in the case of the policy formulation process, one official in the organization subsequently raised a problem and the matter has not been finalised at the time of writing. What is at issue here is a boundary judgement concerning who is to be included in the process and how they are to be included. The more inclusive the process, the more widely accepted will be the eventual policies. However, there is a trade off between the extent of the inclusivity of the process and the length of time it takes to get a policy adopted. But in spite of this unresolved issue, the outcomes of the intervention made a substantial contribution to the strategic priorities of the organization. What is less tangible, but also significant, is the effect of the participatory process, and, in particular, the effect of the interviews and the BCF discussions on the learning of the officials of the organization.

Notwithstanding this evident success, there are, for me, two important problems in using a CST approach in complex and transitory contexts that need further reflection and research.

Firstly, I have argued (Lockett, 2003) that CST requires values clarification and I developed a framework for values clarification (Section 5.1) for this intervention. However, in transitory and complex contexts, where there are ongoing networks of interactions, values cannot be expected to remain static for any significant length of time. Furthermore, espoused values may not necessarily be the drivers of peoples' actions. It may be important, therefore, to go beyond values clarification in CST and incorporate reflections on the process of values formation in any intervention. How this is to be done needs further investigation into the role and formation of values and their dynamic development over time.

Secondly, as a practical consideration, CST claims to be appropriate for complex and changing situations. However, there is a contradiction between the time demands of CST and other participatory action research approaches and the immediate demands that urgent issues place on the schedules of participants at senior levels in the organization. The EKZMW intervention took a long time to complete and it was difficult to keep over-committed senior officials committed and focussed on the process. In this case, the cycle was completed and there were significant outcomes for the organization even though there was the outstanding issue of the process for the development of policies. However, in other interventions that I have worked on (Lockett et. al., 2001; Lockett and Grossenbacher, 2003) the full cycle of the action research process was not completed. Nevertheless, the processes themselves had positive results. Further research should, therefore, investigate cases where the cycles weren't completed to find out what value, if any, the processes themselves added to the organizations and also to understand what impedes the completion of the cycle. This, of course also implies that there exist satisfactory ways of evaluating participatory action research interventions in complex changing contexts. This is a research question in itself!

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APPENDIX 1: LIST OF INTERVIEWEES

Name	Position	Interview date	Ref. code
Balfour, Dave	Ecological Advice Coordinator	11/09/02	DB
Bainbridge, Bill	Wilderness Action Group	05/02/03	BB
Brooks, Martin	Head, Scientific Services	24/08/02	MB
Bukhosini, Sibusiso	Social Ecologist	21/08/02	SB
Buthlezi, Gladman	General Manager, Zululand Region	19/08/02	GB
Cebekhulu (Chief)	Board Member	23/08/02	iC
Clarke, Roseanne	Board Member	09/10/02	RC
Coetzee, Cedric	General Manager, Coastal Region	21/08/02	CC
Dives, John	Officer in Charge, Kenneth Stainbank Reserve	19/08/02	JD
de Jager, Stoffel	Conservator Hunting	30/07/02	SdJ
Elliot, Wayne	Head, Conservation	23/08/02	WE
Ewing, Andrew	Board Member	20/10/02	AE
Gcumisa, Mlindeli	Conservation Partnerships Coordinator	07/08/02	MG
Gcumisa, Mlindeli	Conservation Partnerships Coordinator	16/02/03	MG ii
Goodman, Peter	Coordinator Biodiversity Research	12/03/03	PG
Goodman, Peter	Coordinator Biodiversity Research	02/04/03	PG ii
Grant, Brenda	Board Member	20/02/02	BG
Howells, Bill	Conservation Partnerships Manager, Ukhahlamba	12/08/02	BH
Khoza, Bheki	General Manager, Ukuhlamba Region	30/07/02	BK
McKean, Steve	Resource Ecologist	12/09/02	SM
Mkhize, Khulani	CEO	19/08/02	KM
Ndlovu, Yoliswa	Officer in Charge, Hluhluwe-Imfolozi Park	15/08/02	YN
O'Grady, Janis	Crane Foundation	09/02/03	JG
Player, Ian	Board Member	28/08/02	IP
Porter, Roger	Head, Planning	14/08/02	RP
Potter, Derek	Head, Conservation Partnerships	08/08/02	DP
Potter, Derek	Head, Conservation Partnerships	27/01/03	DP ii
Stewart, Greig	Bergwatch	30/05/02	GS
Taylor, Jim	Wildlife & Environment Society of South Africa	10/02/03	JT
Thompson, Peter	Head, Biodiversity	12/08/02	PT
Thompson, Peter	Head, Biodiversity	30/01/03	PTii
Sutter, Helen	Secretary to the Board	30/07/02	HS
Van Tichelen, Carmen	Senior Technician, South Coast	28/07/02	CVT
Venter, Andrew	Wildlands Trust	01/10/02	AV
Zunckell, Kevin	Maluti-Drakensberg Transfrontier Project	04/02/03	KZ

APPENDIX 2: USE OF INDIGENOUS PLANTS AND/OR PLANT MATERIAL FROM PROTECTED AREAS ^{NBS}

Background and rationale

Requests are frequently received by the KwaZulu-Natal Nature Conservation Service (KwaZulu-Natal NCS) from individuals or organisations in rural communities to harvest or be supplied with, such natural products as wood (for fire-making, building, ornament production) live plants or parts of them (for thatching, basketry, weaving, medicinal purposes).

Where the harvesting of plants or plant resources can make a contribution to the livelihoods of these individuals and communities it will be allowed provided that it does not take place in wilderness areas and provided that it does not compromise the indigenous biodiversity of the protected area. Where harvesting is allowed, it will assist in allaying the perception of neighbouring communities that the existence of Protected Areas has no immediate benefit for them and enabling the people to participate in the planning of the harvesting, and educating people about cultivating and conserving indigenous plants. The NCS can further promote the conservation those species sought after by local communities by promoting the cultivation of these species outside of the Protected Areas; the plant species inside the Protected Areas are a possible source of seeds, suckers and cuttings for such cultivation.

The Policy

A. In Protected Areas or zones of Protected Areas which are categorized as Scientific Reserves (1 (a)) or as Wilderness Areas (1 (b)):

1. No plants or plant materials may be harvested.

B. In all other Protected Areas or zones of Protected Areas (i.e., categories 2-6):

1. The salvaging and/or harvesting of **doomed** plants by potential user groups will be considered. A procedure to guide the consideration is set out in Appendix 1.
2. Where there is an existing sustainable harvest programme with an established scientific and administrative protocol in place, it may be continued provided that it is monitored by the relevant Protected Area authority
3. Where there is no existing programme:
 - a. In the case of non-medicinal plants applications from neighbouring community organizations for the harvesting of plants and/or plant materials, will be considered. (The procedure for considering the applications is set out in Appendix 2.)
 - b. In the case of **medicinal plants** the harvesting of propagation material (seeds, cuttings) only may be considered where the applicants are members of community organisations from neighbouring communities and are also members of a recognised Traditional Healer association. (The procedure is set out in Appendix 3.)

The harvesting of plants and plant materials from Protected Areas is a privilege that may be granted to members of neighbouring communities. This privilege may be withdrawn if such use becomes unsustainable or detrimental to biodiversity conservation in the PA or if such privileges are abused in any way.

CONCLUSION:
**Some Reflections on Methodological Deepening and
Theoretical Extension**

Conclusion: Some Reflections on Methodological Deepening and Theoretical Extension

In this conclusion I reflect on how Critical Systems Practice (CSP), an action research process, may be deepened methodologically.

One of the issues which the use of systems approaches to management of organizations in the South African context needs to be particularly alert to is the tendency in government agencies and parastatals towards skewed distributions of power, despite the rhetoric of participatory democracy. This issue is neither fore-grounded in the introduction nor in any of the papers in this collection. This suggests the need to (re)appraise the usefulness of Ulrich's work for the methodological deepening of my own engagement with CSP.

The validity of the action research process used in the projects described in these papers is another issue to which insufficient attention is given. In this conclusion I simply raise some of the relevant concerns.

1. CRITICAL SYSTEMS THINKING IN POST-APARTHEID SOUTH AFRICA

In the introduction I make the point that the post-Apartheid government of South Africa has developed a plethora of new policies and programs which have implications for all levels of governance and for all sectors of society. This was done with the intention of improving the lives of those who had been dispossessed and disempowered by centuries of colonial and Apartheid rule. However, the lack of organizational and institutional capacity in public services in particular has resulted in a crisis of implementation. It was this crisis that was the catalyst for the three engagements described in papers 1, 2 and 5. Both the value and the shortcomings of these engagements are discussed in these papers. In general it can be justifiably claimed that the use of CST proved to be valuable in the three contexts. However, recent political trends may require a greater alertness to skewed distributions of power in organizations and institutions and therefore the inclusion of an emancipatory emphasis in the use of CST.

In recent years a discernable frustration has been expressed by cabinet ministers and top-ranking government officials with the lack of delivery 'on the ground'. Because of this 'implementation gap' between policy and delivery and because of its (overly) ambitious and idealistic policies, the government is tending to adopt an increasingly authoritarian and

centralising approach to implementation. This tendency has a ‘knock-on effect’ on all state departments and parastatal organizations. This raises sharply the question of the distribution of power within and between these institutions. For example, in the District Health System engagement described in paper 2, we noted that had we considered a wider range of stakeholders than we did, we may have encountered a skewed distribution of power amongst the participants. The fact that we didn’t consider a wider range of stakeholders was a shortcoming of the intervention.

The only CST methodology available for dealing with a skewed distribution of power is Ulrich’s *Critical Systems Heuristics* discussed in the next section.

2. METHODOLOGICAL DEEPENING

In this section I reflect on how the action research process may be deepened methodologically. This reflection is divided into two parts. The first considers the incorporation of Ulrich’s *Critical Systems Heuristics* to address the problem of unequal power relations between the decision-makers of any policy or plan and those affected by the policy/plan. The second part reflects on considerations for validating an action research engagement.

2.1. Considering Ulrich

Ulrich (1988,1994,1996a,1996b,1998,2003) claims that his methodology, *Critical Systems Heuristics* (CSH), can be used by designers of policies and projects as well as the ordinary citizens affected by these policies/projects to reveal the normative content of a proposed policy or project and, in so doing, help answer the question, ‘what ought we to do?’ By ‘normative content’ he means the underlying value assumptions of the policy or project. For Ulrich, all social planning is of public concern. He therefore poses the question,

How can those involved claim rationality for their action even though not all the affected may benefit or agree with the costs imposed upon them, and some may be seriously harmed? How can conflicts of interests between the involved and the affected be resolved with reason? (Ulrich 1988, p.142)

His quest is to make planning as socially rational as possible, by insisting that any policy/plan for improvement should be accepted by both the designers and those affected by it. He proposes that this agreement or consent be secured by the designers through rational dialogue and value clarification with representatives of ‘the affected’, which he calls the ‘witnesses’.

From Churchman (1971, 1979), Ulrich (1983) borrows the idea that the drawing of boundaries, (*a priori* boundary judgments made by policymakers and planners), gives access to the designers' underlying value judgments. His method involves the identification of four social roles involved in any policy/plan and he formulates three questions that should be asked of each role respectively. He claims that this investigation will heuristically¹ expose the boundary judgments, value assumptions and partiality of the policy/plan in question – for interrogation by those affected by it.

We can determine the boundary judgments that are constitutive of social maps and designs if we can give a systematic list of the social actors to whom the planner must refer in order to understand the normative content of his maps and designs. (Ulrich 1994, p.245)

For implementation, he seeks to develop a “practical model of practical discourse” (Ulrich 1988, p.143). He draws on Habermas's (1984) theory of ‘communicative competence’, which includes an understanding of rationality as being dialogical. For Habermas, an ‘ideal speech situation’ would require that the designers of, and those affected by, policies/plans participate equally in a rational dialogue and by so doing reach consensus on the policy/plan. However, Ulrich regards this as “theoretically compelling but pragmatically desperate” (Ulrich 1996, p.172) and suggests that Habermas' ideal speech situation is seldom possible in practice. Instead he claims that CSH can only hope to secure the conditions for undistorted communication by expanding the notions of discourse and civil society (Ulrich, 2003).

Ulrich's method is based on his proposal that in any social planning process there are four social roles (namely, the ‘client’ (or beneficiary), ‘decision-maker’, ‘expert’ and ‘affected’) and he poses three questions for each role. He suggests that decision-makers use his twelve questions self-reflectively to interrogate their own policies/plans. He also encourages decision-makers to test their value assumptions and judgments in dialogue with ordinary citizens affected by the policy/plan. Following Churchman, Ulrich argues that ‘the affected’ are competent to engage in such a dialogue simply by virtue of their being affected. They do not need to be technically literate or communicatively competent (as suggested by Habermas).

¹ For Ulrich the concept of heuristics means the teaching of discovery and the ‘uncovering of objectivist

In concluding, one should note that Ulrich does allow for the eventuality that decision-makers may foreclose any space for rational discussion of policies in which case he advocates the “polemical employment of boundary judgements [which] aims to make visible the operation of power, deception, dogmatism and other non-argumentative means” (Ulrich 1998, p.8). Ulrich, unfortunately, does not explore methods for exposing the deception and dogmatism. Midgley’s (2000) proposal, discussed in paper 3, is that protest and political action may be the only methods for doing so. But as I argued in that paper, such methods should not be regarded as systems methods because that would so broaden the definition of systems approaches as to empty the definition of any specific and useful meaning. This is an issue which needs to be explored further for Ulrich’s ‘polemical’ use of boundary judgements to have any substance.

2.2 Validating an action research engagement

Validation of positivist research is sought through the recoverability of an experimental situation. However, a key ontological assumption of such research is the existence of an ‘objective reality’, an assumption which is not made in the interpretive and critical paradigms. Therefore recoverability is an inappropriate criterion for validating research conducted in these latter two paradigms.

Checkland and Holwell suggest that as an alternative to recoverability attention should be paid to methodological rigour:

Such a declared framework also allows those interested in the research and its outcomes to recover the process by which the results were obtained. (Checkland and Holwell 1998, p.23)

The engagements reported in papers 1, 3 and 5 aimed to achieve this. However, Champion and Stowell (2003) suggest additional validity criteria for action research engagements, which include participation, authority and learning.

Participatory involvement in inquiry and learning is a widely accepted tenet in the literature on action research (Carr and Kemmis, 1986; Checkland and Scholes, 1990; Lather, 1991; Reason, 1994; Whyte, 1991). However, Champion and Stowell raise specific issues regarding participation that have not hitherto been considered in this literature.

The choice of participants, the criteria for inclusion and the reason for non-involvement or exclusion are all matters that can be considered in advance, and this sets a boundary which may alter the inquiry process. (ibid, p.28).

Interestingly, the identification of participants and ‘the excluded’ overlaps with two of Ulrich’s (1994, 1996, 1998) social roles noted above, namely the ‘clients’ (beneficiaries) and the ‘affected’. Ulrich’s questions regarding these roles, asked at the beginning of the process of engagement, could also address these concerns raised by Champion and Stowell (2003) and in so doing enhance the validity of the process.

Secondly, “reflecting upon who authorized, or supported, which elements of the inquiry, and for what purpose, is essential” (Champion and Stowell, 2003, p.30). Again this is could be addressed by Ulrich’s CSH through his insistence on the identification of the ‘decision-maker’ and ‘expert’ roles and his questions regarding these roles. These aspects of CSH would also be incorporated into the beginning of an engagement and applied to the planning process as well as to the research process.

The third issue is that of learning. A central concern of an action research process is clearly that of gaining new knowledge about a situation. Champion and Stowell assume that knowledge is gained by the participants, but to ensure that the acquisition of knowledge is as effective and explicit as possible, they recommend that space should be created for regular dialogue between the researcher (‘expert’) and the other participants (‘decision-makers’ and ‘clients’). However, they point out that such dialogues are not sufficiently inclusive – they do not include people in the wider environment. To be more inclusive, they recommend careful attention to recording the outcomes, as well as the “various aspects of permissions and assumptions” (ibid., p.30), and that these records be made available to the people in the wider environment which include Ulrich’s ‘affected’.

In summary, the methodology of future action research engagements undertaken by myself could be deepened by incorporating Ulrich’s CSH in cases of skewed power distribution and the validity of such engagements could be enhanced by considering the recommendations by Champion and Stowell.

3. THEORETICAL EXTENSION: MANAGING COMPLEXITY

In the introduction to paper 5, I point out the (accepted) value of CSP in the management of complex organizations. However, the use of CST at the interface of social and ecological systems has not been explored.

The management of natural ecosystems is becoming an increasingly complex undertaking. The management of protected areas (PAs) such as national parks already provides significant challenges and these challenges are amplified by Transboundary Conservation Areas (TCAs) of which there are increasing numbers throughout the world including southern Africa.

Explorations in the attempt to understand and manage PAs, TCAs and other contexts in which large scale ecosystems are involved have recently generated novel approaches and concepts clustered around adaptive management (Holling, 1978; Salafsky *et al.*, 2000), understanding the resilience of ecosystems (Gunderson and Pritchard, 2002), the link between social and ecosystems (Berkes and Folke, 1998; Gunderson and Holling, 2002; Gunderson *et al.*, 1995). Gunderson and Holling develop the notion of *panarchy* (the word is derived from the Greek god (Pan) of forests/nature who has a spirited personality!) to describe the adaptive, interactive and evolutionary characteristics of complex natural systems. The panarchy concept is used to describe natural succession which Gunderson and Holling suggest is best conceptualized as a hierarchical nesting, across scales, of four stage cycles involving exploitation, conservation, release and reorganization². This panarchy model provides a promising heuristic that could be applied to enhance the (co)adaptive management (Ruitenbeek and Cartier, 2001) of social-natural systems. CST could contribute to this endeavour through its methodologically pluralist approach and through its emphasis on the importance of boundary judgements and the values underpinning these.

² This is based on an eco-cycle model first proposed by Holling (1987)

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