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J I (Anneke) Muller, School of Public Management & Planning, University of Stellenbosch

jimuller@sun.ac.za (021) 887 1944 (H) (021) 808 149 (W) 083 5204094 (C)

A learning developmental state for a Sustainable South Africa

Abstract

Sustainable Development can mean diverse and even contradictory things to different people. This lack of a fixed meaning and inherent tensions need not be perceived as problems, but rather as energising features that can stimulate the development of deeper meaning regarding the concept. Some of the most important interpretations of the notion of sustainability are the need for radical change in the way we do things, which requires continual innovation, creativity and learning. The main themes around which learning has to take place, is the search for new ways of human progress and well-being, shared by all on the planet, without destroying the natural environment and other species, as the basis of human survival. The urgency and complexity of the planet's present intertwined problems necessitate speeding up the process of adaptation and innovation and a focus on inter-, multi and trans-disciplinary learning, with inputs by theoretical and practical experts, decision-makers and communities, in participatory processes. The role of learning organisations, learning regions and learning cities in this learning process then become very important and in South Africa there is a need for the emergent and immature development state to be part of this culture of learning for sustainability. This paper investigates the specific South African challenges that need to be addressed by the development state in the search for sustainability, and the lessons that can be learnt from the latest thinking about knowledge- policy-action links; sustainability and post normal science, and concepts of transition management, adaptive management and governance; learning organisations, learning regions or cities.

A learning developmental state for a sustainable South Africa

Introduction: The Concept of Sustainable Development

Be the change you want to see (Mahatma Gandhi)

The present real-world challenges require dealing with poverty, inequality, food insecurity, exponential population growth; pandemic health problems such as avian and swine flues, HIV/AIDS; conflict and violence; human-induced climate change and its effects, resource scarcities, environmental destruction through habitat destruction, loss of biodiversity, chemical poisons, pollution and wastes, as well as crises in economic and financial institutions and in states. These challenges are interlinked, complex and 'wicked', requiring some form of integrated solutions (or at least looking at the relationships and interactions between these challenges). The main challenges that need to be addressed are the search for new ways of human progress and well-being, shared by all on the planet, without further destruction of the natural environments as the basis of human survival. In the developing world, the present focus on material progress to the exclusion of almost anything else, seem to be based on a misguided belief that environmental problems can wait to be resolved until after the poverty problem has been eliminated; but we don't have that luxury. Sustainable development requires that we address all these challenges simultaneously. The present mainly economic focus should be replaced with a focus on public values (Moore, 2003) such as improved well-being, equity, justice, freedom and participatory democracy, which also embraces the environment, seeing humans as inexplicitly part of ecosystems in social-ecological systems (Walker et, 2006; Man in Biosphere Madrid Action Plan, 2008). This requires the linking of a humanist agenda with ecological thinking, which are some of the possible values underlying the concept of sustainable development. It also calls for a balancing of modernist and Enlightenment notions of progress versus post-modern critiques of the hidden power relationships, tensions and structures that thwart our dreams of the future.

The concept of sustainable development is also often used as an empty buzzword, jargon or spin. It should be noted that it does not have a fixed meaning and may mean very many different and even contradictory things to different people. Hattingh (2002) has identified a whole range of different interpretations of the concept and refers to the work of Michael Jacobs (1999: 25 -31, as cited in Hattingh, 2002: 21), who uses the idea of fault lines to illustrate the internal tensions within the concept. Along these different fault lines or fractures, polar opposite, even competing conceptions or interpretations of sustainability can be found, as well as a continuum of other possible positions in-between. Different combinations of these opposite views can be used to create models, such as the conservative and radical models. Swilling (2006) refers to this inventory of possible interpretations of sustainability as the sustainability matrix. Table 1 illustrates the sustainability matrix based on the work of Jacobs and Hattingh.

TABLE 1: THE SUSTAINABILITY MATRIX

Conservative model	**Radical model**
Narrow	Broad
Weak (natural capital can be substituted by other forms of capital)	Strong (natural capital cannot be substituted)
Non-egalitarian	Egalitarian (Inter & inter –generational, as well as interspecies)
Minimalist (survival)	Robust (also Quality of Life, integrity of nature)
Top-down	Bottom-up

Adapted from Hattingh, 2002 (following Jacobs, 1999: 25 -31 & 38)

However, there is a whole range of further opposite forces that could be added to the above table. These dialectical contradictions, inner tensions, opposing ideas or ideological divides, in relation to types of knowledge, development processes and issues, relationships and policy options, are all issues that need attention in our creation of meaning in relation to the concept of sustainable development (Huckle, 2004: 37). Table 2 illustrates some of these additional tensions.

TABLE 2: FURTHER TENSIONS AND CONTRADICTIONS IN RELATION TO SUSTAINABILITY

Strong anthropocentric or human centred (vs weak or enlightened anthropocentrism)	Zoocentric (animal centred), ecocentric (nature centred)
Shallow	Deep, spiritual (deep ecology), the sacred
Growth (business-as-usual), dematerialisation of growth, decoupling growth from resource use (circular economy and 3 R's of reduce, reuse & recycle)	Slow growth, no growth (only Quality of Life improvements), contraction
Negative and potentially destructive (critical theory); fear of corruption & rent-seeking (self-interest); malevolent, pessimism about addressing power imbalances (Foucault)	Positive and constructive (appreciative inquiry); benevolent, idealistic, public value, optimism about addressing power imbalances (Habermas)
Boundary of negativity (beyond postmodernism)	Boundary of boredom (beyond positivism) (Patomäki & Wright, 2000)
Post-modern criticisms, extreme views of postmodernism as nihilism	Modernists and Enlightenment views on progress
Tradition, status quo	Progress, change
Analytical – breaking problem down into parts; separation of knowledge into disciplines, policy areas, distinct and separate planning steps, roles; simplification, reductionism, exclusion of elements	Holistic, inclusiveness, mixing and merging of planning steps and role; complexity thinking, simultaneous satisfiers of needs (Max-Neef)
Knowledge fixed for all times, all knowledge available, overconfident of knowing, fear of mistakes	Knowledge seem as provisional, transitional, continually adapting & changing, learning from mistakes, understanding human limitations
Expert knowledge, formal	Community, local & indigenous knowledge, informal
Technical, scientific, managerial solutions and knowledge (development as things & stuff)	Human development (development as relationships, dignity, empowerment, knowledge, capacity)
Ideology	Pragmatism, critical pragmatism
Ideational, mind, ideas, values	Material, matter, facts
Chaos, disorder, entropy, dynamic equilibrium, energy	Order, equilibrium, static , extinction
Little strands, pilot projects, experiments, situational	Big picture, mainstreaming, scaling up, more systemic, pulling strands together, universal
Coercion, authoritarianism, Autocracy, top-down, hierarchy, centralise	Freedom, liberalism, critical liberalism, Democracy, bottom-up, networking, decentralise
Hegemony, empire-building, centralisation of power, central control	Diffusion of power, steering, nudging, guiding from the centre, participation
Nationalisation, public ownership	Privatisation, private ownership, contracting out,
Structure, external, outside influences, forces obstructing, Passive, waiting for others to provide or blame	Human agency, 'illusion of agency', individual power, active, taking charge of own destiny
Public, collective (i.e. in freedom, rights), communalism, socialism, socialization, social capital, social connections, public value	Private, individualism, maximum, freedom, public choice
One way, the right way, universality, one-size-fits-all solutions, dogma, ideology, destruction of other ways	Diversity of opinions, expressions, cultures, religions, languages, accepting pluralism, situated theories
Pro-business; pro-status quo, economic freedom more important than equity	Pro-poor (tilting institutions & policies towards the poor), pro-change, progressive
Programmatic design (fixed, pre-planned, no space for change)	Non-programmatic design (space for individual creativity and change)

Competition (selfishness), Losers, winners & losers, zero sum solutions	Cooperation, collaboration, winners, win-win solutions
Conflict, disagreements	Reconciliation, peace, suppressing conflict and disagreement
Business for individual and shareholder profit, companies	Business for social and group or stakeholder benefit, social economics, time-banking, collectives

The diversity of meanings and opinions around sustainability sometimes ignore that there are some inherent, non-negotiable elements of the concept, namely the importance of the environment, a longer term view of problems; some element of equity (intergenerational, but also intra-generational and even inter species equity) and the linkages between social, economic, environmental, as well as institutional and built environment (including technological) challenges (Allen & You, 2002: 16 - 17). Sustainable development has been described as linking green, brown and red agenda issues (Cock, 2004, as cited in Muller, 2006), but essentially sustainability is about making connections between ideas and people (Muller, 2006).

According to Basarab Nicolescu (Voss, 2001) the answer lies in neither of these opposing sides (either/or 'binary logic'), but in some form of 'included middle'. The lack of fixed meaning and inherent tensions should also not be viewed as problems, but rather as energising features that could stimulate the development of deeper meaning regarding the concept. The requirement is that this social construction of meaning regarding the public value (Moore, 2003; Pattakos, 2004) of sustainable development, should include public processes of learning together through debate and deliberation, where the diversity of opposing views can be questioned, reflected on and explored, within various contexts (such as planning or policy[1] processes). These participatory processes also need a focus on interdisciplinary, multi-disciplinary and trans-disciplinary learning with inputs by communities, theoretical and practical experts, politicians, decision-makers, and various civil society and public organisations.

Some of the most important interpretations of sustainable development are the need for radical behavioural, institutional and policy changes and to re-create the way we think and behave,

[1] In this paper, the concept 'policy' is used to also include the making of laws and regulations.

requiring making mental and paradigm shifts, unlearning, continual innovation, creativity and co-learning. It also draws attention to the role of adaptation, change and transition management (Shove & Walker, 2007; Rotmans & Kemp, 2008) and of learning organisations (Senge, 1990).

The present time of change in the world and in South Africa is the ideal opportunity to reflect on development, the developmental state and the role of planning and the state in promoting a more sustainable future. Globally the recent financial crises and their effect on economic development, have made many question the neo-liberal ideology, which lead to the rolling back of the state. There also seem to be some fresh energy within the present South African government era, with the opening up of policy debates, the new focus on the developmental state and the soon to be established national planning commission (Rep of SA, 2009). Hopefully this is the start of an era of more transparency, openness and participation in policy processes.

The rest of the paper will address the role of the developmental state and planning; especially in relation to complexity and systems thinking; what it means to learn for sustainability, lessons from the literature on the knowledge-policy-action interface and from the concepts of learning organisations, learning regions, learning cities and adaptive resource management. The preconditions and requirements to becoming a learning developmental state will be examined and applied to the South African context, especially focussing on the Medium Term Strategic Framework of July (Rep of SA, 2009). The paper concludes with some lessons for the South African developmental state.

The Developmental State and Development Planning

The capitalist developmental state is a concept that has a long history (Japan, Brazil, South Korea, India, Turkey, Chile), with some failures, a couple of spectacular successes and a whole lot of unintended consequences (Chibber, 2005: 244). The purpose of these developmental states was to promote economic development and industrialisation, originally through import-substitution and

later also export-led industrialisation, using tools such as subsidies, cheap loans, tax breaks, tariffs, provision of infrastructure, education and training, as well as planning, industrial policy, national economic councils, state owned enterprises and national planning committees. The focus was on directing private investments into those sectors which would promote longer term growth and higher social returns, rather than in those bringing high short term private profits for industrialists (Chibber, 2005: 229).

The negative economic experiences of countries under the neo-liberal hegemony of the Washington Consensus have made the developmental state popular again in Latin-America and also in South Africa (Freund, 2006; Chibber, 2005; Jayasurya, 2005; Meth, 2007). However, the original or classic developmental states have been described as "an artefact of a particular Cold War- and Bretton Woods-based regime of international governance" (Jayasuriya, 2006: 383). The context is now very different and it would therefore be imprudent to focus too much on looking at past examples. Instead the focus should be on the specific challenges of the present era and creating a developmental state concept that is adapted to the specific international and South African contexts, in the light of complexity, diversity, uncertainty and skills shortages, as well as the global environmental challenge.

Jayasuriya (2006: 383) also reminds us that even "the state is not an 'entity', but a complex and constituted **set of relationships** between frameworks of political authority and the international political economy, domestic social forces, and the broader ideational notions of authority or stateness" (my emphasis). This focus on relationships brings to the fore the tension between the role of the state and building out the freedom of civil society, communities and the business sector. It has already become clear that rolling back the state can be blamed for some of the present problems experienced in South Africa, but too centralised a state can also be blamed on not recognising and supporting the creativity of and need for participation by communities. The recent and earlier waves of strikes and service delivery protests, as well as the "very high levels of anomie (people like me

cannot influence developments in my community) and alienation (no-one cares about people like me)" found in a 2006 study, are examples (Meth, 2007: 95).

One of the main implements of the developmental state is that of development planning, which can also potentially have many different meanings. In the South African context it is seen as a form of technical or rational planning (Rep of SA, 2009: 40), following in the footsteps of most of the developmental states. The July 2009 Medium Term Strategic Framework (Rep of SA, 2009) talks about improving the capacity of state, the need for medium and long time planning, and also makes liberal use of the popular concepts of 'accountability', 'transparency' and 'effectiveness', but with no details on how this will be achieved.

Pro-active planning, as the opposite of ad hoc and crisis management (muddling through), is indeed an important element of promoting sustainable development. A longer–term view of problems is necessary, as solutions to earlier problems end up becoming the problems of the future, as we unknowingly shift problems from one part of the system to another (Senge, 1990: 58). We should also start addressing the structural causes of unsustainability instead of dealing with the symptoms. Brewer (2007: 165) points to the critical need to increase lead (or response) times through planning, "the time between the present and when in the future the system can still be forecast" (Brewer, 2007: 165).

According to Senge (1990: 71) conventional forecasting, planning and analysis is not equipped to deal with complexity. Brewer (2007) agrees that we might not always be able to predict the future in complex systems, but there is always the possibility of human agency, by inventing, making [and even remaking] the future. He addresses the various ways in which we can potentially deal with uncertainty and complexity, including the role of forecasting, modelling, collecting information and generating and testing alternatives in the planning process (Brewer, 2007: 161 & 162). It is important in these processes that new and tested 'scientific' knowledge also enters the planning arena. The example of the very participatory Swedish local agenda 21 (LA21) plans, can be

mentioned here, which ended up having a lack of sustainability content, and were also ignored by the National level in their funding decisions (Eckerberg in Lafferty, 2001).

Planning for sustainable development is however, quite different from planning for economic development, and would require more integrated planning. On the other hand, technical, rational planning processes have their limits and have to take note of complexity, uncertainty, diversity, the fact that knowledge is socially constructed and the role of power in these processes. Over time a variety of alternatives to the rational-comprehensive planning model have developed, namely procedural models (such as incrementalism, mixed scanning, implementation orientated planning, strategic planning, post-modern strategic planning (Williams, 2002), the practice movement); normative models (equity planning, advocacy planning); critical pragmatist, radical political economy (Marxist), collaborative and communicative planning (called 'planning through debate' by Patsy Healey and also known under the name 'critical planning theory' (Mäntysalo, 2002: 417)) and a whole range of other progressive movements which Leonie Sandercock (1998) calls radical planning. Lawrence (2000) classified these planning models into 5 categories, namely rationalism, pragmatism, socio-ecological idealism (SEI), political-economic mobilization (PEM), and communication and collaboration (CC).

Planning is inherently political and politics is the interface where the different views and values and tensions mentioned in Tables 1 and 2 are negotiated. Planning is therefore also the interface where the state, civil society, communities and business society can invent and create the future together. This makes public participation a very important aspect of planning, but it must be seen as something more than an instrumental process to get a plan or policy approved. The participation process should be part of a collaborative and communicative process to build social and human capital and relationships within communities as part of human development, and to contribute to the building of civil society networks. Planning needs to address, and not ignore or suppress, the underlying conflict (Muller, 2006: 1056, 1059 & 1060). This can be done by using the creative

potential of difference through exploring and transforming the conflict, as well as the underlying structures leading to the conflict (Auvinen & Kivimäki, 2001).

According to Innes and Booher (1999: 418) collaborative or communicative planning is "grounded in the theory of communicative rationality as developed by Habermas (1981, 1989)". This process of making sense together requires the creation of arenas and rules for deliberation, as set out in 10 propositions of collaborative planning by Healey (1992: 154). It should also be remembered that communicative rationality is "a set of ideal conditions for discourse", as a template against which to measure communicative practice, which is often not achieved in practice (Innes & Booher, 1999: 418). A whole series of criticisms of communicative rationality and the possibilities of consensus, based on the role of power and the work of Michel Foucault, have also seen the light (Flyvbjerg, 1998; Mäntysalo, 2002: 418).

Complexity and systems thinking and transition management of complex systems

Sustainable development requires us to look at complex and interlinked challenges, where the context is that of complexity, rapid change, diversity and uncertainty (the postmodern or post postmodern era). The concepts of systems theory or thinking, as well as complexity theory or thinking therefore become very relevant here. Systems theory can be described as models or approaches for understanding and solving problems, where problems are seen as parts of a bigger system, and the parts are understood in terms of relationships and flows of energy, information and materials. Of specific interest are the concepts of soft systems (those humans are part of) and evolutionary systems (dynamic, evolving systems, integrating critical systems inquiry into evolving soft systems).

Complexity theory is a "simplistic title for a broad range of non-linear, complex and chaotic systems theories", which Geyer (2003: 1) describes as first emerging in physics, then studied in weather patterns, fluid dynamics, Boolean networks, and other physical sciences, before it spread over to the biotic world (biology, genetics, environmental science and physiology). Complexity

theory reveals that all phenomena are not as reducible, predictable, orderly or deterministic as originally (or still) thought. According to Colin Hay (2002: 227, as cited in Geyer, 2003: 8) the relational postmodernist position is viewed as standing in opposition to the traditional orderly and modernist position. Geyer (2003: 10) views complexity theory as a bridge between these two opposing positions, as is shown in Table 3. He point to it as a new developing meta-theory for the social sciences, which can be used in researching civil society as a complex adaptive system, which is "an essential element in the "symbiotic competition" between the state and market which enables all three systems to successfully evolve and adapt to the ever-changing ...political economy...As any complex system, in order to thrive, it must find the zone of creative complexity between stultifying order and destructive disorder" (Geyer, 2003: 12).

TABLE 3: POSITIONS OF MODERN, COMPLEXITY AND POST-MODERN SCIENCE

Source: Geyer, 2003: 10 & 11

Modern	Complexity	Postmodern
Epistemological position		
Order	Partial order	Relational
Rationality	Bounded rationality	Relational rationality
Predictability	Predictability and uncertainty	Unpredictable
Reductionism	Reductionism and holism	Irreducible
Determinism	Probablistic and emergent	Indeterminate
Non-interpretive	Interpretive	Relational interpretation
Relation of physical and social sciences		
Subservient/inferiority relationship. Social science must strive to duplicate methods and results of physical science.	Integrative relationship. No necessary separation between physical and social sciences.	No clear relationship exists. Relational and interpretative nature of humanity makes clear relationship difficult.
Relation of humanity to nature		
Expanding human dominance over nature	Holistic interpretation of human and natural symbiotic co-evolution	Unclear relational distinction between humans and nature
Methodological implications		
Experimentation, quantification and search for fundamental laws	Integration of experimentation and interpretation. Fundamental laws and distinctive outcomes	Relational interpretations and undermining truth claims
Vision of Progress		
There are no inherent limits to human knowledge and progress.	Significant limits to knowledge and progress due to complexity and uncertainty.	No fundamental order. Pure knowledge creation and progress is impossible to know.

History is progressive, cumulative, and leads to an ultimate end.		History may progress and display fundamental patterns, but it is also uncertain and tortuous		History is relational hence it does not universally progress.
Range of outcomes for Complexity Theory				
Order	Stifling Order	Creative Complexity	Destructive Disorder	Chaos

Paul Cilliers (2000) describes the general characteristics of complex systems as consisting of a large number of components or elements (which on their own can be simple), with rich and dynamic non-linear interactions and direct and indirect feedback loops. Complex systems are open and far from equilibrium. They have memory and history distributed throughout the system and the behaviour of the system is determined by this history, and by the nature of the interactions and relationships (competitive or cooperative) between the components. The concept of emergence relates to the fact that these systems can adapt, by reorganising their internal structure without the intervention of an external agent. Brewer (2007: 165) builds on this and suggests that it is important for the resilience of complex systems to "resist central authorities' predictions and direction of outcomes". What is needed for resilience is the encouragement of "a diversity of views, values, and social institutional forms", as well as "multiple pathways to objectives, tolerance for ambiguity and risk, and a heightened appreciation for diverse evolutionary possibilities in biological as well as social terms" (Brewer, 2007: 165).

According to Innes & Booher (1999: 417) complex systems are learning systems that "mimic organisms in their behaviour in uncertain, changing environments...an organism can adapt and change in response to information it gathers from its environment. It develops new activities and evolves as it "learns" about that environment". They also describe the circumstances under which productive patterns emerge and relate that to the possible role collaborative and consensus building exercises can play in promoting the flow of information:

> *"A complex adaptive system emerges in nature when the environment is unstable, but not completely chaotic. Stable environments lead to systems in equilibrium, which are not likely to adapt if major changes occur. In chaotic environments, systems cannot find*

> *productive patterns. At the edge of chaos – a good analogy to the current period of social transformation – innovation and dramatic shifts in activity patterns can occur, and systems can move to higher levels of performance. Such innovation, however, depends on information flows through linked networks of agents. Consensus building can provide such links and help participants to do their individual parts in the larger system" (Innes & Booher, 1999: 417).*

Sustainable development is about change and transformation at various levels, from the need for changes in technology, urban form, having to adapt to climate change and the need to change our behaviour in relation to consumption, waste and land development. Planning and policy-making processes are therefore important arenas for this change, but must take note of complexity thinking. Much has been written about change and transformation management and processes for sustainability, which are particularly popular in the Netherlands and Belgium. In the business world a lot has been written about transformation as well. John Kotter (1995 & 2007) is well-known for his 8 step transformation process, which requires the creation of a sense of urgency; building a powerful guiding coalition or team; getting the vision right; communicating the vision for buy-in and teaching new behaviour by example of the guiding coalition; empowering others to act on the vision; planning for and creating short term wins; consolidating and creating more improvements and institutionalising these new approaches as part of a company's culture. These elements are as important for public transformation processes, but the vision and guiding coalition should be shared by communities, civil society organisations, and the business sector, as well as the various elements of the state and state owned enterprises. This type of consensus is not easy, and often leads to shallow and superficial agreements.

Shove & Walker (2007: 768) also caution us that there are no neat and simple processes of transformation, and even if such dynamic, multi-actor, multi-factor and multilevel, extremely complex transitions could be managed (which they doubt), there are many issues that make the chances of success extremely unlikely, such as the politics of who decides, who benefits and who loses, which "drivers offer the best leverage for guiding change in a desirable direction"; "how to

engineer the death of undesirable systems" and technologies, as well as how to measure change. They do support co-evolutionary models of social and environmental change for sustainability, but they also quote Bauman (1991: 267) that "remaking society by design may only make it worse than it was". On the other hand, they agree with "Rip (2006) in recognising the value, productivity, and everyday necessity of **an `illusion of agency',** and of the working expectation that a difference can be made even in the face of so much evidence to the contrary" (Shove & Walker, 2007: 768; my emphasis).

In answer to these criticisms, Rotmans & Kemp (2008: 1006 & 1007) argue that transition management should not be seen as a form of social engineering, top-down steering or blueprint planning. According to them it is a model of "coevolutionary management of transformative change in societal systems", as well as a "governance concept for exploring new paths in a reflexive manner", in a continual, cyclical, complex adaptive, non-linear process of creating spaces for different activities and for entrepreneurs and front runners to contribute; building visions and joint agendas, long term goals, bottom-up development; finding appropriate instruments and incentives, searching, exploring innovations, experimenting, learning, adjusting, adapting, making use of "`darwinististic' processes of variation and selection". They believe that power is distributed over many public and private role-players playing "a particular role in the transition game", with different interests, belief-systems, and resources, and in various roles – strategic, political, advisory, critiquing and monitoring. There is no clear hierarchy or management structure or specific transformation managers. According to Rotmans & Kemp (2008: 1007 "[i]t involves negotiated processes by a multitude of actors, each with their own interests and beliefs, but connected with each other in various ways".

Learning for Sustainability

It seems that learning is therefore a very important element of complex systems. Senge (cited in Fulmer & Keys, 1998: 35) define learning as "the ability to enhance one's capacity to accomplish

something one really cares about". Learning is equivalent to discovering, building and creating new knowledge, sharing and spreading existing knowledge (replication, dissemination), adapting and linking knowledge, and re-using it in new ways, understanding it and the values underlying it. Learning happens through formal and informal processes, and also comes about through experience, making mistakes, disagreeing, questioning, reflecting and even dreaming (Hamel, undated & 2004; Muller, 2009). According to De Beer (2007: 229) "[l]earning proceeds not through linear progression but through breakthroughs, leaps, discontinuities regressions, and deferred action".

A part of adult education is to promote personal and professional growth, service or experiential learning, learning-by-doing and life-long learning. Learners "need to be engaged on many levels", such as the "emotional, physical, spiritual and cognitive" (McLeod, 1996, as cited in Muller, 2009). Keeping a learning or a research journal can play an important part in these processes and can help learners and professionals "grow in understanding and responsibility" (Grauerholz, 2003: 44). Deep, rather than shallow learning has to be promoted. Deep learning is based on critical thinking about facts and other's opinions; engaging with experiences in questioning ways; looking for underlying meanings, using analytical skills, cross-referencing, imaginative reconstruction and independent and reflective thinking. Deep learning is transformational, moving beyond intellectual development, to also includes physical, spiritual, emotional, aesthetic and moral growth. It is engagement of both the left and right brains, combining logical-rational with the emotional and intuitive (Bourner, 2003: 271; Korgel, 2002; Henning, 2002; Grauerholz, 2003; Warburton, 2003, Muller, 2009).

Learning also takes place in collaborative processes. Innes and Booher (1999: 418) observe that communicative rationality has the potential of creating emancipatory knowledge through dialogue, and that this type of knowledge is very important in times of rapid change. They define emancipatory knowledge as "knowledge that goes beyond the self-fulfilling rationalizations that societies develop", and that "transcends the blinders created by our conditions and institutions".

Knowledge-Policy-Action Interface

Planning and policy making should thus be seen as knowledge building and social learning processes under complexity , based on the view that answers with regard to sustainability do not already exist, but have to be created and invented, as well as re-created and re-invented (out of older knowledge). There is therefore a need to link knowledge creation processes with policy processes and with action and implementation, the so-called knowledge-policy-action interface (Barret & Fudge, 1981; Knight et al, 2008). As knowledge is also a driver in the 'knowledge economy', the linkages also need to include the business sector (as in the promotion of new technologies for sustainability). In addition, knowledge is no longer seen as being created mainly in academia or only through science, research or design. According to Serres (1997: 100; as cited in De Beer, 2007: 229) a lot of creativity lies in the discoveries 'beyond method'. Knowledge is more than science, and science has even lost its position as the highest form of knowledge. According to Serres (1975, as cited in De Beer, 2007: 231) "there is more myth in science than we are inclined to accept and more knowledge in myth or fiction than we are ready to agree to".

The meaning of the concept of science is also undergoing change in trying to solve present interrelated real-world challenges, such as sustainability, as shown in Table 4. A variety of relevant positions have developed in recent years, such as critical realism (Huckle, 2004; Patomäki & Wright, 2000), ethno-science (Rist & Dahdoub-Guerbas, 2006), sustainability science (Burns et al, 2006), post normal and mode-2 science (Müller, 2003), and transdisciplinarity (Nicolescu; 2001; Voss, 2001). In addition, some older research approaches are also very relevant in relation to sustainability, such as participatory research, action research and participatory action research, and postmodern enquiry through deconstruction and discourse analysis. Participatory action research illustrates that in the context of complexity, steps and roles tend to mix and merge, and the knowledge-building, policy-making processes and action or implementation can become fused (as in pilot projects and adaptive resource management).

Warburton (2003: 44) believes that "systems thinking and an interdisciplinary/ transdisciplinary approach can be seen as essential themes of sustainable development and education". Various studies have tried to define the meaning of inter-, multi-, pluri- and transdisciplinary knowledge (Tress, Tress & Fry, 2006: 16; Max-Neef, 2005). Tress et al (2006) describes transdisciplinary knowledge as integrated knowledge and theory that cross disciplinary, as well as scientific/academic boundaries and include non-academic participants (society) in the process of common goal-setting and knowledge-building. Nicolescu (2001, in the words of Voss, 2001) believes that "approaching problems in a transdisciplinary way enables one to move beyond dichotomized thinking, into the space that lies beyond". De Beer (2007: 229) also points us towards the "valid and highly significant knowledge that emerge in the spaces between disciplines, outside disciplinary boundaries, and independent of specific disciplines". In order to promote transdisciplinarity, learners must be taught to make connections between social, political, economic, biological and physical dimensions and to make use of more holistic ways of thinking (Warburton, 2003: 44; Grauerholz, 2001: 44, Muller, 2009). However, Ulrich Beck (1992: 30; as cited in Cashmore, 2004: 413) reminds us that "scientific rationality without social rationality remains empty, but [that] social rationality without scientific rationality remains blind". The traditional, separate, rigorous processes of disciplinary peer-review and quality control processes of the past also have to be adapted to these new forms of transdisciplinary science (Marmorek et al, 2006: 51).

TABLE 4: NEW FORMS OF SCIENCE FOR SUSTAINABILITY

Name	**Normal science; Mode 1 science**	**Post-normal science; Mode 2 science**
Examples	Separate disciplinary science (especially between social & natural sciences); basic research, Mode 1 applied science; UNESCO (and SA) scientific organisational structures (separate science councils)	Ecological economics, sustainability science; ethnosciences; Synthesiology[2] ; Goals of the 1999 UNESCO World Conference on Science, critical realism
Goals	Search for objective truths; knowledge seen as value-free; traditional scientific approach of hypothesis formulation, observation, verification, understanding and prediction Discover and apply facts in well-defined & confined settings, governed by special	Enriched cognitive basis of extended facts; multiple epistemologies (includes subjective beliefs and feelings & alternative knowledge systems); awareness of normal assumptions, values, goals & limits of knowledge; self-reflexivity

[2] Synthesiology is a design theory, "the theory of integration of scientific and technological knowledge from different disciplines with the needs of society" (Yoshikawa, 2008)

	academic interests (such as within a discipline)	
Link to application	Difficult to apply to urgent problems, due to uncertain facts, disputed values, far-reaching consequences	Tries to produce useful knowledge in the context of application; use-inspired basic research (Burns et al, 2006); dynamic & evolving framework to guide problem-solving Knowledge immediately useful for policy & management; joint problem identification & solution by stakeholders, through action and social learning; build bridges for dialogue and interaction with potential users, including political institutions, of the knowledge generated
Link to values and ethics	Science seen as value-free Mostly neglected social and ethical/normative (value) issues	Science recognised as not value-free, it has in the past been used to defend opposing views; science must therefore be flexible enough to accommodate different worldviews, values and types of knowledge
Views of knowledge and learning	Puzzle-solving in separate disciplines; interdisciplinary in limited sense; Learning as a linear process , building on prior peer-reviewed knowledge Focus on knowing, prediction and control	Trans-disciplinarity; extended peer communities, including traditional, indigenous, local & lay knowledge, citizen science Constructivist/constructionist approach; socially distributed knowledge Emphasis on learning and adaptation of complex systems, building social and natural resilience (the capacity of a system to absorb disturbance, including major shocks, and adapt to change so as still to retain the same function, structure and identity)
Dissemination of knowledge	Conference proceedings, peer-reviewed disciplinary journals	Openness; open access repositories, free online access, websites (problem of quality control); trans-disciplinary journals, wide publishing of scientific findings; raw data made available for different interpretations and alternative hypotheses thereof

Sources: Mainly based on Müller, 2003; also on Burns et al, 2006; Rist & Dahdoub-Guebas, 2006; Marmorek et al, 2006: 51 & 67, Moll, 2007; Huckle, 2004; Patomäki & Wright, 2000; Yoshikawa, 2008; Welcome Trust, 2009

Foucault reminds us that knowledge is power (Flyvbjerg, 1998), and in a 'knowledge economy' it seems the competition for the control of this knowledge can be quite intensive. Robin Broad (2007) studied the biased and paradigm- maintaining knowledge promoted by the World Bank, which has since 1996 transformed itself into a 'knowledge bank' and created one of the world's largest development research bodies. He discusses the various methods used by the bank in performing "its paradigm-maintenance role by privileging knowledge producers and knowledge that 'resonate' with the neo-liberal globalisation ideology" (Broad, 2007: 702). This includes incentives to increase a person's chances of getting hired, promoted, assessed positively, and of being published and endorsed by the Bank's External Affairs department, as well as other methods to discourage debate and "dissonant discourse and even manipulate the data to fit the paradigm". Broad (2007: 708)

believes the goal should be "to stimulate a more diverse development debate", by support "multiple and diverse independent research institutions, especially in the South". Paradigm maintenance is the opposite of learning and innovation. Learning for sustainability under complexity requires diverse routes of enquiry, not the control of knowledge by powerful institutions like these.

Lessons from learning organisations, learning regions, learning cities and adaptive resource management

The role of learning organisations, learning regions, learning cities (or learning communities) as well as adaptive resource management is very important in this learning process for public service and development planning in South Africa. There is a need for our embryonic developmental state to become part of this learning and innovation culture and to focus this learning towards sustainable development. In the words of Senge (1990: 3):

> *"We can then build "learning organizations," organizations where people continually expand their capacity to create the results they truly desire, where new and expansive pattern of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together".*

The concept of a learning organisation has a history that dates back nearly 40 years, with contributions by Churchman in 1971; Schön in 1974, Argyris and Schön in 1978, Schein on organisational culture and learning in 1985, Senge in 1990, Porter on competitiveness in 1990 and Camagni on innovative firms in 1991 and 1995 (Campbell, 2006: 11 & 2009: 196). Peter Senge (1990) based his influential book 'The Fifth Discipline: The Art & Practice of The Learning Organization' on the 5 disciplines of systems thinking, shared visions, mental models, team learning (through dialogue) and personal mastery (which he defines as the increased connectedness between people, as well as people and the environment – also called spiritual growth or self-actualisation). From the literature, it seems as if the concept is still quite popular in the business world, but not mentioned as often in relation to the public service. The concepts of learning regions

also seem to be used mostly in relation to the promotion of economic development, while according to Campbell (2006 & 2009) learning cities have developed around a variety of subjects including the more holistic concept of sustainable development. Campbell (2006 & 2009) developed an interesting typology of learning cities, based on the different methods used to learn.

A parallel development to the learning organisation is that of adaptive resource management, also a learning approach developed to try and deal with complexity, interrelated issues, dynamic and rapid change and uncertainty. It tries to lessen the uncertainty through a commitment to learning and innovation and by combining science and management. Stankey, Clark & Bormann (2005: 4 -6) trace the origins of the concept back to scientific management, with influences by various concepts such as total quality management, experimental science, systems theory, industrial ecology, learning organisations and social learning. According to Murray & Marmorek (2003: 2) it "provides a science-based learning process characterized by using outcomes for evaluation and adjustment ("closing the loop")". It is based on a circular process of goal setting, problem assessment and knowledge building, experimental design, implementation, monitoring, evaluation and management adjustment. According to Burns et al (2003: 381) adaptive systems management illustrates a shift from 'objective knowing' to 'learning and adaptation' and from 'prediction and control' to trying to 'understand a system's resilience'. The building of resilience and adaptation are also important elements of research into social- ecological processes of change (Ahmed, 2006; Walker et al, 2006; Man in Biosphere Madrid Action Plan, 2008), where it has been defined as "[r]esilience is related to the magnitude of shock that a system can absorb and still remain within a given state, the self-organization capability of that system, and its capacity for learning and experimentation" (Berkes & Seixas, 2005: 967). Resilience even features in human development, both in personal growth and in groups. According to Pattakos (2004: 101) "building one's coping skills for dealing with stress and change [is] central to Frankl's philosophy and therapeutic approach" and therefore linked to the making of meaning.

Senge (1990: 14) stresses that although there is a need for 'adaptive learning' (or what he calls survival learning), we need to move beyond adaptation to what he calls 'generative learning' – "learning that enhances our capacity to create". This links to what various other authors have suggested, including Brewer (2007) who discusses how to 'invent the future'. These adaptive management processes also seem much less adapted to complexity than the evolutionary transformation systems described by Rotmans & Kemp (2008: 1006 & 1007) earlier in this paper.

There are often barriers that prevent learning within organisations. Senge (1990) and Senge and Kotman (1993) called these barriers 'learning disabilities'. The following list includes the issues they mentioned, as well as problems mentioned by others:

- The system causes its own crisis by the way the structure influences behaviour.
- The system seems unable to adapt as the world around it changes (Fulmer, Gibbs & Keys, 1998: 8).
- People become their positions and their actions affect other positions.
- There are misfits between reality, mental models or frames which can impede learning (Senge, 1990: 176).
- People end up blaming others (and not learning from mistakes); not wanting to admit being wrong or they fall back on habitual ways of thinking and acting.
- People's own proactive behaviour may make matters worse, if they are not aware of the inter-linkages with other parts of the system, due to fragmentation of problem solving.
- Linear thinking, based on cause and effect, can be problematic. Instead, cause and effect should be viewed as causal networks, as suggested by Niemeijer & De Groot (2008).
- A lack of cohesion and identity and an overemphasis on competition rather than on collaboration, might be the problem (Fulmer, Gibbs & Keys, 1998: 8).
- There is a lack of experimentation and a lack of critical reflection, so the system stays unaware of the underlying powers and systemic structures that "generate particular patterns of [behaviour]" (Senge, 1990: 45).
- There is too much top-down learning, for example through knowledge enforcement by conditionality of the World Bank and top-down policies, based on the assumption that all the needed knowledge already exists at the top (Broad, 2007)

- The belief in "best practices", as the opposite of 'adaptive management, is based on the incorrect habit of thinking that there are universal ways to manage (Watson, 2008; Marmorek et al, 2006: 23)
- A focus on 'copy and paste' or 'graft and transplant' of knowledge, as in 'best case practice', without adapting it to the specific context (Hartley & Benington, 2006: 104)
- A focus only on single loop learning (maintenance and shock learning for more efficiency), and nor also on double loop learning and triple loop learning. Double loop learning relates to the examination of structures of thinking and decision-making (Argyris, as cited in Fulmer, Gibbs & Keys, 1998: 10), while triple loop learning is where organisations examine the way they learn, in order to be able to change it (Isaacs, as cited in Fulmer, Gibbs & Keys, 1998: 10).

What is needed for promoting learning by organisations is to address these barriers to learning. Complexity needs to be acknowledged, as well as the fact that some parts of the system might be orderly and predictable and others not (Geyer, 2003). The developmental state will need to promote, support and enhance creativity, innovation and learning as a culture, both within and outside the state. The state also needs to build or contribute to coalitions between various groups, as well as stimulate the political will to support sustainable development. A critical mass to keep learning going, is necessary through the creation and review of institutions, spaces and arenas (policy processes) and pre-conditions to support learning, based on flexibility, transparency and accountability. As in any complex system, "in order to thrive it must find the zone of creative complexity between stultifying order and destructive disorder" (Geyer, 2003: 12). In addition, it should be remembered that what can be learnt and can emerge out of complexity, include 'negative' aspects such as corruption, negativity and crime. The idea is thus to use collaborative visioning and building of meaning to focus energies into what Innes & Booher (1999: 417) call 'productive patterns'.

Although power is diffused in complex systems; that does not mean the state can or should totally abdicate power. It still needs to steer, guide and nudge the system in the 'right' direction (although 'right' is a value judgement which should only be chosen through a democratic and participative process). Too much top-down control can be problematic for a complex system, because it assumes

all knowledge is at the top level (and will probably not work, instead causing unintended consequences). On the other hand, often the nudging might come from another part of the system, such as from civil society (protests or court action) or the business sector (disinvestment).

Meaning needs to be created at national, provincial, local (and individual) levels within the developmental state, by developing shared visions and building knowledge of sustainability as part of existing processes of planning[3] ,but with more focus on the interactions between processes. Learning momentum should focus on local initiatives, as most learning takes place at the coal-face where action and implementation happens. It is here where most of the bugs in the system need to be resolved, and more feedback opportunities (communication) are also needed to get this knowledge to other components of the system.

The power of diversity should be used by exploring diversity and a variety of solutions and paths. Inter-linkages between policies and possibilities of creating synergies between policies (focusing energy in the same direction towards the ultimate vision) also need attention. The concept of integration in relation to the economic, social and environmental spheres is important in relation to sustainability. Max-Neef lists the following human needs "subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom" (Cruz, Stahel & Max-Neef, 2009: 2023) and suggests that we focus on what he calls 'synergic satisfiers', namely those satisfiers "which, by the way in which they satisfy a given [human] need, stimulate and contribute to the simultaneous satisfaction of other needs" (Cruz, Stahel & Max-Neef, 2009: 2024). The purpose is to try and address as many needs and policy goals simultaneously, for example promoting equity, at the same time as building skills, rewarding merit, retaining staff and protecting institutional memory. If we focus too much energy on one component of a complex system, we might create unintended problems with regard to the other elements we are ignoring.

[3] Integrated Development Plans (IDPs), Spatial Developments Plans (SDPs), Growth and Development Strategies (GDS) and Environmental Management Frameworks (EMF)

Ways to use the very progressive South African Bill of Rights should be promoted and explored as a bridge across the trauma of the deeply divided past and a possible equitable, sustainable future, by building a human rights culture (from primary school level upwards). It requires that people be seen as active citizens, that need to be treated with dignity and acknowledging their potential creativity (Ramphele, 2008).

Table 5 below summarises some of the arenas and institutions for learning (with possible adaptations for sustainability) as referred to in the literature.

TABLE 5: INSTITUTIONS AND ARENAS FOR LEARNING ABOUT SUSTAINABILITY

Communities of research and practice (epistemic communities)	Establishing and strengthening dedicated agencies and associations, such as Council for Scientific & Industrial Research (CSIR); Human Science Research Council (HSRC), National Research Foundation (NRF), also promoting new transdisciplinary linkages between these Councils Centres of Excellence, new funding and review mechanisms and institutions to support transdisciplinary research Science needs to be responsive to policy problems - management becomes more scientifically rigorous, and research becomes more policy relevant (Marmorek et al, 2006: 51) Collecting and disseminating information – databases, inventories, websites, e-mail lists, open access journals, newsletters, resource centres at NGOs, e-government, t-government (also using alternatives methods so as not to exclude those that do not have access to technology and electronic means of communication) Linking the communities to the business sector and civil society and policy processes; translating science, information and knowledge into viable new products, services, and production processes in the business world (Benner, 2003) and policies, programmes and projects in public Promotion of seminars, conventions, conferences, workshops, user groups, multi and transdisciplinary teams & work groups, fora, networks and partnerships, such as the World Network of Biosphere Reserves, linked to management of biospheres (and starting to extend this to Urban biospheres and the field of urban management)
Educational institutions	Curriculum greening (and linking environment & social in study of social-ecological systems and their resilience), building the base for lifelong learning & self-learning, deep learning & critical thinking, new programmes like the University of Stellenbosch Transdisciplinary Doctoral Programme in Sustainability Studies Create arenas for interactive learning processes: transdisciplinary centers, forums and ateliers, academic dialogue across disciplines, formal and informal (hallways, tearooms & cafeterias) Promote innovation – pedagogical, transdisciplinary, creation of public

	value meaning International and national Educators Associations, such as Global Planning Educators Interest Group (GPEIG); Global Planning Education Association Network (GPEAN), with 9 regions, including the Association of African Planning Schools (AAPS); ASSADPAM
Industrial Institutions	Technology incubators, science parks, techno parks, design teams, technology transfer and exchange visits; university- industry alliances
Parliamentary and Government Committees	Linking learning communities and wider, more open & transparent policy processes Need to facilitating transfer, dissemination and 'translation' of scientific knowledge, as sometimes the problem is too much, contradictory or too complex information Establish Parliamentary Committees on Science, Technology and Innovation (PCSTI), Interdepartmental Coordination Forums, such as Science, Technology and Innovation Forums (STIF), but with a sustainable development focus
International learning programmes	UN programmes (Habitat, UNEP, Sustainable Cities), UNESCO World Heritage Cities, UNESCO Man in the Biosphere (MAB) Combined programmes (Cities Alliance's Cities without slums), ICLEI Agenda 21 & Sustainable Cities, Better links between these and other programmes
International and national professional organisations	Continuing professional development (CPD), mentoring, International Association of Impact Assessors (IAIA); International Society for City & Regional Planning (ISACARP), International Federation for Housing and Planning (IFHP), Commonwealth Association of Planners (CAP) and linkages Council for the Built Environment, Engineering Council of SA (ECSA), SA Council for Professional and Technical Surveyors (PLATO), SA Institute of Architects (SAIA), SA Council for Planners (SACPLAN), SA Planning Institute (SAPI), Interim Certification Board for Environmental Assessment Practitioners, better linkages between these and other SA organisations "[N]ew generation professionals and practitioners who can serve as diplomats, ambassadors and managers/coordinators for bridging global environmental agendas with national and local development aspirations" (Man in Biosphere Madrid Action Plan, 2008: 2)
Learning regions and cities	Planning processes (IDPs, spatial plans, sectoral plans) Dedicated agencies, city clusters in active & passive networks Proactive cities (Curitiba, Seattle, Bilbao, Bogota, Porto Alegre) SA Cities Network (SACN), Local Government Information Network (LOGIN), CityNet, Sister Cities International Competing cities, city twinnings, tours and exchange visits, one-on-one exchange; one-on-many exchange; study missions, Innovation fora, festivals, technology transfer and exchange visits, Best practice, but also adaptation, experimentation, pilot projects, policy

	entrepreneurs Incentive schemes (UK Beacon award scheme)
Civil society	International learning organisations, such as Shack-dwellers International NGOs, CBOs, even of the informal types Supporting and helping to build organisational, infrastructure support and social capital for civil society from within government (and not viewing them as opponents)
Networking across sectors	Networking , ICLEI, clusters, think tanks, collaborative, national network days

Sources: Campbell, 2006 & 2009; Muller, 2009; Nicolescu, 1997; Hartley & Benington, 2006; Totlandsdal, 2007: 260; Man in Biosphere Madrid Action Plan, 2008

Application of concepts to SA system

References to the concept of sustainable development or sustainability in South African laws and policy documents (even if they are not called policies, but strategies or perspectives) are numerous, from the Constitution of the Republic of South Africa (Rep of SA, 1996); the National Environmental Management Act (NEMA) (Rep of SA, 1998), the Local Government: Municipal Systems Act (Rep of SA, 2000) and even in economic policy documents such as the Accelerated and Shared Growth Initiative of South Africa (AsgiSA) (Rep of SA, 2006). In theory the concepts seem to be quite popular, but not as much as during the time of the 2002 World Summit on Sustainable Development. Nowadays the right language is still quite often used, but seem to be little more than spin, especially when compared with the sustainability gaps found in economic policies such as AsgiSA, the Provincial Growth and Development Strategy Guidelines (Rep of SA, 2005) and even the more recent Medium Term Strategic Framework (MTSF) of July 2009 (Rep of SA, 2009). None of these policies even mention any form of linkage between the environment and economic growth, nor is potential downsides mentioned (more coal-based energy needed, more CO_2 pollution, water shortages, increased habitat and biodiversity loss). There was (and still is) large policy gaps in relation to poverty, social development, urban areas, urban renewal and planning. The linkages between poverty and the environment and the potential of creating 'green' jobs, while

at same time protecting and restoring the environment (such as through recycling, reusing and reducing resources and materials (the 3 R's) and dematerialising or decoupling the economy (Yoshida et al, 2007), are rarely recognised in policy documents. None of the earlier government policies even acknowledged complexity and uncertainty, and this does not seem to have changed much in the latest policies. The belief in technical, rational planning seems to be as strong as in the past, despite the lack of results (in the form of poverty relief or job creation).

It is also the time to question and address the lack of commitment to (or understanding of) sustainable development as illustrated in the latest policies, continuing the trend during the previous era. Despite the October 2008 Cabinet approval of the National Framework for Sustainable Development (NFSD) - originally drafted in 2006 - and the announcement at that time of the intention to develop an in-depth implementation plan for sustainable development for the country (greenbuilding.co.za, 2008), the MTSF seem to elevate 'growth' and providing physical infrastructure above all else (no 1 & 2 of the 10 strategic priorities), without making any policies about trying to delink growth from resource use. The environment is narrowed down to 'sustainable resource management' (as strategic priority no 9), with no link to development.

Strategic priority 7 is about building 'cohesive, caring and sustainable communities', which even includes a paragraph (42.2) on promoting "a shared value system and a greater sense of community solidarity – including promoting people's confidence and ability to enter mainstream economic activity", but no guidance is given on how this laudable goal will be achieved. A programme to promote national unity and inclusiveness deals with the potentially very divisive concept of name changes (par 42.3).

A very big problem is the lack of integration (or any form of linkage) amongst economic, environmental, social, heritage, land use, land reform, housing, transport and planning policies. The recent Land Use Management Bill (Rep of SA, 2008), which was not proceeded with, actually would have made the problem of integration worse (Muller, 2008).

In the last couple of years, policy processes were very restricted. Policies went from secret, in-house documents (only available within departments and to a closed network) to final documents, announced as new policies in the State of Nation speech (and thereafter the parliamentary policy process commenced as a fait accompli, with short periods to comment or make representations on complex policies). Often the only knowledge-building exercise preceding the policy was a consultant's or academic's report. Pillay & Tomlinson (2006) try to show how research influenced urban policies, but the examples they mention actually illustrate the limited and narrow nature of these exercises, which assume that the knowledge needed for the policies are to be found in a few places, instead of spread over many.

One of the policy errors of the Mbeki era, that urgently needs to be addressed, is the view that we had enough policies, and instead needed to focus on implementation. For quite a while no new policies were approved, and all kinds of tricks were used to get past this barrier, such as renaming them strategies or perspectives (Pillay & Tomlinson, 2006). In times of dynamic change there is a need for ongoing policy adaptation and change, otherwise policies will become outdated, delinked from practice and oppressive.

South Africa needs more transparent and open policy processes with more participation by all role-players (including people on the ground and their representatives). The old green and white paper processes inherited from the British system were much more open than any system in recent use. In complex systems nobody (including the cabinet) should be gatekeepers of transparency. Transparency needs to start almost from the moment the need for a policy or law is expressed, and not only after politicians have approved a policy for participation.

According to Mamphele Ramphele (2008) in her recent book 'Laying ghosts to rest: Dilemma of the transformation in South Africa', South Africans have no experience of being active citizens of a democracy and tend to fall back on 'what is the government doing to solve the problem?' She also believes that civil society, which was behind the liberation, has been demobilised by the Government and there is a need to re-mobilise and strengthen civil society. South Africa has a very

progressive Bill of Rights, but most of these rights (especially the socio-economic rights) will stay little more than paper rights unless their implementation is pro-actively planned for.

For that reason participation at municipal level should be as broad as possible, with a variety of methods of building democracy and opening communication channels, and there is a huge need for more dialogue, debate, thinking and doing together (think service delivery and taxi protests). This requires much more than strengthening community organisations such as ward committees (par 42.5 of the MTSF). If all the focus is on participation through ward committees, it will actually narrow down rather than expand the opportunities to participate, especially if there is not sufficient funding and training to support the use of the concept. In addition, many present institutions, in particular local government councils, seem to be based mostly on competition (the winner takes all concept), encouraging unethical concepts such as floor crossing and buying politicians. There should be incentives and policies for more collaboration and co-operation, to promote broad-based coalitions and alliances across political parties and across different sectors, including businesses and communities.

The building of the developmental state by improving the capacity of the state, is one of the preconditions for the economic growth, but is only priority no 10 on the MTSF priority list, while the skills shortages is mentioned as strategic priority no 4. One of the biggest problems to date has been the lack of co-operative governance between the three spheres of government, mentioned as a problem in various sectors, such as higher education (Du Toit, 2007) and planning. The government's solution to this was the Intergovernmental Relations Framework Act no 13 of 2005, but it is interesting that the coordination of legislation processes to avoid the problem of conflicting legislation is not even mentioned in this act, which focuses on a variety of committees and protocols to co-ordinate implementation and action processes. However, there is a far bigger need for legislative protocols and open processes for making laws and policies. A further problem is that policies are based on the idea that all local authorities are dysfunctional, while the central state is actually often the one making their job difficult (such as a lack of funding). Their diverse needs and

capabilities are not acknowledged and very little space is created for supporting and even learning from the creativity of the larger cities (and even some smaller ones).

A learning system needs to encourage diverse paths towards solutions and one size fits all policies, such as the original housing policy, should be avoided. The new housing 'policy' (Pillay & Tomlinson, 2006) 'Breaking New Ground' has not yet moved much beyond ideas. Planning is an important tool for sustainable development, but also needs to build a learning culture. The fact that the budgeting process seems to drive planning processes (such as the IDP), with very short time limits for each stage of the process, is not very conducive for stimulating creativity and innovation in planning. Furthermore, the field of environmental policy integration (EPI) also seems to be a very fruitful area of study for the South African Developmental State (Lehtonen, 2007; Lafferty & Hovden, 2002), in that it focuses on ways of integrating various policies, without discounting the environment.

A learning system needs to learn from mistakes and errors and requires forms of feedback to monitor progress towards a desired state (such as key performance indicators). The incentives in the system are very important and need to be orientated towards what communities want and what is required for sustainability, rather than what politicians want. This requires locally created meanings and visions and monitoring systems. Rotmans and Kemp (2008: 1008) point out that important qualitative indicators are those that measure the types of relationships built, such as number of emerging networks, new coalitions, new discourses and changes in behaviour. The development indicators mentioned in the MTSF (Rep of SA, 2009) are particularly revealing in relation to the government's lack of focus on sustainable development, with 'green-house gas emissions' as the only environmental indicator (listed under good governance), this despite the very extensive and laudable project of the former Department of Environmental Affairs and Tourism on environmental sustainability indicators, and State of the Environment reporting. Another big challenge is that knowledge about these sustainability and other indicators often do not flow back into policy processes. There is therefore a huge disconnect in the knowledge- policy- action feedback cycle.

Conclusion

In order to survive in a complex world, it is becoming more and more important for any organisation (even a developmental state) to become a learning system, evolving towards sustainability. Pro-active, rational or technical planning is an important part of negotiating and inventing the future, but, to deal with uncertainty, rapid change and diversity, it has to be based on complexity thinking. Planning and policy-making should be seen as dynamic, complex relationships and processes of transformation, which require the proactive creation of institutions and spaces for deeper learning and innovation, and the building of relationships across sectors. Dynamic systems cannot be controlled from the top, but need to promote and explore a multiple of diverse and even opposing routes of enquiry, with more transparency, communication and feedback of information. The building of coalitions and collaborative visioning exercises can help create synergy to channel the creative energy of opposing forces into productive patterns. And in conclusion, Wals & Jickling (2002: 230) have the following to say about education for sustainability, which is equally valid for a learning organisation:

> *"The process of seeking, rather than setting, standards for education for sustainability, from an emancipatory vantage point, above all means the creation of space. Space for new ways of thinking, valuing and doing. Space for participation minimally distorted by power relations. Space for pluralism, diversity and minority perspectives. Space for deep consensus, but also for respectful dissensus. Space for autonomous and deviant thinking. Space for self-determination. And finally, space for contextual differences and space for allowing the life world of the learner to enter the educational process".*

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