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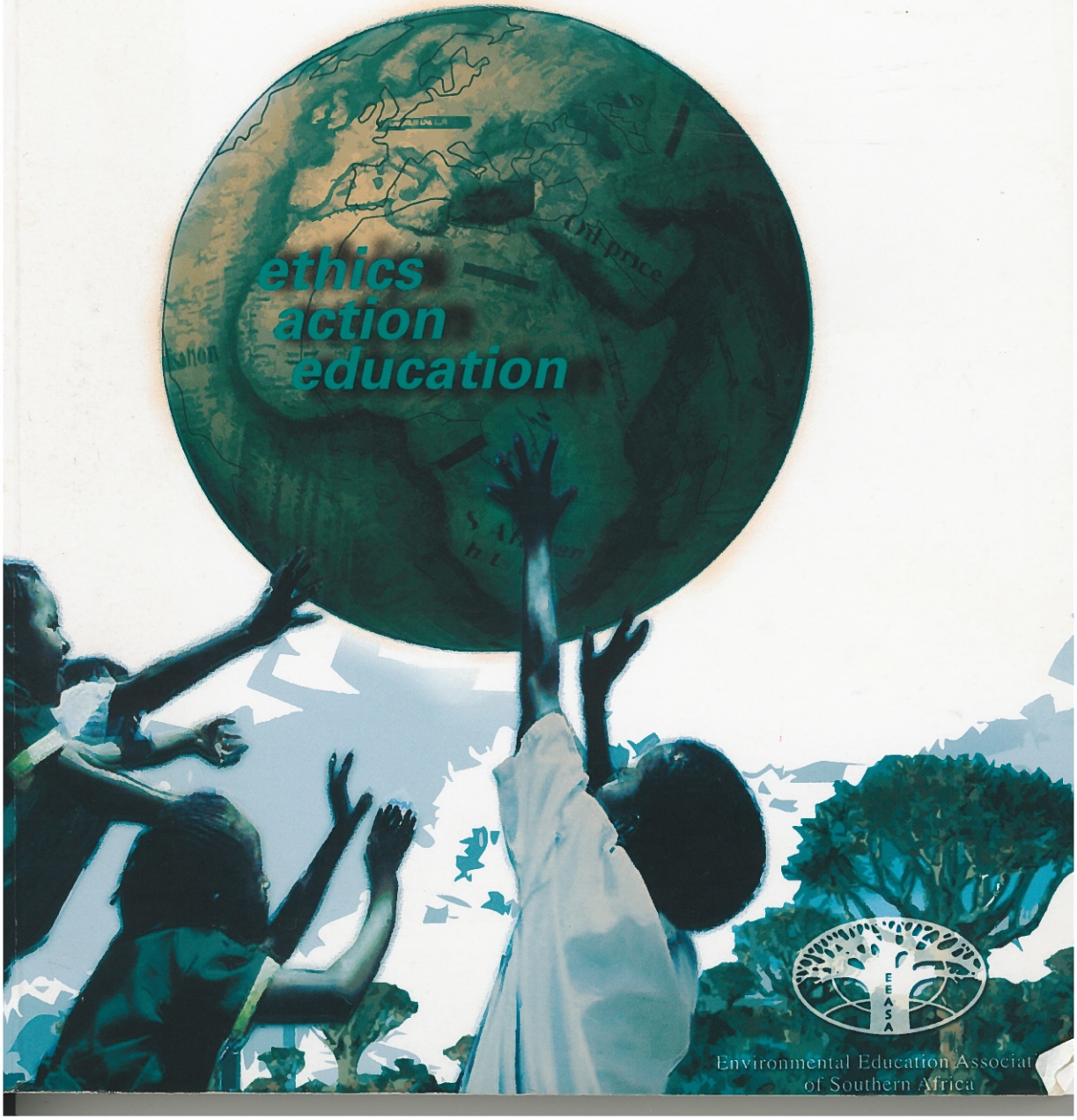

Environmental Education Association of Southern Africa

Southern African Journal of Environmental Education
Environmental Education Research in the Year of COP15

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The Southern African Journal of Environmental Education (SAJEE) is an internationally refereed journal published once a year. The journal is published by the Environmental Education Association of Southern Africa (EEASA).

The SAJEE aims to publish and report on a wide range of aspects relating to environmental education, ethics and action in southern Africa and elsewhere. The journal seeks to further the study and practice of environmental education by providing a forum for researchers, scholars, practitioners and policy makers. The journal aims to carry papers reflecting the diversity of environmental education practice in southern Africa, and includes conference reviews and keynote papers, retrospective analyses of activities or trends in a particular field, commentaries on policy issues, comparative aspects of an environmental education, environmental ethics or environmental action issue, and critical reviews of environmental education, ethics and action in a particular country or context. The journal actively seeks out international dialogue in order to provide perspective on and for environmental education in southern Africa.

The Southern African Journal of Environmental Education aims to provide southern African and other authors with a forum for debate, and professional development. The journal incorporates an author support programme to encourage new authors in the field to establish themselves as professional writers.

Papers published in the Feature Articles section of the journal are reviewed by two and at times three advisory editors. Keynote, Viewpoint and Think Piece papers are reviewed by one of the editors of the journal or an advisory editor.

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Contents

Editorial
Environmental-Education Research in the Year of COP 15

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David Kronlid, Uppsala University, Sweden

Introduction: The Year of COP 15

This year there has literally been a cacophony surrounding the implications of climate change, as the world geared up for the 15th Conference of the Parties (COP 15) in Copenhagen, where it was expected that the largest ever gathering of world leaders would sign binding agreements to reduce carbon emissions to keep global temperatures from rising by more than 2^0C. As we make the final contributions to the refinement of this editorial, late in December 2009, it is concerning to note that this did not happen, that civil society voices were marginalised at the COP 15 and that there has been little progress on a socially just and ecologically sound global climate change deal. The stark reality remains that developing countries – southern African countries in particular – remain most vulnerable to the risks associated with global climate change. Havnevik (2007) stated a while ago that:

> The ways in which poverty, consumption and climate change are addressed, tend to blur historical, structural and power features underlying global inequalities. This makes possible the focus on market forces, such as carbon trading, to resolve the problems. However, these market solutions will not suffice, and may only delay a real solution, which will then have to be developed in a situation of more acute global social injustice and possibly deeper conflicts … Issues related to inequality, energy and climate are of a global character: there is no longer one solution for the South and one for the North. (18,19)

So where does the current state of climate change and the political failures surrounding responses to climate change leave education research in developing and developed nations? What are the implications for environmental education researchers in southern Africa and elsewhere? These are some of the questions pondered in this edition of the *Southern African Journal of Environmental Education* (SAJEE). As one of us (Kronlid) reflects in a Think Piece in this journal: 'the world is one and many and … the complexities associated with climate change means that we have a shared global systematic problem manifested in a myriad different concrete ways in people's everyday life throughout the globe. We need many different kinds and modes of climate change education research' (Kronlid, this edition).

The Sigtuna Dialogue on Climate Change Education Research

A key feature of this edition of the *Southern African Journal of Environmental Education* (SAJEE) is a series of short papers or Think Pieces, which we have clustered and called *The Sigtuna Dialogue*. *The Sigtuna Dialogue* represents a meeting of African and Swedish researchers, held at a peaceful centre of community learning in a place called Sigtunastiftelsen in Sweden in March 2009, just prior to the World Conference on Education for Sustainable Development which was held in Bonn, Germany. The purpose of the dialogue was to discuss whether it would be interesting to develop a research agenda/s focusing on climate change in environmental education/ESD research, and what such an agenda might look like. While *The Sigtuna Dialogue* is presented here as a set of discrete Think Pieces, it is important to note that the original dialogue was practised as a thoughtfully reflective symposium or research meeting where diverse perspectives and ideas were put forward and deliberated through reflective responses in a process of developing mutual understanding, intellectual and practical interest and curiosity for further dialogue and working together on a local-global issue of significance in education today.

The Sigtuna Dialogue, as presented here, and as it continues to unfold,[1] also represents one of the practical outcomes of the Mainstreaming Environment and Sustainability in African Universities (MESA) International Conference (the MESA recommendations were published in the 2008 *Southern African Journal of Environmental Education*), which sought to consider the question of what climate change means for education research and closer South–North collaboration. In writing the proposal for the meeting, one of us (David Kronlid) wrote: 'It [the proposed *Sigtuna Dialogue*] addresses climate change education in relation to mitigation, adaptation and social, economic, and ecological vulnerability. Thus its focus is on how educational practices can deal with enhanced risk, insecurity, and ethical responsibility in the face of climate change, which is an important contribution to research in education and sustainable development.' This initiative is and was undertaken at a time when climate change education research is and continues to be a minority focus within climate change research (most of which is science and policy oriented).

So what took place in *The Sigtuna Dialogue*? There are 10 *Sigtuna Think Pieces* contained in this edition of the SAJEE, collected as Sigtuna Think Piece 1–10. We briefly introduce them in order of appearance in the journal and then briefly discuss what seem to be interesting dynamics surrounding the dialogue.

In the first Sigtuna Think Piece, Akpezi Ogbuigwe from the United Nations Environment Programme provides an overview of the meaning and impact of climate change in Africa, and she makes the hard-hitting point that despite much scientific and technological research and advocacy and policy development, '… there is still not an effective capacity to bring the understanding of the climate change facts to the public in a manner that influences their day to day actions and habits' (Ogbuigwe, this edition). She argues that climate change cannot be isolated as a single 'cause' of destruction and vulnerability in Africa, and that there are 'so many unanswered questions' and other causal factors, and environmental (education) questions to research and understand, highlighting the epistemic uncertainties and complexities associated with climate change research. This motivates her to argue for a cross-disciplinary approach to

dealing with climate change in education, and one that builds on the strengths and validity of years of work in environmental education on the continent and elsewhere, particularly the mobilisation of indigenous knowledge and the development of alternatives and practices that will halt the loss of development gains and strengthen sustainable development on the continent.

In the second Sigtuna Think Piece David Kronlid from Uppsala University in Sweden draws attention to the serious moral questions and conundrums embedded in climate change. He does this by drawing on the works of on Amartya Sen, Martha Nussbaum and other capabilities theorists to provide an ethical analysis of climate capabilities that helps to identify climate vulnerabilities affecting people's wellbeing. He critically analyses the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report text, identifying its limitations in terms of considering climate change from a full set of capabilities, as presented by Nussbaum and other theorists who argue for articulating capabilities as key social justice and ethical principles. Significantly for the articulation of a climate change research agenda, however, he argues that climate change education research may include descriptive and comparative, normative, critical and meta forms of research to investigate the various meanings of climate change wellbeing in spaces of capabilities. His Think Piece also has an interest in probing 'conversion factors', i.e. how climate change education can help students turn resources into new valuable beings and doings. He locates his thinking about climate change and education within the wider framework of education for sustainable development, noting that 'Educational research teaches us that learning takes place in spaces of capabilities, in expanded spaces of beings and doings, in people's concrete circumstances of adaptation and vulnerability. Hence, learning is possible and learning conditions are likely to be improved if learners' spaces of capabilities are expanded and enriched' (Kronlid, this edition).

The third Sigtuna Think Piece, by Charles Namafe from the University of Zambia, reorders thinking about climate change and challenges its constitution as a risk and danger discourse framed by the enemy metaphor that has rapidly gained political ground internationally, at the expense of other discourses and metaphors that might equally (and better?) guide human thinking and responses to climate change, especially from an educational perspective. He does this by drawing attention to the way in which 'enemy' is used as foundational metaphor in Western scientific thought. By drawing on some of the polemics associated with climate change, and a commentary on Barack Obama's climate change responses by Björn Lomberg, he questions the validity of some forms of climate change discourses and argues that for Africa, there is a need to devise research framed by different metaphors, not those located in the 'enemy metaphor'. He, like Ogbuigwe, while recognising the importance of climate change in Africa, also draws attention to other equally significant societal needs such as responding to HIV/AIDS, and also argues for a cross-disciplinary approach to climate change in education, and one that is grounded in human agency and positive change practices.

Following this is the Sigtuna Think Piece by Johan Öhman from Örebro University in Sweden. In his Think Piece he considers three different traditions of environmental education that have emerged in the Swedish context, namely fact-based, normative and pluralist traditions of environmental education. He considers climate change critically in the context of these three traditions, noting that 'climate change is not only a scientific concept that concerns

measurements of temperature changes and models for predictions of emissions and their consequences. It is also a political concept in the sense that it is value-laden and that the use of the concept is connected to different interests, ideologies, priorities and strategies' (this edition). This, together with a commitment to the public responsibility of compulsory education to contribute to democracy, provides the normative frame from which he argues for a pluralistic approach to climate change in education, discussing how this essentially deliberative orientation can shape climate change education research. Of interest would be an exploration of this deliberative and pluralist orientation in processes of conversion of resources to valuable beings and doings, as outlined in the Kronlid paper and the Lotz-Sisitka paper, and demonstrated in the Mukute paper in this edition of the SAJEE.

The fifth Think Piece in *The Sigtuna Dialogue*, produced by Leif Östman from Uppsala University in Sweden, focuses on ethical tendency discourse analysis as a tool for researching climate change in a wider frame of education for sustainable development. The ambition of the paper is to illuminate the moral dimension in a locally relevant way in teaching. Östman describes use of a method – ethical tendency discourse analysis – and how it has the potential to create local teaching material and illuminate the moral dimension of climate change (and other environmental issues). He sees this method as potentially able to incorporate the global dimension in the teaching content, through international collaboration and the development of diverse case studies. Climate change, he argues, has the potential to transform the ethical tendency landscape differently in different places, and knowledge of this can be shared to develop broader understandings of climate change relations and moral questions in education. Both Namafe's and Pesanayi's papers provide some insight into how climate change discourses are changing the ethical tendency landscape in different contexts, as does the paper by Le Roux and Bouazid, although their work does not apply discourse analysis with this intent. Perhaps future research links can open up such experiments.

Following this is the sixth Sigtuna Think Piece, produced by Tichaona Pesanayi from the Southern African Development Community's Regional Environmental Education Programme. His Think Piece reports a piece of emancipatory social research that considers learning interactions amongst farmers in a context of vulnerability to increased drought, declining socio-economic conditions and disrupted social tradition. He proposes two theoretical tools for such research, notably communities of practice theory that emphasises distributed cognition, and critical realist ontological analysis to identify underlying causal mechanisms shaping and influencing learning and associated adaptation practices. These research tools, as exemplified in the study, provide potentially useful lenses for investigating how people develop their capabilities to adapt to changed conditions that may be affected by climate change and other influencing factors. This research provides insight into how the conversion factors that Kronlid refers to might be mobilised in enhancing capabilities, and how education can support such conversions.

Also concerned with emancipatory approaches to climate change education, the next Sigtuna Think Piece, by Petra Hanson from Uppsala University, Sweden, draws attention to how we might use the creative arts in climate change education and how this might be the focus of climate change education research. Her Think Piece elaborates possible research connections

between ecocriticism and climate change education research, addressing the overarching question of what cultural responses to climate change can offer climate change education and climate change education research. It investigates literary critic Louise Rosenblatt's transactional theory of reading in the context of ecocriticism and suggests a few possible climate change education research questions. In particular, Hanson is interested in a more explicit research focus on students' responses to the reading of texts used in ecocritical classrooms – she sees this as being fruitful for adding knowledge to the meaning of reading in climate change education.

In her Think Piece, Heila Lotz-Sisitka from Rhodes University in South Africa considers a range of theoretical and conceptual tools that may assist with the emergence of a research agenda for climate change in education. Her think piece considers the conditions that are created by climate change in and for southern Africa, and then deliberates which contextually related theoretical tools may be useful to frame research questions for climate change education. She considers the educational research implications of adaptation practices, reflexive justice and the development of agency, reflexivity and capabilities, noting that a climate change education research agenda, not different from a wider reflexive environmental education research agenda dealing with transformative praxis in southern Africa, is essentially a sociologically and historically emergent 'researching *with*' agenda, and is in effect a social learning process. Her paper, like the papers by Mukute and Pesanayi (although they don't use the same language as Kronlid), shows an interest in *conversion processes* mentioned by Kronlid in his paper on capabilities. Within this language frame, it is possible to see that Lotz-Sisitka is interested in exploring how participatory social learning research may be a conversion factor in the expansion of capabilities that people require and value in their relations with changing socioecological conditions.

The ninth Sigtuna Think Piece, by Frans Lenglet from the Swedish International Centre of Education for Sustainable Development, gives an overview of different approaches to research, providing a 'reflective tool' for reading with the other contributions in *The Sigtuna Dialogue*. The Think Piece argues that for climate change education research within the wider context of education for sustainable development to have effect, a research programme should build on the best of different research traditions while avoiding the pitfalls associated with each of them. In this respect the paper argues for methodological innovation and expansion of existing forms of research, and provides some references to some examples of different approaches to research that might be useful for exploring climate change in education.

The final Sigtuna Think Piece, produced by Dermot Farelly and Ida Johanne Ulseth from Uppsala University, provides a reflective note on the rest of the think pieces, in the sense that they look back on the conversations that took place during *The Sigtuna Dialogue* in Sweden and think through what they mean in for education. Both Dermot and Ida participate in an innovative student-run programme at Uppsala University, called CEMUS,[2] where students set the agenda for what, how and from whom they would like to learn about globalisation issues, environmental issues and other socioecological concerns. Their Think Piece reminds us that of the agency of young people in deliberations on educational research agendas (see also the Togo paper in the Viewpoint Papers section), and their insightful comment on the nature and purpose of the current education system and the changes required to address complex issues such as climate change, provide a fitting closing think piece to *The Sigtuna Dialogue*.

Our reflections (Kronlid and Lotz-Sisitka) on *The Sigtuna Dialogue*, as presented here, are that the dialogue provided an interesting platform for deliberation on climate change education research in the year of the COP 15, with seemingly diverse departure points. The Swedish research tradition tended to emphasise analytical orientations to research, with consideration for contextual and empirical realities; while African researchers tended to emphasise historical and contextual realities (of both a praxis and discourse nature) and a critical search for appropriate conceptual and theoretical tools and metaphors to inform responses.[3] Was this similar, but different or different, but similar, and what is there to be learned from these apparently differing departure points? As these similarities and differences exist, it is possible to see that there are indeed a number of different ways of thinking about climate change education research, but within this diversity there also appear to be a number of common interest points and openings for further dialogue that seem to be emergent from *The Sigtuna Dialogue*. These are:

1) Climate change education processes, while important and while justifying critical attention at this point in human history, should not seen as too far from or too different from wider critical environmental and social-justice education agendas, from the history and validity of environmental education, and from the efforts to link environmental education (EE) to new development paradigms through emerging forms of education for sustainable development (ESD) (with due cognisance of various critiques of EE and ESD); and from efforts to foster transformative learning and use new metaphors to guide our thinking and practice. Overall, the Dialogue shows that it is interesting to probe what a discussion on climate change brings to environmental education and/or education for sustainable development at this time in history, as it may potentially shape innovation and new ways of thinking about EE/ESD research and practice.
2) Climate change education processes, like other socioecological issues and risks, engage normative and moral concerns, and hence involve ethical deliberations and processes of engaging critically with moral concerns and ethical questions in education. Understanding these requires careful consideration of the democratic process in education as well as development of tools and conceptual frames for analysing and 'seeing' how such ethical dynamics are made manifest in society, and thus become subjects of educational theorising and praxis.
3) Climate change education processes, similar to wider environment and sustainability education processes, are likely to involve social learning processes that are critical, transactional, situated and interactive and which engage critically with structural constraints and mechanisms, the assumptions and histories that shape practices, texts and cultures, and 'futures', all of which in turn are 'bound up' with language and meaning making – and how we read and act. This effectively constitutes a democratic social-change project of enhancing and expanding human capabilities, reflexivity and democracy.
4) Critical social theory and contemporary environmental science remind us however, that such a democratic social change project is not a liberal project, where individuals have 'rational choice' freedoms to do as they wish, or where responsibility for doings and beings are left to the individual only. The stark reality is that while people may wish

> to, they simply do not have access to the same possibilities for freedom, and climate change and other ecological issues are showing that there are ecological limits to human freedoms too – their doings and beings are variously constrained. This is the source of the concern raised by Öhman about the paradoxes that exist between democratic thought and educational praxis, and his concern to outline a deliberative democratic project for environmental education in this complex moral /ontological context. Critical realist analysis (exemplified in the Pesanayi case study) shows the ontological nature of many historically constituted structural mechanisms, which may or may not be exercised in social interactions and agential processes through events, epistemologies and educative interactions. The democratic social change project is – with these insights – one that, in addition to seeking out communicative rationalities in interactions, must also pragmatically and ethically engage new and creative possibilities, deep-seated inequalities of opportunity, ongoing socioecological degradations, loss of capabilities (e.g. for transcendence, or for growing food or using water etc. as discussed variously in the Kronlid, Ogbuigwe and Pesanayi pieces) and actively and critically seek out transformative learning possibilities and practices.

Inviting David Kronlid to coedit this section of the SAJEE and the decision to publish this Dialogue in the SAJEE presents an open invitation to others in Africa and elsewhere to join the conversation, and to deliberate on what a focus on complex issues such as climate change[4/5] in educational research brings to our existing knowledge and experience of doing research in environment and sustainability education.

The Research Papers

What is interesting to note about these key openings for environmental education research outlined here, is that these principal themes of *The Sigtuna Dialogue* are brought forth and extended further in a series of research papers contained in this edition of the SAJEE. Readers will find that the key themes in the Sigtuna Dialogue appear in the research papers and vice versa, even though these synergies were not intentionally sought out.

In their research article, Sally Harper and Wilhelm Jordaan seek to reclaim for the idea 'green', something of the depth and range of its philosophical and ideological ideas at the time of its emergence and early formation from the 1960s to the 1990s, ideas which appear today to be largely unknown, forgotten, or deliberately sidelined. The paper also seeks to provide for political, economic and environmental opinion-makers and decision-takers, a list of indicators by which to assess the green-ness of a 'text', a set of tools that are also useful for educators. As it currently stands, the paper has little direct educational application or analysis, but reviewers felt that it provides useful tools and insights for educators to review the texts that they work with, and to develop critical readings of environmental education texts drawing on the insights provided here. SAJEE readers are therefore encouraged to use this piece reflectively in relation to educational practice.

Mukute's paper, developed in a very different genre than the Harper and Jordaan paper, considers knowledge in the development of agency. He describes knowledge within a pragmatic perspective (similar to Östman's work with Wittgenstein) where knowledge is seen as integrally linked to practice or 'capacity for action', which suggests that knowledge derives its utility from setting something in motion. His paper focuses on the agentive process in social learning, supported through a process of developmental work research that allows for expansive learning. The research demonstrates the 'conversion process' referred to by Kronlid in the sense that it provides detailed insight into the agentive process that emerges from socio-historical activity systems when contradictions are mobilised as sources of learning and change, i.e. into valued beings and doings. He draws on Engeström's (2008) view of agency in this research, 'taking intentional transformative action based in an interpretation of the situation and after a search for resolutions to contradictory motives, tools or conditions' (this edition). Using the SCOPE Permaculture Programme in Zimbabwe as case study, his research shows how contradictions were used as sources of learning and development leading to 'real life expansions', or what Kronlid might call expanded capability, and what Namafe might see as emergent possibility that mobilises inner strength and positive metaphors, which Mukute describes as a 'Yes we can' attitudinal momentum.

Carrying forward a clear interest among researchers in Africa into the relationship between context and history, empowerment and action, Cheryl le Roux and Tayeb Bouazid provide an in-depth contextual analysis of the nature and practices associated with desertification in Algeria in north Africa. In doing this they conceptualise a programmatic approach to environmental education that is contextually located, emergent and responsive, not unlike that proposed by Pesanayi and Mukute in their two papers in this edition of the SAJEE, and by the research agenda proposed by Lotz-Sisitka in her Sigtuna Think Piece. They are particularly interested in conceptualising the potential role of environmental education for enabling social change in response to the complex livelihood challenges of people living in contexts where they paradoxically exacerbate desertification through lack of alternative opportunities. To this end, they argue that 'Failing to capture the full factors, actors, structures and relationships that interact to impact on the prospects of sustainable development in terms of sustainable agriculture limits the analytical understanding of and intervention process to address the issue as well as achieving positive outcomes' (this edition). In outlining a possible environmental education programme for this context, they go on to argue that 'Ideally, local sustainable development initiatives can engender learning processes – the benefits of which go well beyond the projects themselves, pointing the way to solutions of other problems' (this edition).

The paper by Downsborough that follows the Le Roux and Bouazid paper can be seen, together with the Pesanayi and Mukute papers, as resources for the project of Le Roux and Bouazid, who are interested in facilitating social learning processes in farming communities of practice. Downsborough demonstrates how researching learning interactions using a communities of practice theoretical framework can provide useful contextual insights into how farmers learn new practices, a subject which Le Roux and Bouazid make proposals for, but do not research. Of interest across these papers focusing on learning amongst farming communities of practice (Pesanayi, Downsborough, Mukute and Le Roux and Bouazid) is the

insight that contradictions, tensions and risk are mobilising factors that stimulate co-learning and the emergence of agency. Mukute's paper takes this insight further by providing insight into the reflexivity that is involved in this process, and how researchers interested in research as a social learning process may support the expansion of people's capabilities to respond to environmental challenges and develop more sustainable alternatives and practices (see also Lotz-Sisitka, this edition).

Following the cluster of papers on farmers and their learning is a cluster of papers that all focus on environment and sustainability issues as experienced in schools and the context of schooling. The paper by Silo uses similar theoretical tools as those used by Mukute to understand learner participation in waste-management activities in a school in Botswana. Through a cultural historical activity system analysis (after Engeström) she is able to show that understandings of participation in waste-management objects are not shared in the same way by teachers and learners, and that learners have different interests from teachers in participating in waste-management practices, each with different antecedents. She traces these tensions to the way in which the education policy is mediated in schools, via normalising processes, and to structural conditions that influence sanitation practices in the school. She sees potential for this analysis to provide tools for engaging learners in expansive learning processes that can change the nature of their participation and hence their action competence and abilities to make choices and decisions about waste management in their schools.

This paper is followed by an analysis of the contradictions that exist between the initiation curriculum for boys and girls in a rural Zimbabwean context, and the objectives of education for sustainable development and the formal education system itself. This research, by Charles Chikunda and Pamela Shoko, probes gender relations that are embedded in the initiation school curriculum, but also examines the link between the initiation school curriculum and drop out in schools – they see this as a question that addresses relevance and quality of education. The study reveals complex tensions between community cultural practices and learning systems, youth identity formation and the formal education system and its learning expectations. In seeking to resolve these tensions, they propose recourse to the value system of *ubuntu*. The study is small in scope and thus can really only begin to open the space for further research into what is arguably an immensely complex social terrain.

The paper by Ferreira and Bopape from the University of South Africa seeks to find out how teachers are being supported to take up new curriculum requirements in the formal education system in South Africa. They probe the nature and extent of professional development provided to teachers, and raise the question of whether professional development of teachers in environmental education is required for effective teaching in this field. Using a small-scale survey questionnaire and a literature review of sources, they provide primarily descriptive interpretations that argue for the incorporation of environmental education into teacher professional development programmes.

The Viewpoint Papers

There are also four very different viewpoint papers contained in this edition of the SAJEE. The first is a viewpoint paper by Mark Mattson in which he draws on the theory and analysis of American theorist Ken Wilber to claim that political ecology tends to only emphasise empirical and rational categories of knowing, which leaves it open to category errors. This paper can be read in relation to some of the papers in The Sigtuna Dialogue in order to examine how environmental educators are interpreting political ecology epistemologically and ontologically (for example, Kronlid's political ecology includes transcendence as an important epistemological process and capability). Mattson sees Wilber's theory as having potential for effecting psychological maturity through ontological depth involving the interior stages of consciousness development. The paper presents, rather than engages critically, contextually or educationally with the Wilber thesis (reflecting Mattson's viewpoint that the Wilber texts may be useful tools for thinking about epistemology and ontology in environmental education research). This viewpoint on the Wilber work may prove to be interesting in its proposal for creating epistemological pluralism in educative processes, which further research may reveal.

The second viewpoint paper focuses on students as agents for change in a university setting. Drawing on evidence of student involvement in sustainability practices in universities, Muchateyi Togo argues that students are not only 'targets' for education for sustainable development (ESD) programmes, but that they are capable of generating ESD opportunities through their own engagement in issues and through a variety of opportunities in which they are able to exercise their agency. Her view is that students in university settings should therefore be seen as active agents in ESD and not just recipients of programmes developed for students. This paper resonates with the contributions made by Farelly and Ulseth to *The Sigtuna Dialogue*, as outlined above in this editorial piece.

The third viewpoint paper focuses on introducing a cross-cultural ESD curriculum development project involving teachers in South Africa and Japan. The short paper, produced by Clark, Kitahara, Nagao, Petersen and Sato, argues for a particular approach to this work, namely *furikaeri* (or 'lesson study'). The authors describe 'lesson study' as a form of reflective practice that has been shown to be a most useful tool in support of teacher professional development. Further research will no doubt show how this approach plays out in their project over time.

The final viewpoint paper 'connects' to the first part of this edition of the SAJEE in that it provides 'live dispatches' from Copenhagen written by Million Belay, an environmental educator and activist from Ethiopia. Million's daily musings on the events at Copenhagen provide insight into the politics, the participation and the issues, and how they were discussed at Copenhagen. For environmental educators in Africa, he provides a final reflection on the experience, alerting us to the challenges that climate change and its discourses and practices have brought to the field of environmental education in Africa and elsewhere.

And Finally…

With this rich array of contributions, it is possible to see some of the contours of environmental education research in the year of COP 15, if only represented in one regional journal. If the collection of Think Pieces, research and Viewpoint papers in this edition of the SAJEE are to be an indicator, environmental education research appears to be raising interesting questions as well as opening new methodological terrain and new critical and theoretical edges that require researching. Years ago, Eureta Rosenberg (nee Janse van Rensburg)[6] wrote that '… rather than confirm expectations, science, research and critique should *open up possibilities*' (Janse van Rensburg, 1995:161, our emphasis). The papers in this edition of the SAJEE have, in our view, opened up possibilities for taking the failed COP 15 agenda – namely how people ought to be responding to climate change and other socio-ecological issues such as desertification, food security etc. in more socially just and ecologically responsible ways – into education research circles in productive, engaging and critical ways.

Bob Jickling (2008), in some recent reflections on the words of John Ralston Saul and Arne Naess, stated that '… we don't really need single leaders, heroes, or saints to make a difference, but rather many people taking small steps.' In the latest edition of *Radical Philosophy*, Nunes (2010), in reflecting on the global condition, states that 'while the danger grows, the redeeming power seems to recede.' He notes that it is just as easy to say that since Seattle 10 years ago, 'a lot' has been achieved while in the same breath one can also say that 'not enough has been achieved'. He also states that 'there are no partial "local" solutions that can stand in isolation, and there is no "global" solution unless this is understood as a certain possible configuration of local ones' (3). Because there is a lack of structures for global accountability (as shown so starkly at the COP 15) it is only to the extent that local struggles enhance their capacity to act in their immediate environment/s that they can act globally in meaningful ways. This is a significant point for thinking about climate change in education research in the year of COP 15 and beyond.

Nunes (2010:7) goes on to argue that 'privileging convergences can sap resources from local capacity building, when the point should be that the former reinforce the latter' and that investment in the global at the expense of the local can lead to a '… disconnection between politics and life, representation and capacity building, burn-out, or a replacement of slowly built consistency for the quicker, wider, but also less sustainable effects of the media.' It is hoped that this edition of the SAJEE, while seeking out both convergence and diversity in international knowledge exchange, *will* contribute to all of our local capacities to act and to convert our various resources into new capabilities. Educational researchers that take seriously the diverse, local challenges and possibilities of climate change impacts, capabilities and responses, along with the impacts and possibilities for renewal of society associated with other related socio-ecological issues (such as those represented in this journal) are among those 'many people taking small steps' to connect politics, ethics and life, representation and capacity building.

Endnotes

1 *The Sigtuna Dialogue* process will continue in Lusaka, Zambia in 2010.
2 Centre for Environment and Development Studies, Uppsala University.
3 Some might see this as a 'theory' vs 'practice' difference, but in our view this is too simplistic a conception of the diversity of approaches evident in the Swedish and African research traditions.
4 Latour (1993) notes that complex issues such as HIV/AIDS and environmental issues (e.g. climate change; ozone depletion etc.) are not easily accommodated within modern knowledge structures – he calls such issues 'imbroglios' and points out that they involve complex multi, inter and transdisciplinary knowledge processes that are not easily 'purified' into disciplines. His critique of scientific reasoning and knowledge production raises the issues about the adequacy of modern knowledge structures in response to complex societal issues.
5 Similar discussions have taken place in the field of HIV/AIDS research, where the multidisciplinary and complex socio-cultural, socio-political, material and scientific dynamics of the pandemic raised the need for researchers to consider how diverse contributions to knowledge could help to shape more adequate responses (Treichler, 1999). Treichler (1999:1) states that 'The AIDS epidemic is cultural and linguistic as well as biological and biomedical. To understand the epidemic's history, address its future, and learn its lessons, we must take this assertion seriously.' Authors of *The Sigtuna Dialogues* show a similar perception of the onto-epistemological complexity of climate change. Other environmental issues also present similar complexities, as shown in the paper by Le Roux and Bouazid.
6 Former editor of the SAJEE.

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Sigtuna Think Piece 1
Climate Change Education in Africa

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Abstract

Climate change has placed the environment firmly on the international agenda. It is one subject that all nations of the world must relate to and address. Africa is not left out. Though Africa produces less than 10% of total greenhouse gas emissions, the continent was noted as one of the most vulnerable to climate change by the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007). There is therefore a justifiable call for adaptation and mitigation policies to help Africa cope with the challenges of climate change. This will require the involvement of every sector and individual; and this is where climate change education is seen as critical in empowering citizens and leadership and mobilising positive response to the climate change challenge. This think piece highlights the present uncertainties surrounding climate change science, identifies other critical areas of study and argues for a cross-disciplinary research agenda for Africa that will create opportunities for knowledge sharing within the continent with an emphasis on provision of solutions to the continent's problems, preferably in the context of indigenous knowledge systems. It concludes by emphasising that climate change education should not be viewed in isolation of the critical foundation provided by environmental education. Africa needs to build its climate education strategy and research agenda on the already existing worldwide effort to bring about environmental citizenship in all spheres of society through environmental education. For Africa, this means domesticating environmental education in order that it addresses the present and foreseen environmental challenges that the continent is facing, laying a particular emphasis on adaptation and mitigation of climate change effects.

Sustainable Development Challenges in Africa

In their study of sub-Saharan Africa's prospects for economic and social development in the 21st century, the African Development Bank, African Economic Research Consortium, Global Coalition for Africa, United Nations Economic Commission for Africa and the World Bank concluded that Africa could develop in the 21st century on condition that it addressed the development traps that confined it to underdevelopment, conflict, and untold human suffering for most of the 20th century (The World Bank, 2000). For Africa to break free of these traps, the report of the Commission for Africa[1] (2005) corroborated most of the recommendations made in the World Bank Report (2000). According to the commission, the 'coherent package for Africa' included: improving governance and capacity building; the need for peace and security; investing in people in terms of health and education; going for growth and poverty reduction; and increasing trade and ensuring fair trade. These, combined with significant improvement

in the quality of funding from donors, would meet the challenges. Presently, pursuing the recommendations above is threatened due to new challenges in this century. Some of the challenges include the failing world economy, rising food and energy prices, HIV/AIDS and perhaps the most challenging in the longer term, climate change.

Climate Change in Africa

Africa and climate change vulnerability

The changing climate triggered by the fast-rising average world temperatures due to increased anthropogenic emission of green house gases into the atmosphere is now recognised as the greatest environmental problem facing the Earth. Though Africa produces less than 10% of total greenhouse gas emissions, Africa was noted as one of the most vulnerable continents to climate change by the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (2007). An issue paper by the African Union Conference of Ministers (UNECA, 2008) indicated that this vulnerability derives from multiple stresses including: the geographical location of many African countries characterised by an already warmer climate, marginal areas that are more exposed to climatic hazards such as rainfall variability, poor soils and flood plains; the heavy reliance of most African countries' economies on climate-sensitive sectors such as agriculture, fisheries, forestry, other natural resources and tourism; and the inadequate ability of the continent to respond to the direct and indirect effects of climate change because of widespread poverty, poor economic and social infrastructure, conflicts, limited human and institutional capacities, and inadequate technologies and financial resources.

Likely impacts of climate change in Africa

The continent is already being faced by vulnerabilities that could be attributed to climate change. For instance, desertification is now an alarming occurrence in parts of the continent. In the Yobe state of Nigeria, the Sahara is expanding southwards. Villagers have reported losing farms, wells, houses and roads to the desert yearly. Reduced fresh water availability has also been reported. The east African Great Lakes and reservoirs including Lake Victoria and Lake Nakuru could be responding to climate variability with pronounced changes in storage, while parts of Kenya and the Horn of Africa have been heavily affected by recurrent droughts. On the other hand, the frequency of severe floods is increasing, with devastating effects as shown in recent floods in Mozambique and Namibia.

The degradation of woodlands, loss of forest quality and deforestation are now common occurrences in most parts of Africa. It is projected that the succulent Karoo biome could be completely displaced or lost altogether under continued climate change (UNEP, 2006). Of course this will be accompanied by species losses not only in the Karoo but in other biomes too. The oceans have not been spared either: coral bleaching and coastal erosion are now a real concern to environmental managers. The projected rise in sea level is now threatening to displace the occupants of Ngomeni. In 2007, strong ocean currents were reported to have destroyed several houses and inhabitants were spending sleepless nights trying to salvage household items or save their lives (UNEP, 2006). Glacial melting is no longer an issue to only worry the

northerners; back here in Kenya, where the United Nations Environment Programme (UNEP) has its headquarters, Mount Kilimanjaro has lost the bulk of its glaciers – over 80% since 1912 (Minarcek, 2003), while the Lewis Glacier on Mount Kenya has retreated by more than 800m between 1893 and 2004 and lost almost 16m water equivalent of its thickness between 1979 and 1996 (UNEP/GRID-Arendal Maps & Graphics Library, 2007). Other severe impacts are loss of agricultural productivity and increased health risks due to expansions of malarial areas.

Climate Change Education

For Africa to mitigate and adapt to these effects that are a threat to the continent's very survival, individuals, institutions, governments and the private sector, in essence everyone on the continent, needs to take responsibility for reducing the causes of these risks, as well as appropriate responses to mitigate and adapt to them. Education is therefore going to play a fundamental role in the fight against climate change in Africa. So far, many studies have been undertaken to understand the science and economics of climate change. Technologies to reduce its causes and those that help to mitigate and adapt to its effects are constantly being researched. New policies are continuously proposed and organisations are conducting relatively successful advocacy on climate change. Despite all these activities being in place, however, there is still not an effective capacity to bring the understanding of the climate change facts to the public in a manner that influences their day-to-day actions and habits.

Another dimension of climate change education is the fact that climate change science is still bleary and most of the climate change science draws logical conclusions from various scenarios. There is still a lot to be understood. For example, is climate change the only responsible cause for the current changes in Africa (i.e. the hazards mentioned above) and the rest of the world? If climate change could really lead to a disastrous future for Africa could this mean that things are already bad now? Can we identify specific contributory factors that are within our control?

So many unanswered questions. Hence, climate change education would have to be born out of a cross-disciplinary research agenda. Without a comprehensive approach, born of a proper understanding of the facts behind climate change, the fight will be lost before it is begun.

Research Agenda

What should be included in a climate change education research agenda?

As mentioned above, a research agenda must be an intrinsic part of climate change education by reason of the fact that climate change itself is a 'phenomenon' that is yet to be fully understood. Other challenges in Africa that could also lead to some of the impact associated with climate change are poor urban planning, ineffective governance systems leading to poor infrastructures and failure of services, including inadequate regulations for disposal of chemical waste, destruction of forests and aquifers, etc. According to the World Bank report (2010), climate and development are inextricably linked. This means that if the effects of climate change are anything to go by, then sustainable development will not only be seriously hampered, but even the already gained achievements will be reversed. For Africa, this will affect water, land and

energy, the key resources for development. Water is a key factor in development for the role it plays in sanitation and subsequently, the health of individuals. Closer observation may reveal that the availability of sufficient clean water is an indication of healthy ecosystems, without which water levels and water quality are reduced. Land in Africa is quite essential in food production. With its vulnerability to hunger, land degradation means reduced food production and diminished potential to increase the quantity of food produced. Energy is important in development as it determines the rates and levels of industrialisation, hence affecting employment and economic status. Poor sources of energy, such as fossil fuels, are now turning out to be problematic in terms of contributing largely to greenhouse gases, which have now been shown to cause global warming.

Africa is at this point struggling to develop; and to avoid the destructive development path of the Western countries that are the main cause of climate change, it is important that Africa chooses a sustainable development path, amid the threat of climate change. To do this, the key resources for development: water, land and energy (which unfortunately are the most vulnerable to climate change as well as to mis-governance) need to be researched and well understood to enable their sustainable utilisation, and how they are considered in educational programmes. Therefore the research agenda for climate change education in Africa should focus on answering the following questions:

Governance:

- What is the role of government in positioning African nations to mitigate and adapt to climate change, and what education is needed for governments?
- How much are current structures and systems contributing to present vulnerabilities and likely impacts of climate change in Africa, and what are the implications of this for education programmes?
- What is the meaning and function of equity in understanding and dealing with climate change on a global or international environmental governance level, and how should such issues be integrated into education programmes?

Water:

- What are the factors that affect water quality (both negative and positive) and how are these to be brought into education programmes?
- How can the positive factors be introduced/boosted while minimising/eliminating the negative factors, and what kind of education is needed to strengthen positive outcomes?
- How can the quality of water be constantly monitored in using simple indicators to ensure that adjustments are constantly made to maintain its quality, and can education make these monitoring processes more widely applied and used?

Land:

- What land-use activities are essential for the livelihood of citizens and for sustainable development in general, and how can education strengthen these land-use activities?

- What land types are required for these activities and where are these located, and how can education be oriented to helping people to correctly locate appropriate activities on different land types?

Energy:

- What sources of energy are available to Africa and how can education share this knowledge with people?
- What quantities of energy are required to boost and sustain Africa's sustainable development, and how can education best help citizens to use energy more sustainably?
- Among the available sources, what are their costs of production and impacts, and under a cost-benefit scrutiny, which are the most viable and how can this knowledge be shared through education?

In addition, ecosystems and related implications for education have to be well understood as they determine the quantities and qualities of the above resources. Any effect on ecosystem resilience through direct human activities or through climate change effects will have a ripple effect on the key resources for development. The educational research agenda should therefore look at the following questions:

- What role do ecosystems play in determining the quality and quantity of water?
- How do human activities on ecosystems affect the overall climate?
- How does energy production and utilisation affect the health or resilience of ecosystems?
- Does the health of ecosystems affect land that is proximate?
- To maintain a high health status for ecosystems, which human activities should be encouraged, which should be encouraged and what indicators should be used to monitor their health? This should be answered especially in the context of water (quality and quantity), land-health status and energy (production and consumption).

Underpinning all of these ecosystem-related research questions is the associated question of how education can strengthen knowledge and learning about these issues in order to broaden public uptake and participation in solutions and alternative practices.

Another argument that should be considered at this stage is: why should Africa mainstream climate change in its education curriculum when it does not significantly contribute to climate change itself? Due to its low levels of industrialization, Africa produces less than 10% of the total greenhouse gas emissions in the world. It would therefore be prudent to focus Africa's agenda on building capacity that can chart a development path that is climate friendly, and equally address the other challenges that Africa faces including environmental degradation, corruption and poor governance. Thus, the research agenda should focus on creating opportunities for knowledge sharing within the continent with an emphasis on provision of solutions to the continent's problems.

One of the critical starting points is through research into indigenous knowledge. This knowledge is usually integrated in the culture of a people and thus is readily usable. Gorjestani

(2000) describes indigenous knowledge as a significant resource that could contribute to the increased efficiency, effectiveness and sustainability of the development process. This is because it is defined as the basis for community-level decision-making in areas pertaining to food security, human and animal health, education, natural resource management and other vital economic and social activities. Communities in Africa have an abundance of indigenous knowledge depending on their geographic location and history. Universities should explore this knowledge with the aim of tapping into it in order to meet climate change challenges.

Indigenous knowledge about environmental adaptation should be integrated into environmental education in Africa, another readily available tool for closing the knowledge gaps existing among the African people. Environmental education is a worldwide effort aimed at teaching the functioning of the natural environment and how this environment is affected by humans. The goal is to influence humans to ensure sustainable ecosystem function, as defined in Belgrade in 1975:

> The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (UNESCO, 1975)

Developing a responsive environmental education curriculum

Africa needs to build on the already existing worldwide effort to bring about environmental citizenship in all spheres of society through environmental education. For Africa, this means domesticating environmental education in order that it addresses the present and foreseen environmental challenges that the continent is facing, laying a particular emphasis on adaptation and mitigation of climate change effects.

Borrowing from some of the key characteristics of environmental education as described by Meredith *et al.* (2000), Africa should be able to develop a curriculum that addresses its challenges. Below is an explanation of some of the environmental education characteristics given as they will relate to the creation of an environmental education curriculum for Africa that embraces climate change.

- *Environmental education relates to an environmental topic or issue.* Africa currently faces many challenges that should be included in the curriculum, as discussed above. These include high levels of deforestation associated with biodiversity loss and loss of livelihoods, water scarcity, disease, soil degradation, population growth and challenges associated with unplanned urbanisation.
- *Environmental education is a lifelong learning process.* If Africa is to overcome its challenges including risks it faces from climate change, the education should focus on individual Africans embracing environmentally healthy habits in their entire lives. This would guarantee that actions at all levels are influenced by informed decisions based on factual environmental information and ethics. Those who benefit from environmental education

should apply it through their entire careers, ensuring that environmental consciousness is at the core of each action taken.

- *Environmental education is interdisciplinary and draws upon many fields of study and learning.* One remarkable aspect of environmental education is that it widely encompasses virtually all disciplines, since environmental degradation affects all spheres of life. Therefore the curriculum should not only draw from all disciplines to enrich it, but also target all individuals in all available disciplines on the continent.
- *Environmental education is relevant to the needs, interests, and motivations of the learner.* The need for proper nutrition, clean water, clean air and a clean environment is fundamental to all human beings. Therefore the prospect of bettering their lives is at the centre of Africans' interests. A well-designed curriculum addressing these issues will motivate Africans to take individual lifelong actions that would guarantee reduced risks emanating from environmental factors, whether natural or anthropogenic.
- *Environmental education is based on accurate and factual information and inspires critical thinking and decision-making.* Africa's academics in the higher education and research institutions should play a key role in designing the curriculum. Their role is to ensure that information presented is soundly researched and factual, and is about or directly relates to the African situation. The design of the curriculum and its delivery should also be done in a way that inspires the recipients of the education to think outside the box and create African solutions in view of the challenges and resources available on the continent.

Conclusions

Climate change should not be addressed in an isolated fashion in education. For Africa, sustainable development seems to be the most pressing challenge. This is made more complicated by the climate change effects that are threatening to reverse even the little development progress that has been made. Factors affecting the key resources required for development in Africa: water, land, energy and of course good governance, should be studied and solutions to mitigate the negative ones sought – preferably in the context of indigenous knowledge systems that exist in the continent. Climate change education in Africa should seek to ensure that individuals, governments, the private sector, communities and indeed all stakeholders understand the essential principles of Earth's climate system and the impacts of climate change, and are able to make informed and responsible decisions with regard to actions that may affect climate. This way a climate change education and research agenda for Africa would pave the way to good governance, improving the living conditions on the African continent (both of humans and the natural environment) using inherited wisdom, value systems and indigenous knowledge in combination with modern science and technologies.

Notes on the Contributor

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Endnote

1 The Commission for Africa was established in 2004 by the British Prime Minister Tony Blair. It consisted of 17 members, nine of whom were from Africa and were all working in their individual and personal capacities with the task of defining the challenges facing Africa, and providing clear recommendations on how to support the changes needed to reduce poverty.

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Sigtuna Think Piece 2
Climate Capabilities and Climate Change Education Research

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Abstract

This think piece introduces the views of Amartya Sen, Martha Nussbaum and others on the capabilities approach to climate change ethics research. Furthermore, it suggests that the capabilities approach can help climate change research in identifying if, and if so which, intrinsic values of people's wellbeing are vulnerable to climate change.

The think piece introduces a climate-capabilities reading of documents associated with the IPCC Fourth Assessment Report (IPCC, 2007). Furthermore, it suggests that climate change education research may include descriptive and comparative, normative, critical and meta forms of research to investigate the various meanings of climate change wellbeing in spaces of capabilities. Furthermore, climate change education research may contribute to climate change research in identifying how education may help students identify individual, social and environmental conversion factors. That is, factors needed to convert, for example, adaptation resources into actual beings and doings – into climate capabilities.

Introduction

Climate change[1] involves serious moral challenges. Despite this, ethics and educational research have not paid much attention to the moral dimension of climate change education.[2/3] This think piece will suggest some climate change education research questions that are based on what a climate change moral landscape would look like according to the Intergovernmental Panel of Climate Change (IPCC)[4] from the point of view of the capabilities approach (Sen, 1993; Nussbaum, 2000)[5] Thus, the suggested climate change education research stems from an ethical[6] analysis of selected elements of IPCC's fourth assessment report.[7]

There are several general and implicit reasons for why we need climate change education research that highlights the relationship between climate capabilities and education for sustainable development (ESD). First, climate change is one of our time's most serious environment and development questions and is therefore central to ESD. Second, anthropogenic climate change involves serious moral conundrums regarding human wellbeing.[8] Hence, clarifications of these moral conundrums are of importance because ESD is typically focused on the significance of values and democracy in environmental education. The capabilities approach offers such clarifications. Third, climate change is characterised by harbouring possibly unsolvable epistemic uncertainties, potentially catastrophic eco-social consequences as well as ethical, political, economic and scientific conflicts of value (Bäckstrand, 2003, my translation from

Swedish). Climate change educational research needs to take this into consideration to clarify how ESD may respond to such complexities. Fourth, the moral conundrums of climate change are currently framed in a dominant, thus limited, paradigm of distributive justice. Hence, ESD and climate change education research need to encompass also non-distributive concepts of climate change justice, for example, climate capabilities rather than distribution of resources and welfare goods, to offer other solutions to the serious conundrums associated with climate change.

Climate Change Ethics Pluralism

When facing widespread decrease in human wellbeing and searching for significant and relevant research questions relevant to climate change education, it is important to use an open approach that regards ethical theories as '... intellectual frameworks that support the analysis and solution of particular moral problems' (Stone, 1995:133). That is, in order to suggest research questions relevant to climate change educational issues we can use the capability approach to produce a temporary, selective and complementary map of the moral landscape of climate change, which however limits:

> … the objects of significance, the questions of relevance, and the strategies or methods of relevance. In short, we 'map' the morally relevant situation according to our … ethical theory, in the same way as we for instance 'map' the … world in accordance with geological theories.[9]

The capabilities approach attracts our attention to whether the IPCC addresses intrinsic values of human wellbeing and whether certain intrinsic values are left unnoticed. Keeping in mind that it guides us according to specific coordinates and has boundaries outside of which it leaves us without guidance, we might identify whether or not and which 'real freedoms people have for leading a valuable life' (Robeyns, 2003:61)[10] the IPCC addresses. The foundation of the capabilities approach is the intuition that every individual human being is entitled to be and to do what he or she has reason to be and to do. Such beings and doings are codified in the concepts of capabilities and functionings (Sen, 1985),[11] which capture what real opportunities you have regarding the life you (may) lead. Furthermore, as argued by Sen (1993, 2005) and others working on the capability approach, the space of capabilities delimits intrinsically valuable elements (capabilities and functionings) from instrumental valuable elements of human wellbeing (e.g. resources, material and immaterial goods). Sen developed the concept of capabilities in a context of theorising alternatives to economistic, for example welfarist, views of poverty. This is important to keep in mind as the capabilities approach is often under critique for being overly liberal (Robeyns, 2005).

Capabilities research often captures such intrinsic values or positive freedoms, i.e. capabilities/functionings in generic and/or particular set lists of capabilities. In the mapping of key documents of the IPCC I have used a set list consisting of Life, Knowledge and Appreciation of Beauty, Work and Play, Friendship, Self-integration, Coherent Self-determination, Transcendence,

Other Species, and Mobility (Alkire & Black, 1997; Robeyns, 2003; Nussbaum, 2005; and Kronlid, 2008a).

A Limited Moral Landscape

The IPCC's fourth assessment report (2007) (indirectly) relates to five elements of the generic set list of capabilities: Life, Knowledge (but not Appreciation of Beauty), Work (but not Play), Transcendence, Other Species and Mobility. The following discussion focuses on Knowledge, Work, Transcendence, and Mobility.[12]

Knowledge
The IPCC often refers to the question of loss of knowledge systems due to ecosystem shifts caused by climate change:

> The loss of local knowledge associated with thresholds in ecological systems is a limit to the effectiveness of adaptation. (Folke, *et al.*, 2005)[13]

This is related to the concern that climate change threatens people's ability for practicing theoretical and practical knowledge, i.e. the resilience of theoretical and practical knowledge systems (rational and meaningful [coherent] on their own terms) are affected by climate change. Accordingly, it is argued that climate change causes shifts and flips in ecosystems that threaten the resilience of indigenous knowledge systems (IKS). Timothy B. Leduc (2007:247) affirms the IPCC's claim and argues that the changing climate changes the adaptation knowledge of Inuit people – *Inuit Qaujimajatuqangit* (IQ):

> IQ was real at the time because the planet was not changing. They knew what was going to happen to the weather for four seasons. But today the weather has so changed that IQ is pretty much gone, it can no longer predict because of the change in climate.

This is affirmed by, for example, the World Wildlife Fund's climate witness, Sámi reindeer herder Olav Mathis Eira from Norway:

> The most urgent change for us, the Sámi people who live of the reindeer, has been the winter rains. […] In the old days this used to happen only every 30 years and we had ancient methods of foretelling the weather. Now this is no longer possible.[14]

Furthermore, modern knowledge systems (MKS) are also affected by the climate in flux.[15] This is underlined by the IPCC, which communicates uncertainties of consequences of present and future climate change in terms of very high, high, medium, low, and very low confidence (ranging from at least nine out of 10 chance to less than one out of 10 chance) of being correct. Furthermore, the IPCC communicates uncertainties in terms of likelihood regarding 'probabilistic assessment of some well-defined outcome having occurred or occurring in the

future'; virtually certain, very likely, likely, about as likely as not, unlikely, very unlikely, and exceptionally unlikely ranging from >99% probability of occurrence down to <1% probability (IPCC Summary for Policy-Makers, 2007:21).

Thus, both IKS and MKS are vulnerable to the complexities of climate change. This underlines that experiencing risks of loosing certain abilities to be rational in the face of a changing climate can, despite differences in adaptation capacity, vulnerability and material standard, be equally threatening to indigenous and modern[16] cultures.[17]

Work

This discussion will focus on the ability to exercise some degree of excellence in work, which is frequently mentioned in the fourth assessment report (IPCC, 2007). The IPCC claims that climate change affects resource-dependent work among the poor and among women (IPCC, Fourth Assessment Report, Ch. 17, Box 17.5:730) and underlines work changes in European communities dependent upon ski tourism (IPCC, Fourth Assessment Report, Ch. 17, Table 17.1:722). In addition, erosion of beaches and coral bleaching affecting local resources in small Islands will affect, for example, small fisheries, affecting also the tourism business (IPCC, Summary for Policy-Makers, 2007:15). Furthermore, extreme weather and climate events in the mid to late 21st century will affect people's ability to execute excellence in their work in agriculture and forestry and industry, settlement and society sectors (IPCC, Fourth Assessment Report, Ch. 17, Table 17.1:722).

Increased heavy precipitation is very likely to damage crops, increase soil erosion and hamper the ability to cultivate land. Additionally, flooding caused by increased precipitation will very likely cause disruption of settlements, commerce and transport and put pressure on urban and rural infrastructures. Moreover, increased land degradation, lower yields/crop damage and failure and increased livestock deaths as well as increased risk of food and water shortages with reduced hydropower generation potentials and potential for population migration are likely in areas affected by drought (IPCC, Fourth Assessment Report, Ch. 17, Table 17.1:722).

The IPCC predominantly addresses work as a resource and as a process instrumental to human wellbeing. From a capabilities approach however, the IPCC's results and predictions indicate that climate change threatens people's intrinsic abilities to execute excellence in work in affluent as well as scarce communities.

Transcendence

Although the IPCC mentions a statistical relationship between adaptation and religion,[18] no references are made to the possibility that climate change may affect people's ability to transcend.

Transcendence is analogous to religious praxis (Bergmann, 2005:56) and varying trajectories in people's lives situated in specific socioeconomic, ecologic and cultural contexts construct and create the ability to transcend (Bergmann, 2003; Bergmann, 2005:56). Thus a person's ability to transcend interrelates with other everyday faculties of life. Timothy Leduc's (2007) cross-disciplinary research on indigenous transcendence testifies to how specific indigenous transcendence is threatened by climate change. Leduc's work focuses on problems associated

with climate change research's efforts to understand and make use of Inuit apprehensions of a changing environment gets involved in reductionist interpretations of Inuit spiritual conceptions. Leduc focuses on the Inuktitut term '*Sila*' that climate change research has interpreted as an Inuit spiritual power associated with 'weather'. Through a triangulating transdisciplinary research approach (Leduc, 2007:241) reaches two meanings of *Sila*, *Silarjuaq* (something great that simply is and the substance of life) and *Silatuniq* ('a practical wisdom for living within this land' [244], that can attend to *Silarjuaq*) (243). According to Leduc, both *Silatuniq* (the doings) and *Silarjuaq* (and beings) of *Sila* are vulnerable to climate change. First, the Inuit ability to transcend is being threatened by the ways in which climate change researchers anthropomorphise and reduce its meaning to fit modern environmental management models. Second, it is threatened because the environmental pressure of the changing climate induces an enforced uncertainty regarding their understanding of *Sila* (Leduc, 2007:247–248). Hence, climate change and the modern climate change discourse threaten *Sila* as a specific contextual transcending practice, which might have important consequences for the Inuit community in question.

Mobility

The IPCC indicates that climate change affects voluntary and involuntary geographical movements and addresses mobility as both a reactive (Adger, *et al.*, 2006:8)[19] adaptive strategy for people in communities that have reached their resilience[20] threshold, and as a limit of adaptation strategies (IPCC Fourth Assessment Report, Ch. 17:734).[21]

Mobility research highlights that constrained social and geographical mobility collude in times of crisis.[22] Thus, the extent to which geographical mobility is vulnerable to climate change is related to our ability to be socially and technologically mobile. The IPCC alludes to this, suggesting that 'the spatial patterns of existing social networks in a community influence their adaptation to climate change' because it determines 'the success and patterns of migration as an adaptive strategy' (IPCC Fourth Assessment Report, Ch. 17:734). Hence, the effect to which people experience 'stranded [geographical] mobility' (Grieco & Hine, 2008:65) is directly related to people's social mobility, and is hence intrinsic to wellbeing (Grieco & Hine, 2008).

Drawing on both climate change research and mobility research it becomes possible to identify the identities of the mobility poor and those who have access to mobility resources, consequently to delimit the climate change vulnerable individuals and social groups from resilient ones. Furthermore, access to social mobility resources sets limits for access to geographical mobility resources. This highlights that climate change induced stress on resource systems (private car ownership, factual public transport, etc.) in geographical space may further cement the boundary between the more vulnerable and the less vulnerable in developing and developed countries.

Climate Change Education Research

Based on a the capabilities approach reading of key documents associated with the Fourth Assessment Report (IPCC, 2007), we can assume that climate change threatens certain abilities, thus that climate change increases pressure on human flourishing. However, the emerging moral landscape is quite limited as it leaves abilities intrinsic to human wellbeing and dignified life – for example, appreciation of beauty, play, friendship, self-integration, coherent self-determination – unnoticed. In addition, capabilities like transcendence and mobility are merely brushed upon or treated as instrumental rather than intrinsic to wellbeing.

The capabilities approach teaches us the important lesson that the abilities to know, work, transcend and be mobile accounted for above are intimately connected. Thus, if climate change threatens one or several of these capabilities it is likely that other capabilities will face increased vulnerability as well. On the other hand, strengthening, for example, the ability to transcend will probably strengthen one, several or all the other capabilities as well.

Educational research teaches us that learning takes place in the space of capabilities, in expanded spaces of beings and doings. Learning is possible and learning conditions are likely to be improved if learner's spaces of capabilities are expanded and enriched. So, what does this mean for climate change education research? I will end this think piece by suggesting some research areas and questions.[23]

Descriptive and comparative climate change education research

The aim of descriptive climate change education research is to systematically describe the form and content of climate change learning processes and clarify the reasons for why certain learning processes occur. Such learning processes may involve learning about the changes of the climate, vulnerability, adaptation, mitigation and resilience. In addition, it involves systematic and stringent clarifications of if, which, and how climate change affects the learner's capabilities and how life, work, mobility, appreciation of beauty, play, friendship, self-integration, coherent self-determination etc. can or do affect their learning conditions. Such empirical research could focus on, for example, how transcendence is affected by climate change in Mongolia[24] and how this is related to climate change education. It could also involve comparative analysis of climate change learning processes in educational practices located in communities of different levels of vulnerability and resilience in Sweden, South Africa, Zambia, etc., and among various groups of learners. In addition, historical comparative climate change education research could be helpful for understanding how learning about the climate has been executed in different countries and educational practices prior to the current climate change discourse boom.

Meta forms of climate change education research

The purpose of engaging in meta forms of climate change education research is to study climate change language in educational and learning practices. What is the meaning of key concepts like 'climate change', 'climate change education', 'vulnerability', 'resilience', 'adaptation' and 'learning capacities' in terms of the capabilities approach in current global and local ESD discourse/s, in policy texts, in teaching material, etc.? Furthermore, meta forms of climate change education

research investigate meaning making in climate change learning in different ESD discourses. Thus these involve both empirical and philosophical research. Meta forms of climate change education research are important for the dimensions of climate change education research listed in this paper and can also clarify how various capabilities are interconnected in various climate change education learning processes. For example, in the Inuit example above the ability of knowledge, of work such as reindeer herding, and of transcending are deeply interrelated. Accordingly, if climate change threatens one or several of these capabilities it is likely that other capabilities will face increased vulnerability as well. However, if this is true, strengthening, for example, the ability to transcend will probably strengthen one, several or all the other capabilities as well. This result is obviously of immense importance for climate change education research if capabilities are significant for meaning making and learning.

Normative climate change education research

Normative climate change education research focuses on systematic and stringent argumentation for a, or several types of, climate change education. Unlike research traditions that like to refrain from normative assumptions, ethics and other fields within the humanities are well skilled in normative research. Based on carefully outlined assumptions about the meaning of learning and the nature of learning processes it is important to argue for and against certain types of climate change education and/or for and against certain theoretical standpoints associated with climate change ethics and climate change education. Questions concerning whether certain capabilities are more important than others for climate change education and climate change learning processes are important for normative climate change education research. Furthermore, it is important to identify and argue for how various forms of climate change education may include ways to convert vulnerability, adaptation, mitigation, and resilience resources into functionings. In fact, learning how to adapt and mitigate and to reduce vulnerability and enhance resilience can be seen as learning how to convert resources into functionings.

Critical climate change education research

Critical climate change education research locates its themes and problems in a, or several, particular political, cultural, religious, etc. contexts. The main purpose of critical climate change education research is to clarify the form, content, and meaning of learning processes in relation to the interests of various actors in global and local climate change arenas. Thus, critical climate change education research focuses on, for example, how certain religious, political etc. contexts contribute to expanding the spaces of capabilities, thus expanding learning opportunities for people vulnerable to climate change and to people more resilient to the effects of climate change. Furthermore, critical climate change education research can clarify how certain political, etc. contexts may facilitate or exacerbate learners' access to conversion factors and how learning to, for example, adapt to climate change is connected to both accesses to adaptation recourses and to converting skills. As Robeyns puts it, '[i]f a person is disabled, or in a bad physical condition, or has never learned to cycle, then the bicycle will be of limited help to enable the functioning of mobility' (2005:99). Thus, being able to be mobile includes being able to 'convert the characteristics of the commodity (e.g. a vehicle) into a functioning'

(Robeyns, 2005:99). Furthermore, critical climate change education research may open a space for systematic critical reflections on the role of personal, social (political) and environmental conversion factors in climate change education.

Conclusion

Climate change threatens people's capabilities, hence it increases pressure on human flourishing. The capabilities approach can be used as a research approach to climate change ethics to study whether and if so which intrinsic values that are being threatened by climate change in various social, ecological, and economic contexts and on a generic level. Based on a reading of documents associated with the IPCC Fourth Assessment Report (2007), I can conclude that on a generic level, the moral landscape of the IPCC is quite limited because the IPCC merely touches upon a few of the capabilities highlighted by capabilities research. Hence, knowledge, work, transcendence and mobility are locations in the topography of the limited moral landscape of the IPCC.

Educational research teaches us that learning takes place in spaces of capabilities, in expanded spaces of beings and doings, in people's concrete circumstances of adaptation and vulnerability. Hence, learning is possible and learning conditions are likely to be improved if learner's spaces of capabilities are expanded and enriched.

This means that we need climate change education research that can help us identify how learners' spaces of capabilities may be expanded and enriched in different social, ecological and economic contexts. Drawing on the assumptions that the world is one and many and that the complexities associated with climate change means that we have a shared global systematic problem manifested in a myriad different concrete ways in people's everyday life across the globe, we need many different kinds and modes of climate change education research. Therefore, I have suggested in this think piece that we may develop descriptive, and comparative, normative, critical and meta forms of climate change education research.

Based on my experiences from the Sigtuna Dialogue we should not set a limit to research creativity when it comes to climate change education research. Hence, we should embrace methodological, ethical and theoretical diversity and while not letting go of high academic standards realise that these standards are also being given their legitimacy in context.

Notes on the Contributor

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Endnotes

1 Throughout this paper, the term 'climate change' refers to anthropogenic climate change.

2 Page (2007), Northcott (2007), Garvey (2008) and Adger, *et al.* (2006) are some important exceptions.

3 This paper is part of an ongoing research project *Climate Capabilities* (2008–2010) financed by the Swedish research council Formas, the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning. Parts of it will be published in David O. Kronlid (2010) in Bergmann & Gerten (eds) (2009).

4 The International Panel for Climate Change (IPCC) is the leading scientific body for the assessment of climate change. Chaired by Mr. Rajendra Pachauri, the IPCC synthesises current climate change research in its assessment reports.

5 Amartya Sen developed the capability approach as an approach to wellbeing and social justice that focuses individual's entitlement to capabilities, i.e. to positive freedoms. Martha Nussbaum and others later developed the capabilities approach into a research field widely recognised within development ethics and development policy.

6 Ethical analysis or 'ethics' means 'the philosophical inquiry into the nature, extent and justification of the ethical claims which are made on human beings …' (Dower, 1998:2–3). In this sense, IPCC documents reflect (implicit and explicit) certain moral claims and assumptions regarding climate change.

7 The analysis focuses on the Working group II's (WGII) *The Summary for Policy-Makers* and Chapter 17, 'Assessment of Adaptation Practices, Options, Constraints and Capacity'. The summary for policy-makers contains the key scientific findings and is the core document in which the IPCC communicates its results to the media, academia and policy-makers. Hence, from a discourse theoretical point of view, *The Summary for Policy-makers* is the most authoritative among the IPCC documents.

8 The fact that climate change affects people's health, mobility, education, work, consumption, etc. is clearly an indicator of this.

9 Kronlid (2003:55–46).

10 Robeyns (2003:61).

11 Alkire & Black (1997) 'prefer the term "flourishing" – which also communicates the sense that people pursue and participate in but never fully realize' the dimensions of wellbeing 'once and for all' (268). I use 'functions' and 'flourishing', and 'elements on capability set lists' and 'dimensions of flourishing' interchangeably.

12 A discussion of the missing capabilities (appreciation of beauty, play, friendship, self-integration, and coherent self-determination) and how they relate to other dimensions of wellbeing are of significant importance and will be dealt with in coming publications.

13 Here cited from Chapter 17, 'Assessment of Adaptation Practices, Options, Constraints and Capacity' in the *IPCC Fourth Assessment Report*, 2007:734.

14 http://www.panda.org/about_our_earth/aboutcc/problems/people_at_risk/personal_stories/witness_ stories/?uNewsID=113580, accessed 22 May 2009.

15 Leduc makes this point as well.

16 The term 'modern' does not imply that indigenous cultures are 'pre-modern'. Rather, 'modern' refers to lifestyles and knowledge systems typical for affluent growth economies characterised by de-contextualised education, reductionist research and learning and a separation of the spiritual and the worldly.
17 Contextual and individual differences in vulnerability and power can of course produce various consequences of such experience. This question will be further elaborated in coming publications.
18 The ability to transcend refers to a person's ability to relate to some more-than-human source of meaning and value. See IPCC, Fourth Assessment Report, Ch. 17, Box 17.5:730).
19 In this chapter, adaptation is understood as institutional (inter- and transnational, national, and local) and/or individual proactive, reactive and inactive responses to climate change.
20 'Resilience' refers to 'the self-repairing capacity of ecosystems' (Folke, *et al.*, 2005:558) but could also refer to the self-repairing capacity of eco-social systems.
21 Mobility researchers also allude to a dimension of mobility sometimes referred to as the meanings attached to geographical mobility, sometimes as existential mobility, and sometimes as symbolic mobility. See for example Cresswell, 2006; Kronlid, 2008a and 2008b. Hence, in order to understand fully how climate change affects mobility we need to understand how various mobilities (social, geographical, symbolic, existential, etc.) interlink.
22 Grieco & Hine (2008:67): 'Routine neglect of the relationship between transport and social exclusion was the mother of the New Orleans crisis.'
23 My suggestions can easily be applied to other ESD areas as well.
24 A minor field study focussing transcendence in Mongolia is currently being planned at the department of curriculum studies in Uppsala, Sweden.

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Sigtuna Think Piece 3
The Wider Context Of Climate Change Discourse

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Abstract

This paper discusses climate change from the perspective of metaphorical vision. The paper asserts that there is one central metaphorical vision driving Western societies, notably the metaphorical vision of the enemy. The paper goes on to explain how this metaphorical vision manifests itself and how it is maintained through psychological and other social interests. It then provides an empirical example of a climate change project in Kenya that demonstrates the visibility of this metaphor surrounding climate change, and then provides a viewpoint of a business scientist, Bjorn Lomberg, who challenges conventional discourse on climate change. The paper finally considers what the educational implications are of perpetuating enemy metaphorical visions through climate change education and challenges researchers to consider whether the enemy metaphor can be overturned and changed as central metaphor in climate change education.

Introduction

The findings of the world's Intergovernmental Panel on Climate Change (IPCC) are receiving significant amounts of attention across the world (Tanner & Mitchell, 2008). According to these authors, achieving an international agreement, especially under the United Nations Framework Convention on Climate Change (UNFCCC), on emission targets, burden sharing, trading mechanisms as well as technological and financial assistance remains a high priority issue for the 'mitigation' of climate change. Tanner and Mitchell (2008) further add that the question of how to address climate change impacts in the context of sustainable development and poverty reduction is becoming a major and pressing concern in many parts of the world.

The discourse on climate change has moved so rapidly that several issues around the topic are already known with reasonable confidence by scientists, such as the general causes, dimensions and potential impacts of climate change on one hand, and the adaptational, social justice and economic cases of climate change, on the other. The objective of this article is to present a wider context of the discourse of climate change as a way of contributing to some better understanding of the subject. In the process of this presentation, potential researchable areas will be highlighted for readers interested in pursuing further the orientation taken herein. In presenting this discussion, I consider it crucial for readers to understand how the immediate, local concerns and anxieties associated with climate change often have much broader and deeper contextual causes than those that may be immediately apparent.

Metaphorical Vision

Metaphorical vision of the enemy

The first point to state is that the whole discourse on climate change is locked into metaphor. Metaphor plays a fundamental role in our perception and comprehension as well as our thinking and writing about climate change. This point as it applies to education is discussed below in more detail. Societies and individuals differ in their choices of metaphors. Interest in metaphor is partly due to, as Lakoff and Johnson (1980) have shown, the point that the concepts of climate change that govern our thought are not just matters of science or the intellect but that these concepts are originally metaphorical in nature. How climate change is structured, understood and addressed is deeply metaphorical. Many of the linguistic concepts used in the discourse on climate change, as well as all the human ways of tackling it, are based on a metaphorical concept that I shall soon unravel.

While the idea that metaphor is central to the discourse on climate change may be generally clear to a good number of people, the related idea that the Western world is operating under a 'metaphorical vision' may still not be known by many people. According to Mills (1982b), who originated the notion of metaphorical vision, three periods in the history of Western attitudes to the environment are distinguished. In the Middle Ages, the environment and nature were seen primarily as a book. In the Renaissance, environment and nature were organised as a human being. In the modern age, the most influential metaphor of nature and environment has been the machine. Mills (1982b) posited that a society chooses one metaphor rather than another as the primary vehicle through which it seeks to comprehend and organise its environment and the world. Such a choice is highly indicative of the needs and aspirations of that society.

In the above paragraph, I have assumed that many people today have no idea that our world, each time, uses one metaphor in particular as the basis for the systematic development of a 'metaphorical vision' of the world. According to Mills (1982b) the history of Western attitudes toward the environment over the past 2000 years was based only on the above mentioned three metaphors.

Accordingly, what Mills (1982b:238) means by the term metaphorical vision:

> … is the tendency for a society to seize upon one metaphor in particular as the central vehicle through which it seeks to comprehend its world. Choice of one metaphor rather than another is highly indicative of the needs and aspirations of that society. The chosen metaphor is exploited for all its implications, around which a systematic world vision is elaborated.

In line with this definition, I shall argue in this paper that Western society deliberately chose the metaphor of 'enemy' as its bedrock metaphor for the period spanning the Middle Ages, the Renaissance and the modern. Viewing the environment, nature and the earth as an 'enemy' has formed the bedrock of western approaches during all these three periods, including before the Middle Ages. In short, the 'enemy metaphorical vision' has deliberately been chosen by western society as basis to comprehend, organise and exploit the world. Based on this assertion,

interested researchers can investigate what implications were to be exploited by Western society by choosing the metaphor of enemy. The discourse on climate change, in this regard, is locked into the enemy metaphorical vision. The metaphorical concept of 'climate change is an enemy' currently structures what people do, how they understand and what they do about climate change. Let interested researchers verify this claim. The essence of metaphor here is understanding and experiencing climate change in terms of an enemy. This is what it means for the discourse on climate change to be metaphorical in nature. This premise will be elaborated as we proceed in this paper. For now, let me present the philosophical basis of the enemy metaphorical vision.

Philosophical statement on the enemy metaphorical vision

The enemy metaphorical vision has a firm foundation in Western philosophical thought. A philosophical justification for the enemy viewpoint is presented below:

> … the enemy, as embodiment of the primordial chaos 'rich in creative seeds', is the source of transformation. In so far as chaos is an intrinsically valuable part of religious life, the enemy is intrinsically valuable and, indeed, indispensable. If the enemy did not exist, one might say, we would have to invent him … since the enemy embodies all the chaos encountered in war, the act of identifying oneself with the enemy one kills is an initiatory descent into death that generates greater life. Ultimately, then, both war and the enemy embody the ideal of all religious life … perhaps it is only by fighting the enemy that we can simultaneously embrace both perfect cosmos, perfect chaos, and the union of the two. If so, then it would understandable that human societies always have, and always will, insist on finding an enemy to fight. (Chernus 1991:341)

The above statement of philosophy applies to a whole range of things, phenomena or conditions to which the idea of the enemy has been applied in Western society. The list of such things is almost endless – including flood waters, nature, women, population, political opponents, disease and, now, climate change. Applying the above statement to the topic under discussion, therefore, means that climate change:

(a) is now a source of transformation in much of the world, however this means it
(b) is intrinsically valuable and indispensable
(c) can generate greater life after humanity 'conquers' it
(d) might become the ideal of all religious life
(e) embodies all the chaos encountered in war
(f) would have been invented, anyway, if it had not existed
(g) will persuade all societies to insist on fighting it.

With the above implications around, it should be understandable if humanity at the moment witnesses the gradual spread of the discourse on climate change to virtually all corners of the globe, academic disciplines and to all forms of human endeavour. This diffusion process is something we are witnessing at the moment, and that is what it partly means for an object to help

create an enemy metaphorical vision for the entire world. Let interested researchers tackle the question: is climate change helping to create understanding of context as an enemy situation?

Rationale for the 'climate change is an enemy' metaphor

The justification for creating the 'climate change is an enemy' metaphorical concept is pegged at various levels presented next.

Opportunities to be generated: There are countless opportunities arising from choosing an enemy to be a central driving metaphor. Let readers add to this list themselves based on their knowledge. Firstly, allies, networks and partnerships tend to be formed aimed at addressing the enemy condition so designated. Secondly, unity of purpose among various players and organizations tends to be forged by an enemy situation. Thirdly, resources, talent and human attention usually come to be mobilised with relative ease as a way of addressing the enemy condition. Fourthly, a lot of human activity, movement and fuss tends to be generated in the process. Activity and movement are valued attributes by some people.

Innovation: Crisis as an offshoot of enmity is believed by some people to drive innovation; and climate change in itself has, indeed, generated a deep sense of crisis worldwide. In this regard, a 'culture of crisis and paranoia' that climate change generates can be seen to be a source of innovation in itself, as McKeown (2008:12) seems to suggest here:

> … people need some reason to make tough choices. Organisations find it even harder to make progress without knowing that it 'has to', and will usually wait until a real crisis comes along before getting on with the hard stuff that is essential to moving forward. A crisis is not the same as a disaster (although disaster may prompt a crisis). It is a 'crucial or decisive point or situation' or a 'turning point'. Such turning points force a choice between inertia and innovation. When faced with a crisis, ask: How can we use this crisis to inspire innovation?

Interested researchers could document the varieties of innovation inspired by climate change being a crisis situation.

The psychology of climate change: Being an enemy condition as argued herein, climate change is already brewing some distinct form of psychology among various actors and people. If climate change is an enemy situation, then some people are already at war with it. Here is what LeShan (2002:71–72) says about war:

> … the first modern research project I know of that asked the question 'Why do men go to war?' was started by the United States Army in 1916. When news of it reached General Pershing, he ordered the study discontinued. He said that the answer was obvious. 'Men go to war' he said, 'because they enjoy it.' Indeed, we cannot completely ignore this answer. (Bertrand Russell phrased it, 'many are happier in war than in peace'.)

There it is said. Waging war against climate change is likely to be enjoyed by many people for the following motivations cited by LeShan (2002):

(a) Displacement of aggression – this situation refers to the point that when there is something or someone to hate outside ourselves as a group, then our stresses are eased. Could it therefore be that hating climate change performs the same function among human beings? Research is needed to confirm or refute this.

(b) Projection of self-doubts and self-hatred – this situation is similar to item (a) above and refers to a condition in which when we find an outside scapegoat or target to absorb our self-doubts, feelings of worthlessness and hopelessness; then our tension is greatly decreased. Instead of feeling bad about ourselves, we feel good as we go out to rid the world of the evil of climate change.

(c) Lack of meaning and purpose in life – war against climate change holds out the promise of our being needed in a great cause. The need for intensity, colour and meaning in life is a strong and powerful drive, which war provides. For, instead of praising war (against climate change) directly, stories, novels or movies often applaud war's heroic, mythic and patriotic aspects among individuals. People involved in war get praised for courage, belief in the future and a faith in the best ideals of one's country in relation to climate change. In this way, they get a sense of meaning and purpose in life.

(d) A need for greater belonging to a group.

LeShan (2002:83) quotes Arthur Koestler as saying that:

> the continuous disasters in man's history are mainly due to his excessive capacity and urge to become identified with a tribe, nation, church or cause, and to espouse its credo uncritically and enthusiastically, even if its tenets are contrary to reason, devoid of self-interest and detrimental to the claims of self-preservation.

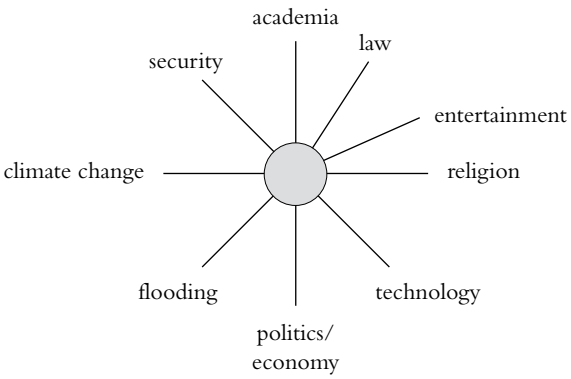
This factor of 'belongingness' is crucial in motivating people to fight climate change, enlisting themselves in the fight out of an identification with a network, cause or unit of some kind. It would be instructive to investigate the varieties of climate change networks or units already established worldwide, regionally or nationally.

Operations of a metaphorical vision

Lynchpin for transformation: Much of our contemporary world is experiencing a certain type of change, which may not be pleasant to some people, as a result of the workings of the enemy metaphorical vision. According to Namafe (2006), this change is one that favours or saves a few at the expense of the suffering and dying majority. It is the same type of unpleasant condition that produces predominantly negative effects of one kind or another in politics, entertainment, economy, climate change, security as well as medicine, religion and so on, as shown in Figure 1. In Figure 1, the enemy metaphor is at the centre of the various elements portrayed in the diagram. It is a transformative factor. Moreover, the locus of climate change in the diagram can

be observed within a broader configuration of a wheel of change and transformation formed by the enemy metaphorical vision whose fulcrum is the enemy metaphor.

Figure 1. Transformation through a metaphorical vision



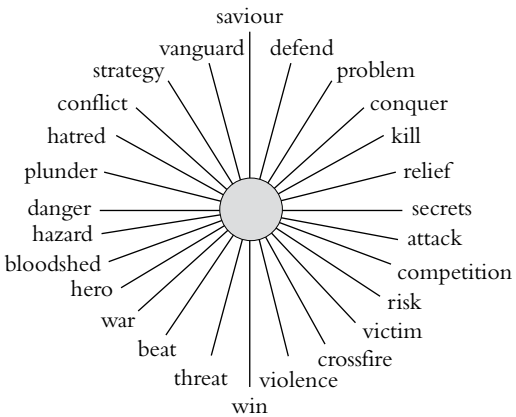
(Source: Namafe, 2006)

The same enemy metaphorical vision controls a host of other related features of human life, such as the following:

(a) thinking style – tactics, strategic plan, target audience, manoeuvre, risk society and so on.
(b) concepts used in scholarship – hazard, vulnerability, risk, threat, conflict, violence, force, mitigation, security, challenge, stress, disaster and so on.
(c) ordinary conversation – hammer! sort him out, shoot!
(d) actions – game scouts, war, argument, master, slave, retreat, mobilise, conquer, sacrifice, interrogate, boss and so on.
(e) institutions – police force, military establishments, defence counsels, security wings, victory ministries, freedom statues and so on.

Concepts generated in everyday life: The power of the enemy metaphorical vision over people arises partly from the fact that it is so deeply hidden as to merely generate offshoot concepts that people often use in their ordinary, everyday lives. Figure 2 below illustrates some of the subsidiary concepts generated by the enemy metaphorical vision. This range of concepts can be compared with people's response to the issue of climate change as cited by the International Climate Challenge (ICC) in Kenya in relation to some research by Jo Hamitton of Oxford University (cited in International Climate Challenge Programme, 2008:3).

Figure 2. Subsidiary concepts



(Source: Namafe, 2006)

Educational Implications

The part played by the 'climate change is an enemy' metaphor in education

The metaphorical view of 'climate change is an enemy' has important implications in education. The first implication, noted by Taylor (1984), relates to how our choice of metaphors reflects and helps to organise our thinking, talking and writing about educational issues such as climate change. Much of education is conceptualised in terms of metaphor. Ideas transposed from their original fields of application (e.g. enemy) are being employed to describe, to legitimate and sometimes to explain complex multi-determined processes (e.g. climate change) in ways that, however useful, are often inappropriate to educational contexts (Taylor, 1984). This point, related to the concepts and assumed negative impacts of climate change, as well as the motivations which people get by fighting an enemy as discussed above, are illustrated in the use of concepts which are entering schools of Kenya through the work of the International Climate Challenge (ICC) programme.

Perils of inappropriate metaphors in education

Taylor (1984) has warned of the perils of transposing ideas from their original fields of application to education. Some metaphors may simply be inappropriate to educational settings or even wrong in themselves. Evidence of the inappropriateness of the metaphorical concept of 'climate change is an enemy' in itself can be gleaned from the following extended and technical account quoting Bjorn Lomberg, who is Professor at Copenhagen Business School and Head of the Copenhagen Consensus Centre.

Box 1. Obama on global warming

In one of his first public policy statements as America's president-elect, Barack Obama focused on climate change, and clearly stated both his priorities and the facts on which these priorities and the facts on which these priorities rest. Unfortunately, both are weak, or even wrong. Obama's policy outline was presented via video to California Governor Arnold Schwarzenegger's Governors' Global Warming Summit, and has again been shown in Poznam, Poland, to leaders assembled to flesh out a global warming roadmap. According to Obama, 'few challenges facing America and the world are more urgent than combating climate change.'

Such a statement is now commonplace for most political leaders around the world, even though it neglects to address the question of how much we can do to help America and the world through climate policies versus other policies. Consider, for example, hurricanes in America. Clearly, a policy of reducing carbon-dioxide emissions would have had zero consequence on Katrina's devastating impact on New Orleans, where such a disaster was long expected. Over the next half-century, even large reductions in carbon-dioxide emissions would have only a negligible impact.

Instead, direct policies to address New Orleans' vulnerabilities could have avoided the huge and unnecessary cost in human misery and economic loss. These should have included stricter building codes, smarter evacuation policies, and better preservation of wetlands (which could have reduced the ferociousness of the hurricane). Most importantly, a greater focus on upkeep and restoration of the levees could have spared the city entirely. Perhaps these types of preventive actions should be Obama's priority.

Likewise, consider world hunger. Pleas for action on climate change reflect fears that global warming might undermine agricultural production, especially in the developing world. But global agricultural/economic models indicate that even under the most pessimistic assumptions, global warming would reduce agricultural production by just 1.4% by the end of the century. Because agricultural output will more than double over this period, climate change would at worst cause global food production to double not in 2080 but in 2081.

Moreover, by implementing the Kyoto Protocol at a cost of $180 billion annually would keep two million people from going hungry only by the end of the century. Yet by spending just $10 billion annually, the United Nations estimates that we could help 229 million hungry people today. Every time spending on climate policies saves one person from hunger in a hundred years, the same amount could have saved 5000 people now. Arguably, this should be among Obama's top priorities.

Obama went on to say why he wants to prioritise global warming policies: 'The science is beyond dispute and the facts are clear. Sea levels are rising. Coastlines are shrinking. We've seen record drought, spreading famine, and storms that are growing stronger with each passing hurricane season.'

Yes, global warming is happening, and mankind is partly responsible, but these statements are – however eloquent – seriously wrong or misleading.[1]

Box 1. Continued

Sea levels are rising, but they have been rising at least since the early 1800s. In the era of satellite measurements, the rise has not accelerated (actually we've seen a sea-level fall over the past two years). The UN experts about a 30 centimetre sea-level rise over this century – about what we saw over the past 150 years.

In that period, many coastlines increased, most obviously in Holland, because rich countries can easily protect and even expand their territory. But even for oft-cited Bangladesh, scientists just this year showed that the country grows by 20 square kilometers each year, because river sedimentation wins out over rising sea levels.

Obama's claim about record droughts similarly fails even on a cursory level – the United States has in all academic estimates been getting wetter over the century (with the 1930's 'dust bowl' setting the drought high point). This is even true globally over the past half-century, as one of the most recent scientific studies of actual soil moisture shows: 'there is an overall small wetting trend in global soil moisture.'

Furthermore, famine has rapidly declined over the past half century. The main deviation has been the past two years of record-high food prices, caused not by climate change but by the policies designed to combat it: the dash for ethanol, which put food into cars and thus upward pressure on food prices. The World Bank estimates that this policy has driven at least 30 million more people into hunger. To cite policy-driven famine as an argument for more of the same policy seems unreasonable, to say the least.

Finally, it is simply wrong to say that storms are growing stronger every hurricane season. Even for the Atlantic hurricane basin, which we tend to hear about the most, the total hurricane energy (ACE) as measured by the US National Oceanic and Atmospheric Administration has declined by two-thirds since the record was set in 2005. For the world, this trend has been more decisive: maximum ACE was reached in 1994, and has plummeted for the past three years, while hurricanes around the world have for the past year been about as inactive as at any time since records began kept.

Global warming should be tackled, but smartly through research and development of low-carbon alternative. If we are to get our policies right, it is crucial that we get our facts right. (*Sunday Post*, 14 December 2008 and www.project-syndicate.org)

This detailed account is presented in its entirety because, in the current situation, information on the 'enemy' view of climate change is so preponderant that readers may rarely find a contrasting viewpoint on it similar to this one.[2]

A hard nut to crack

According to Giddens (2006) climate change and its associated global warming are regarded by many people as the most serious environmental challenge of our time. At the same time it is recognised that the earth's climate is extremely complex and a variety of factors will interact to produce different consequences in individual countries at varying points across the earth.

If the argument in this paper is anything to go by I would suggest that, instead of climate change, the enemy metaphorical vision on which climate change is based is the most serious environmental challenge of our time. As stated in this paper, metaphorical vision produces a way of life for people. In this sense, Chris Patten (2009:12) argues that:

> … the biggest challenge for all of us, young and old, next year and for the indefinite future, will result from a different sort of change that is unlikely to respond simply to technological determinism. It results from the way we have been living for two centuries. If older leaders do not produce the right answers soon, younger generations will reap the whirlwind – sometimes literally.

Although he did not specifically pin point the enemy metaphorical vision *per se* as the sort of change which is unlikely to respond to technological determinism, Wachepa (2008:25) notes that, from an educational point of view, 'not even education can change that which society intends to maintain, especially as seen through a shared metaphorical vision.' In short, not even education can change the enemy metaphorical vision, or can it? This is a researchable question.

Conclusion

The discourse on climate change is now worldwide in coverage. This discourse, like most topics in scholarship and education, is heavily laden with metaphors. However, the 'enemy metaphorical vision' seems to, arguably, exert a central influence on the discourse. As a result, 'climate change' has come to be conceptualised in terms of an 'enemy'. As cautioned by Taylor (1984) such a metaphorical concept of 'climate change is an enemy' may in fact be weak, or even wrong in itself, especially when applied to education. Notwithstanding this point, this paper has suggested potential research areas for interested readers wishing to take this discussion on metaphor further. Above all, it is hoped that readers have appreciated that the immediate, local concerns and anxieties associated with climate change (e.g. flooding, global warming or some disease burden) often have broader and deeper contextual causes than those that may be immediately apparent (e.g. the greenhouse effect or rapid industrialisation). The whole discourse on climate change, and its associated concerns and anxieties, is just one of the many spokes of a metaphorical vision wheel whose lynchpin is the metaphor of the enemy.

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Endnotes

1 These assumptions about such statistics being misleading are also contested.

2 Editors' note: It should be noted here that contrasting perspectives on complex issues are often hotly debated, and while pieces such as the one presented here are useful in that they present challenging and different perspectives they are not without their critiques (e.g. some dissident views on climate change are said to be in the service of corporate interests who have vested interests in maintaining fossil fuel economies). Such pieces should therefore not be read naively. They also create epistemological uncertainties which may have material consequences of a different kind – as seen in the HIV/AIDS dissident debacle in South Africa – that led to unnecessary human suffering and early death for many people. The salient point here is the focus on more appropriate choices, and that there are different ways of looking at issues that may allow for more appropriate choices to be made.

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Sigtuna Think Piece 4

Climate Change Education in Relation to Selective Traditions in Environmental Education

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Abstract

In this paper the development of climate change education is related to three traditions of environmental education in Swedish schools: fact-based, normative and pluralistic traditions. These traditions are discussed from two perspectives; first that climate change is a political concept connected to different interests, ideologies, priorities and strategies; and second that compulsory education has democratic responsibility and should be carried out using democratic working methods to prepare pupils for active participation in civic life. It is stressed that the pluralistic approach has many advantages as it recognises the political dimension of environmental and sustainability issues and the same time, strives to avoid the risks of indoctrination by promoting students' critical thinking and their democratic action competence. Finally the paper recognises a number of questions important to address in further research such as the relativistic attitude of a pluralistic approach and the meaning of such an approach in educational practice.

Introduction

The purpose of this paper is to discuss the development of climate change education in relation to fact-based, normative and pluralistic traditions of environmental education in Swedish schools. The advantages and disadvantages of these traditions are judged from two normative premises; first that climate change education should be able to handle the political aspects of climate change; second that climate change education should take the democratic responsibility of compulsory education as a concern.

The first premise relates to the fact that climate change is not only a scientific concept that concerns measurements of temperature changes and models for predictions of emissions and their consequences. It is also a political concept in the sense that it is value laden and that the use of the concept is connected to different interests, ideologies, priorities and strategies. This means that although there might be agreement on that the climate is indeed changing and that the sources are anthropogenic (IPCC, 2007), ways of valuing the consequences in terms of the seriousness of the threat, the best actions for balancing mitigation and adaptation and the willingness to make changes to improve the situation, will differ. Conflicts between different values perspectives are seldom possible to resolve by simply referring to scientific investigations. To find ways for common strategies we are thus forced into negotiations and making compromises which can be regarded as both reasonable and morally acceptable.

Climate change as a political concept relates to many of the tensions within sustainable development in late modern societies in general and can be understood as a struggle between two opposite positions (see Sandell, Öhman & Östman, 2005; Fergus & Rowney, 2005; Jabereen, 2006; and Sumner, 2008). On the one hand are the mainstreaming of environmental and sustainability issues and reorientation of the market economy, which often is labelled as ecological modernisation (Hajer, 1995; Læssø forthcoming). Here there is a focus on the negative consequences of development through treatment technology, legislation and planning. On the other hand there is an alternative thinking perspective questioning development itself and the very foundations of Western modernisation; neoclassic market theories, material growth and the international export economy. Instead alternative production systems (decentralised and based on ecological knowledge), and alternative consumption patterns (with a focus on fairtrade and solidarity), are advanced. One of the main challenges thus facing climate change education is how we prepare coming generations to deal with value-related differences and make agreements, compromises and changes.

The second premise relates to the specific demands the democratic responsibility of compulsory education imposes on educational practice when facing this challenge. In the Swedish school system the democratic role of education has been a central curricular theme ever since the school commission of 1946 (see Englund, 1986, 2001). Even though there has been a historical wave motion between a focus on knowledge and a focus on citizenship, democracy presents an obvious reference point when new perspectives or issues such as climate change are about to be implemented in the curriculum. The democratic concern can be illustrated by quoting from the introduction to the Swedish Agency for Education document 'Curriculum for the compulsory school system, the pre-school class and the leisure-time centre Lpo 94', in which it is stated that 'Democracy forms the basis of the national school system', while further on in the text it is declared that 'It is not in itself sufficient that education imparts knowledge of fundamental democratic values. It must also be carried out using democratic working methods and prepare pupils for active participation in civic life' (The Swedish Agency for Education, 2006:5).

However, the relationship between democracy and education is not unproblematic. A classical problem that has concerned philosophers and educationalists ever since the idea of democracy saw the light of day in ancient Greece is the paradox between the double educational assignment to foster free, autonomous subjects and at the same time transfer foundational values and norms of a particular culture to future generations. This paradox is indeed accentuated when working with climate change education: how to create a commitment to resolving or halting climate change but still leave room for free opinion-making?

Environmental Education as a Basis for Climate Change Education

Traditionally, complex environmental issues similar to climate change have been included in environmental education. It therefore seems reasonable to suggest that climate change education should build on and develop the experiences of environmental education. This does not mean that climate change education is necessarily simply an extension of environmental

education, since it is interesting to probe what the question of climate change brings to environmental education. My point here is that educational practices are continuous, and that the development of a practice can be seen as a process through which prior experiences, habits and customs are involved and transformed. In earlier studies (Öhman, 2004, 2008) I have suggested that the variety of ways of teaching about environmental and developmental issues can be viewed as different selective traditions. The term 'selective tradition' was originally developed by Williams (1973) to underline that a certain approach towards knowledge and a certain educational praxis are always selected within the frame of a specific culture. The selective traditions represent different answers as to what constitutes good teaching in a subject, and includes different practices concerning the selection and organisation of the subject matter, as well as the selection of forms and teaching methods. In the studies referred to, three different selective traditions within environmental education were identified in Swedish schools: a fact-based tradition, a normative tradition and a pluralistic tradition. The question is, to what extent are these different traditions appropriate as a starting point for the progress of climate change education given the premises indicated above? In the following I will make a brief presentation of the three traditions and then continue with an assessment of their possibilities.

Selective Traditions of Environmental Education

Overview of selective traditions

In the fact-based tradition, teachers primarily treat environmental issues as knowledge problems. This tradition is based on the idea that environmental problems can be dealt with by means of more research and information supplied to the public. The position taken is that only science can provide a reliable foundation for our knowledge about environmental issues and that scientific facts and models have sole importance in an educational context. The democratic role of education is to provide objective facts as a basis for the students' opinion-making. The democratic process is therefore something that comes after education.

The formation of the normative tradition can be viewed as an answer to the fact-based tradition's shortcomings concerning value-related content. This tradition is built on the idea that it is possible to derive norms from scientific facts. The answers to value-related environmental issues are accordingly established through deliberative discussions among experts and politicians and are presented in policy documents and syllabi. Schools are then obliged to teach students the necessary environmentally friendly values and attitudes and, in this way, attempt to change the students' behaviour in the desired direction and support an environmentally friendly transformation of society. The democratic process is in this case thus something that comes before education.

The pluralistic tradition can be seen as a post-foundational alternative to the fact-based and normative approaches. This tradition is characterised by an endeavour to mirror the variety of opinions on sustainability informing contemporary debate about different questions and problems relating to the future of our world. The students critically examine the knowledge basis, interests and values behind the different opinions. Compared with the normative approach, where the democratic process is something that concerns experts and politicians

and advances education through negotiations over the curriculum, the democratic process is rather something that is situated within education itself. Thus, rather than an attempt to promote a preconceived idea of what constitutes a sustainable society, the principles for a fair and environmentally sound future are displayed, exchanged, deliberated and agreed upon in the educational process.

Advantages and disadvantages of the traditions

The strong point of fact-based education is that it is well established, easy to assess and clearly based on reliable scientific descriptions, models and facts. This focus creates good possibilities for the students to develop a solid and common knowledge basis concerning climate change and its causes. The problem with this teaching is that the climate change problems easily appear merely as objective descriptions. The risk is thus ignoring that the understanding of these problems are intimately connected to values and interests. Furthermore, students generally do not gain much experience of participation in discussions in which different perspectives are critically evaluated or how to transform their standpoints into action. The resulting democratic-action competence is therefore likely to be rather poor. The fact-based approach can thus be seen as a limited basis for climate change education both in relation to the premises that an appropriate climate change education should be able to deal with the political aspects of climate change and that it should take the democratic responsibility of education as a concern.

In contrast with the teachers within the fact-based tradition, teachers working within the normative tradition pay attention to the political dimension of environmental issues. These teachers take a clear political stand and they see it as their mission to promote the norms they find pro-environmental in their teaching. With suitable teaching methods this kind of education can create a strong commitment to issues from students, and effectively influence them towards more climate-friendly attitudes and behaviour. The problematic side of this teaching is of course how to be sure of which values are the really environmentally friendly ones and how to ascertain what appropriate solutions to complex issues involving environmental as well as economic and social (including cultural) aspects might be. By delivering specific answers to value-related issues the normative approach runs the risk of turning education into a political tool to create a specific predetermined society and to decrease the very foundation of democracy – the diversity of ideas and opinions. This means that there is a danger that education will lose its critical and emancipatory potential and its democratic obligation will be violated; the result being that education then resembles indoctrination (see the warnings of Wals & Jickling, 2000; and Jickling, 2003).

In relation to the fact-based and the normative, the pluralistic approach seems to have many advantages as it recognises the political dimension of environmental and sustainable issues and the same time strives to avoid the risks of indoctrination by promoting students' critical thinking and their democratic-action competence. Rather than preparing for a democratic life after school, a climate change education that builds on pluralism makes formal education one of the arenas in society where different value judgements concerning our common future are discussed. By not treating the values of climate change as fixed but subjects for

constant discussion, pluralistic approaches to climate change education can allow for difference, dissonance and conflicts to arise and be deliberated.

Such a pluralistic approach relates to the pragmatic philosopher John Dewey's (1916/1980) view of democracy as a life form, which in recent years has attracted a lot of attention in Swedish curriculum research (Englund, 2006; Säfström & Biesta, 2001; Gerrevall, 2003; Larsson, 2007; Englund, Öhman & Östman, 2008; Öhman, 2008). These researchers have emphasised democracy in terms of a communicative activity and that the ideal of democracy is not a situation in which people relate to each other by declaring and defending their preconceived standpoints, but rather a situation where people create new possibilities by influencing each other. In relation to this view of democracy, education is understood as a forum in which people with diverse backgrounds can communicate their different experiences and, accordingly, continuously reconstruct their experiences through common meaning-making processes. Communication is here seen as the means of reaching a deepened, nuanced standpoint where several different possibilities have been explored and valued. In this way education plays a significant role in the maintenance of the democratic life form.

Further Questions

Although a pluralistic approach may solve many of the problems connected to the two premises, this approach also gives rise to a number of questions important to address in further research.

To begin with there are questions about the relativistic attitude of a pluralistic approach: if one strives to illuminate different opinions about value-related issues in educational practice, could this be interpreted as all alternative actions being equally right and all values equally good? And if everything is equally good and right – that anything goes – how might commitment to important issues be encouraged?

From a philosophical pragmatic perspective an answer to such a critique has been rejection of the idea that the true and the good are something absolute which can be discovered. For pragmatists this is rather something that is created in human communication (Hickman, 2009), and as Rorty holds, in human interaction relativism is rarely a problem: 'One cannot find anybody who says that two incompatible opinions on an important topic are equally good' (Rorty, 1982/2003:166).

Still, there are several important objections that can be raised to the pragmatic claim that concepts like truth, virtue and morals can only be understood against the background of the cultural context in which they have been created and developed. Does this not mean that we are giving a privileged position to those who belong to a certain culture, simply because of their so belonging? Is there not a risk that this will merely conserve established patterns of thinking? What are the consequences if the cultural context is oppressive to both humans and nature? And so on.

A possible answer to such a critique is to claim that this way of defining what is true and good is only valid on the basis of an undistorted conversation. The question is what kind of criteria such a conversation must meet, and how those criteria are to be justified. Are these norms contingent as Rorty (1989) claims or is it as Habermas (1990) and Benhabib (1992) hold

possible to reconstruct such norms, making them valid beyond historical and local contexts? (For a discussion between Rorty and Habermas on this issue, see Brandom, 2000.)

Even if we would come to an agreement on the criteria for deliberative conversations it still would be possible to claim that due to differences in background, people would have unequal possibilities to participate in such conversations. On the one hand this is of course a problem and an important task in climate change education should be to give all students an opportunity to develop basic scientific knowledge about climate change problems. On the other hand difference is also the very condition for communication and it is by experiencing difference that we can learn something new. The challenge for both democracy and education is accordingly not to create unity and consensus, but rather to make plurality and diversity possible in a shared, local and global community. Striving for sameness and conformity would not only exclude those who do not fit the standards of normality, but would also reduce the number of possible solutions to future problems.

Other important research questions concern what a pluralistic approach means in educational practice. There are a number of recent and ongoing Swedish studies in the field of ESD research that all relate to pluralistic approaches that hopefully will contribute to the development of climate change education processes. There is not enough space here to detail this research but I would just like to mention some of the questions that have been addressed in these studies: what strategies do teachers adopt in their planning, when they select methods and content, and how do they contextualise the teaching content? (Sund, 2008); what actions (questions and comments) do teachers use in order to create a pluralistic learning environment in the classroom? (Rudsberg & Öhman, forthcoming); what power structures can be indentified in the classroom and how are norms created in practice? (Öhman & Öhman, 2009); how can the process of moral meaning making be described? (Öhman & Östman, 2007, 2008); what are students learning in deliberative conversations, how do they develop their democratic-action competence? (Rudsberg, Öhman & Östman, 2009); what are the students' experiences of deliberative conversations in school? (Gustafsson & Warner, 2008); what importance do aesthetics and values have in meaning making about environmental issues? (Lundegård, 2008).

Finally, it is essential to keep in mind that pluralism appears to be a useful vantage point for the development of climate change education given the two premises of political aspects and democratic responsibility discussed above. In other cultural and historical contexts other premises may be more relevant. Furthermore, the idea of pluralism and deliberation is in itself a specific norm, connected to the ideals of the Enlightenment and the development of humanism and liberalism in western European philosophy. Important questions in further research are therefore what a pluralistic approach may mean in other parts of the world, how it can adjust to these contexts, and what alternative approaches they may offer for climate change education development (see Larsen, 2008). It would be both dangerous and contradictory to determine pluralism as being the ultimate way of practising climate change education, rather than one of many possible solutions.

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Sigtuna Think Piece 5

Climate Change within Education for Sustainable Development: Ethical Tendency Discourse Analysis as a Tool

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Abstract

This think piece describes a way of including climate change within education for sustainable development (ESD), with a specific ambition to illuminate the moral dimension in a locally relevant way in the teaching. A method – ethical tendency discourse analysis – for creating a locally relevant teaching content that illuminates the moral dimension of climate change is described. This method has the potential to also, through an international collaboration, incorporate the global dimension in the teaching content.

Introduction

The purpose of this think piece is to suggest a possible way of handling climate change within the concept of education for sustainable development (ESD). A significant characteristic of ESD is the strong emphasis on the value aspects of environmental and developmental issues (see for example UNCED, 1992, Ch. 36:2; Baltic 21E:12; UNESCO, 2005, Annex I:3). These and other policy documents require educators to develop educational practices where students are given an opportunity to learn how to make ethical judgements and act in morally conscious ways.

Education for sustainable development is a context-sensitive education, since what is considered to be sustainable development varies between geographical locations and cultures.

In the following section I sketch out a way of including climate change within ESD, and especially focus on how to illuminate the moral dimension in a locally relevant way in the teaching. The sketch includes the description of a method – ethical tendency discourse analysis – that can be used to create a locally relevant teaching content that specifically focuses on the moral dimension of climate change. I also indicate how an international collaboration regarding such analyses can incorporate the global dimension in the teaching content.

The Ethical and Moral Dimension

As Joas (2000) reminds us, morals and ethics can assume a number of different expressions. In order to clarify ethics and morals in educational practice, Öhman and Östman (2008) developed an approach inspired by the later works of Ludwig Wittgenstein (1953/1997 and 1969/1997). Other than in 'A Lecture on Ethics' (1993), Wittgenstein did not say very much about ethics and morals (see further Rhees, 1970/1996). Rather, our work has been inspired by the philosophical method he used in his later works, i.e. his way of investigating 'ethical'

forms of life and language games. In the eyes of Janik and Toulmin (1973), such an application is reasonable:

> For might one not have urged that, on his own later principles, that the very *intelligibility* of words like *good* and *right* is as dependent as that of all other linguistic expressions on the acceptance of those shared language games and forms of life within which they are given their standard uses, and by reference to which alone we can understand one another's choices, decisions and scruples? Surely, his own later position implies that the concept of 'values' itself relies for its meaning on the existence of certain standard and recognizable modes of 'evaluative' behaviour. (235)

Wittgenstein used the term 'language-game' because in his investigations he wanted to be true to the idea that the use of language was part of an activity or a form of life. By doing so he forces us to focus on how the meanings of expressions and words are connected to their use in different situations: 'A meaning of a word is a kind of employment of it' (Wittgenstein, 1969/1997:61).

The background to this way of working is that Wittgenstein did not believe that it was possible to step out of our language: we live in the language. The consequences of this starting point is that the meaning of words and the circumstances in which words are used are interconnected in a way that precedes the analytical separation of the world (the circumstances) and the use and meaning of words when we speak. In line with this approach, we do not approach ethics and morals as theoretically demarcated concepts (as though they only have one 'true meaning'), but rather as a feature of human thinking and behaviour – which we, with inspiration from Wittgenstein (1993:44), call the ethical tendency. Many different forms of moral and ethical expressions can be found in the ethical tendency (see below). Thus, the purpose of this way of approaching ethics and morals is to open a way for investigations into the various ways that ethics and morals can appear in practice.

In Öhman and Östman (2008) a categorisation, resulting from an investigation of communication in educational settings, is presented. The backing for this categorisation was the observation that, in conversations, two different ways of using judgements are evident – which Wittgenstein (1993) referred to as relative and absolute judgements. The former concerns judgements that are made in connection with actions undertaken within a practice that are governed by well formulated rules and purposes. For example, when we say that someone is skilful horse rider, we do not normally interpret this as a moral judgement. But if someone states that it is wrong to insult or offend a human being, or that we have to take responsibility for future generations' wellbeing, we usually make such an interpretation. We do so because the person communicates that the judgement has a universal validity; a validity that is beyond particular circumstances and people's views or standpoints. Even though we communicate this universality regarding our judgement, it does not mean that moral judgements are universal, or that in practice we do not often take into account particular circumstances as an exception. The expression 'white lie' is an example of that. Thus, the important thing to pay attention to

is that when we use absolute judgements we communicate that we are dealing with morals and ethics.

Absolute judgements can also be expressed in three different types of educational situations, which Öhman and Östman (2008) call moral reactions, moral norms for correct behaviour and ethical reflection.

A moral reaction is a personal, immediate, spontaneous emotional reaction that includes responsibility for someone or something and can be expressed in terms of remorse, anger, shame or love and care. Here we are reminded about situations such as when we see someone hitting a child, ill-treating an animal, or when someone, without consciously calculating the risks, spontaneously dives into the water to rescue a drowning person. In other words, they are bodily reactions that we have little control over: they just happen. In linguistic terms we often pay attention to other people's moral reactions because they use strong aesthetic words and expressions – like 'how awful', 'how disgusting' – in specific situations. In the teaching context, moral norms are often about the teacher trying to get the students to learn social rules about how to treat people and nature in a correct and proper way. Ethical reflection is to do with what we can call rational ideas and thoughts about moral reactions, moral dilemmas or moral norms for correct behaviour. 'Rational' means that moral reactions, dilemmas, etc., are discussed in general terms.

In order to describe the ethical tendency within a class, local society etc., we can use the metaphor of landscape. An ethical tendency landscape can be described with the help of the categories of moral reactions, norms for correct behaviour and ethical reflection. By investigating which actions and events are 'objects' for norms for correct behaviour, moral reactions and ethical reflections, we acquire information about both the topography and content of the ethical tendency. The result of such an investigation can be used to create a local relevant teaching content regarding the moral dimension in education for sustainable development (see below).

It is important to pay attention to the fact that an ethical tendency landscape is not static. The objects for norms, moral reactions and ethical reflections can both change and vary between different cultures and geographically different positions. Moreover, the same object can have different locations in different cultures. Dewey (1922/1988) formulated the principle for this dynamic in the following way:

> The foremost conclusion is that morals have to do with all activity into which alternative possibilities enter. For wherever they enter a difference between better and worse arises. … Yet it is a perilous error to draw a hard and fast line between action into which deliberation and choice enter and activity due to impulse and matter-of-fact habit. … every reflective choice tends to relegate some conscious issue into a deed or habit henceforth taken for granted and not thought upon. Potentially therefore every and any act is within the scope of morals, being a candidate for possible judgement with respect to its better-or-worse quality. (279)

In some places climate change will transform the ethical tendency landscape, while in other places there will be no change at all. Furthermore, the transformation will probably look different in different places and communities. It might also be the case that changes in the ethical tendency landscape vary between different social groups in a local community. We can illustrate this by imagining a place where there has always been plenty of water for both cattle and people. Some of the people have access to the water via a lake, others from a stream running into the lake. Since the amount of available water has been plentiful it has not been included in the ethical tendency landscape. However, changes in the climate have led to a drastic reduction in the amount of available water and those most affected by this are the people living around the lake: the people living upstream still have some water. Although this change has led to changes in the ethical tendency landscape, the changes vary according to the different geographic positions and thereby different access to water. It is easy to imagine how this might create a tension in the local community.

Creating Local Relevance: Ethical Tendency Discourse Analysis

In order to situate the moral dimension in climate change education, an analysis of the local ethical tendency landscape can be helpful. A suitable methodology for such an analysis is discourse analysis, since it is focuses on patterns over time and space. While this is not the correct forum for elaborating on the actual technique of discourse analysis, some general procedures can be mentioned. One obvious way of creating data is to conduct semi-structured interviews with individuals or groups of people. When conducting such interviews it is important to create an atmosphere in which it is easy to talk about values and changes of values in relation to physical changes in the environment or other changes as an effect of physical change. In the analysis it becomes crucial to identify situations where the informants use absolute value judgements and, by looking at the circumstances in which the absolute judgements are located, to categorise them into moral reactions, norms for correct behaviour and ethical reflections. It is also important to pay attention to the time-line of the informant's story in order to acquire knowledge and information about the transformation of the ethical tendency landscape. When identifying a pattern, if there is one, it is also important to make comparisons between individuals or groups. In making such comparisons, the basic topography of the ethical tendency landscape in a local community can be identified without losing sight of the differences.

Local and Global Relevance

Dealing with climate change justly and effectively means that there is also a need to encourage the engagement and involvement of people in local issues as well as distant problems: problems that concern other people. Some of the causes of climate change in developing countries have their origins in the actions of people in developed countries. This means that it might be necessary for some of us to take other people's wellbeing into consideration – people whom we have never met – when deciding how we want to live our lives. In line with this it might also be

important to consider the question of how to include the dimension of 'distance responsibility' in the locally relevant content created by the ethical tendency discourse analysis. One way of doing this would be to create an international collaboration, where the focus would be to develop cases of ethical tendency discourse analysis with people in local contexts from different places. These cases could be arranged in relation to similar ethical tendency landscapes, in accordance with similar vulnerabilities or in accordance with the production of climate change and the consequences of such changes. Such arrangements can create possibilities for ethical reflections on the relationship between the local and global in different ways.

Although in this very rough sketch I have restricted myself to the ethical tendency landscape, a change in the ethical tendency landscape will naturally have consequences for the political landscape: who is able to set the agenda and who is not, etc. Including this dimension in the teaching of climate change is very important – and a theme for another sketch.

Notes on the Contributor

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Sigtuna Think Piece 6

A Case of Exploring Learning Interactions in Rural Farming Communities of Practice in Manicaland, Zimbabwe

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Abstract

Food insecurity is one of the major threats to sustainable development in Africa, and particularly southern Africa. Climate change is increasingly having negative impacts on food production, further increasing the vulnerability of resource-poor communities. This paper outlines a research study conducted in two Zimbabwean smallholder communities of practice, with the aim of understanding learning interactions taking place within the community of practice that influence its choice of cultivated food plants. This would hopefully inform capability-centred teaching and learning. The study was conducted in the context of vulnerability to environment risk, socio-political pressures and a market-oriented agro-based economy in recession. Various causal mechanisms influencing plant-food choice were identified using critical realist ontological analysis. These included mixed messages from external influences in conflict with local knowledge due to power knowledge relationships. A number of learning interactions were found to be important in promoting the adaptive capacity of the farmers to chronic drought, which included inter-generational knowledge sharing; farmer to farmer exchange and reflective dialogue; experiential learning; farmers 'passing on' part of their harvests to other farmers; farming communities learning from risk and responding to risk; and learning from trying things out. The implications for capability-centred social learning processes were that it is important to understand the causal mechanisms that influence choices; and to confront tensions, while reducing ambivalence. A focus on more sustainable alternatives, feasible and practical for farmers, was recommended. These findings, in the context of one case study, create research questions to be examined in other case contexts in environmental education research focusing on climate change learning and adaptation.

Research Context, Background and Methodology

Food security in the context of agro-biodiversity conservation has become increasingly important for Zimbabwe as a nation and at household level, especially during the post-land reform era (1999 to present). For many centuries, traditional open-pollinated food plants, careful seed selection and conservation, and traditional cultivation methods have played a vital role in ensuring household and community food security. Such indigenous food security practices were characterised by diversity, variety and exchanges of seeds, crops and vegetables among local farmers[2]. Some of these plants include sorghum, millet, rapoko, brown rice, maize, groundnuts, cow peas, cucurbits, green leafy vegetables, sweet potatoes and yams, giving a good mix of starch, protein, oils, vitamins and minerals. A careful combination of some of these crops was commonplace in traditional mixed cropping systems (Murwira, *et al.*, 2000; Food and Nutrition Council of Zimbabwe, n.d.).

Unfortunately, the combination of frequent and prolonged drought cycles, market-oriented agricultural policies introduced during the colonial period, a depressed economy and socio-political instability brought about by the land reform programme in independent Zimbabwe (post-1980) have led to widespread food insecurity. Research published by the United Nations Environment Programme (UNEP 2006) indicates that there have been at least four drought periods hitting southern Africa between 1986 and 2003: the first being 1986/87, followed by the 1991/92 season, which was described as severe; and then 1994/95, which was described as the worst drought in memory, and lastly the 2001–2003 drought, which was described as another severe drought in the Southern African Development Community (SADC) Region. In the UNEP report, the 2001–2003 drought period singled out Zimbabwe in particular (and other countries northwards) as worst affected. Western countries, in a bid to help the region, have in the process included genetically modified (GM) grain and seed in their food aid and recovery packages.

Risk factors affecting food security also include the self-validating reduction of certain nutritious foods due to their false associations with poverty and backwardness (Jickling, *et al.*, 2006). The Food and Nutrition Council of Zimbabwe (n.d.:16) observes that 'In Zimbabwe today many people are turning away from a healthy traditional diet because they think it is inferior to a western diet. This results in people eating less healthy food.' The role of environmental education under these circumstances is to improve the knowledge and awareness of new possibilities and of risk, in order to reduce its impact (Beck, 1999). In addition, education has the potential to improve reflexivity among communities of practice (Wenger, 1998) on some of the dangers associated with modern unsustainable agricultural practices that are increasing genetic erosion, knowledge loss and food insecurity.

While many modern agricultural practices can be described as unsustainable or damaging to the environment (Shiva, 2000), modernisation and conventional agriculture did not bring all the ills. Today the potential exists to combine modern approaches with traditional food production systems to address shortcomings and to provide broader, more holistic approaches to food security. This has been seen to be possible in a system that recognises and promotes the smallholder farmer as a distinguished experimenter and researcher in traditional food security practices. Evidence of research on learning that takes place in communities of practice of rural farmers is scarce, and yet such research could provide pointers to improving agency and food security in such contexts (see also Mukute, this edition).

My research interest in this study was to understand the learning interactions that contribute to the dual functions of food security and sustainable agriculture within selected communities of practice (Wenger, 2000) of communal farmers in the rural Nyanga and Mutare districts of Manicaland Province in Zimbabwe. The study involved interviews, observations and document analysis focusing on farming interactions in these two case study contexts, complemented by contextual profiling, which included historical and contextual research into factors shaping the experiences of the farmers (e.g. recurrent drought conditions; availability of support services for farmers; economic conditions, etc.). This generated data on learning interactions in the two community of practice contexts, and the influences shaping these learning interactions, which was analysed using two theoretical lenses, namely communities of practice theory and critical realist ontological perspectives. Given my interest in learning interactions and thus relational dynamics

of the learning process, I tried to identify theoretical vantage points that would assist with a relational analysis. Learning in communities of practice is influenced by structures that may either support the process and result in a positive change, or constrain the agency of people learning in a community of practice. To further clarify my understanding and use of critical realism in this study, I worked with such concepts central to sociological analysis, as the perception of reality, power, structure and agency, causations and causal analysis.

The study was undertaken with an interest in generating reflection on learning interactions that could help to improve the quality of practice of all stakeholders, especially that of communal farmers themselves, extension officers and other development agents, and help educational researchers concerned with such conditions as described above, to undertake new forms of research into farmers learning in communities of practice.

A Community of Practice Epistemological Lens

Lave and Wenger's (1991) recently conceived 'communities of practice' concept that embraces a situated learning theory provides useful tools in helping to understand the role of social learning (in this case amongst small grains farmers, nutrition garden groups and bee-keepers). I consider these farmers to be communities of practice because they are learning together, with minimum external support, how to choose and grow appropriate crops for food security and agro-biodiversity. For example, they are growing the same small grains together and passing on seed to neighbours to reduce risk of avian (bird) destruction, but also extending an age-old traditional practice of sharing that ensured community seed security. A community of practice is described as different from a community of interest or a geographical community, because these do not imply a shared practice. Hence, not every community is a community of practice (see also Downsborough, this edition).

Wenger (2007:1) defines communities of practice as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.' A community of practice thus defines itself along three dimensions:

- What it is about – its *joint enterprise* as understood and continually renegotiated by its members
- How it functions – mutual engagement that binds members together into a social entity
- What capability it has produced – the *shared repertoire* of communal resources (routines, sensibilities, artefacts, vocabulary, styles, etc.) that members have developed over time. (Wenger, 1998:2, my emphasis)

Communities of practice are self-organising systems that develop around things that matter to people (e.g. food security) and also move through various stages of development characterised by different levels of interaction among the members and different kinds of activities. The three characteristics of a community of practice are:

1. A shared domain of interest. Membership implies commitment to a domain (e.g. crop farming), and thus shared competence that distinguishes members from other people
2. The community members engage in joint activities and discussions, *help each other and share information*

3. Members of a community of practice are practitioners who develop a shared repertoire of resources forming a shared practice: i.e. *experiences, stories, tools, ways of addressing recurring problems*. (Wenger, 2007:2, my emphasis)

The research orientation and theoretical framework of this study reflects an underlying assumption of an epistemology and ontology grounded in shared practice. It also supports the view that there is more than one way of viewing reality, allowing for equal consideration of, and respect for the contributions of members of the communities of practice under study, as they come from different backgrounds, and may bring in different experiences due to social dynamics such as migration and training. Salomon (as quoted in Daniels, 2001:70) refers to this concept as 'distributed cognition', whereby cognition is distributed among individuals and knowledge is socially constructed collaboratively, thus making it essential for a community of practice to share common resources.

Seed security is a moral imperative and the cornerstone of food security in subsistence rural communities. It has seen these communities live and survive over many years in good and bad times. Modernistic developments and climate change have brought with them several challenges for these communities. According to Willemsen, *et al.* (2007:465) '… for more than 800 million people living in the more marginal and heterogeneous areas, food security and poverty continue to be a daily challenge'.

Critical Realist Ontological Analysis

Critical realism, like the communities of practice perspective, is a relational theory that was relevant in gaining a deeper insight into examining the data. According to critical realism, the world is inherently transformative, with more than one dimension of reality. There is thus a concern with explanation (Delanty, 2005). A critical realist perspective provided a model for explaining how effects are brought about (causations), with a view that there are different levels of causative factors, and diverse ways in which these 'play out' and influence people's experiences (which is seen as one of the 'layers' of reality in critical realism). These causal factors can be unpacked through a causal analysis relating potential causes and effects, and in the context of this study, between learning and choices. According to Wilkgren (2004:13) 'critical realists are concerned with ontological depth and identifying causally efficacious mechanisms.' Drawing from Baskhar's writings, she sees critical realism being used to analyse more deeply what potential underlying causes are of events and experiences in a wider context.

Causal mechanisms influencing choice

This case study showed that farmers select seed to plant for food as a result of various learning interactions they engage in, which include inter-generational knowledge transfer, farmer to farmer extension and external training by extension organisations and non-governmental organisations. A critical realist causal analysis was conducted to unravel the various causal factors influencing choice. A number of underlying structures and causal mechanisms were found to influence learning interactions and choices in these communities of practice, and they include ambivalence, which influences the changing domain and practice. Figure 1 is a causal analysis

of ambivalence found among the farmer communities of practice. Climate change, drought and risk were found to affect farmer practice, while power relations affect the community, its practice, domain, sponsorship and the learning interactions in the communities of practice. The political economy was also found to have a profound effect on the domain and practice.

Figure 1. A causal analysis of ambivalent messages (Pesanayi, 2008)

Effect/event

No conservation works	Re-adoption of locally adapted seed	Hangover with hybrid seed
• loss of soil nutrients • crop failure • hunger	• successful yields • food on the table • improved incomes	• Marketing of hybrids by seed houses; crop failure; hunger • Self-validating reduction of local seed/crops, feeding habits

Conditions (other mechanisms)

Climate change	Micro-economic challenges
• Drought • Cyclone activity	• Unaffordable seed on market • Late acquisition and availability of seed and inputs

Mechanisms

Government agricultural policy (increasing productivity) →	Operation Maguta	Non-governmental organisations and development agencies	Seed houses
• Fertiliser promotion • Provincial and district seed fairs: local and hybrid seed promotion • Input subsidies accessible to few farmers	• Low-cost fertiliser provision • Hybrid seed provision	• Trainings • Facilitation of farmer to farmer interactions • Promotion of locally adapted / OPV seed varieties • Some promotion of hybrid seed and fertilisers in combination with OPV promotion • Promotion of conservation farming	• Hybrid seed marketing • Supply outstripped by demand • Inadequate consideration of farmer environment for seed performance • Controlled by multinationals

Structure

Ministry of Agriculture	Political intervention	Macro-economic challenges	Knowledge systems
• Agricultural authority • Separation of extension (AREX) / engineering functions	• Command agriculture • Land issue, agrarian reforms	• Hyperinflation • Seed scarcity • Fertiliser scarce and expensive	• Indigenous way of knowing about appropriate crops • Challenge of dominant western knowledge systems (research stations, top-down extension) • Power-knowledge relationships

Critical reflexivity, capability-centred learning and agency

Conditions presenting themselves to the communities of practice of farmers, such as increased drought from climate change (see Figure 1), caused farmers to question their knowledge and practices. This opened up critical thinking and reflection about the types of seed to sow and accompanying inputs and the values surrounding associated choices of seed, especially when their livelihood and wellbeing were threatened. Farmers also challenged the constraining structures that encouraged conventional green revolution approaches to farming. They began to place more value on indigenous knowledge practices, such as choice and exchange of locally adapted small grain seed, which had been discarded by new technologies and which they reclaimed with tremendous agency when reintroduced. This agency appeared to be enhanced by familiarity with revalued knowledge, which gave farmers and their communities of practice the confidence to influence once-dominant structures such as techno-centric extension. Government policy has been observed to shift over the years to promote what it saw working in the communities of practice by promoting small grain farming as an approach to food security.

As an influence of drought threats to food security, and an opportunity for farmers to critically reflect on their practice, a space was found for the influence of capacity and knowledge sharing in participatory frameworks of the communities, implying that extension quality can be enhanced to promote locally adapted and diverse seed varieties for food security improvement. The study showed that a deeper understanding of the mechanisms influencing the context of teaching and learning provides a more refined insight into the learning interactions and choices of farmers.

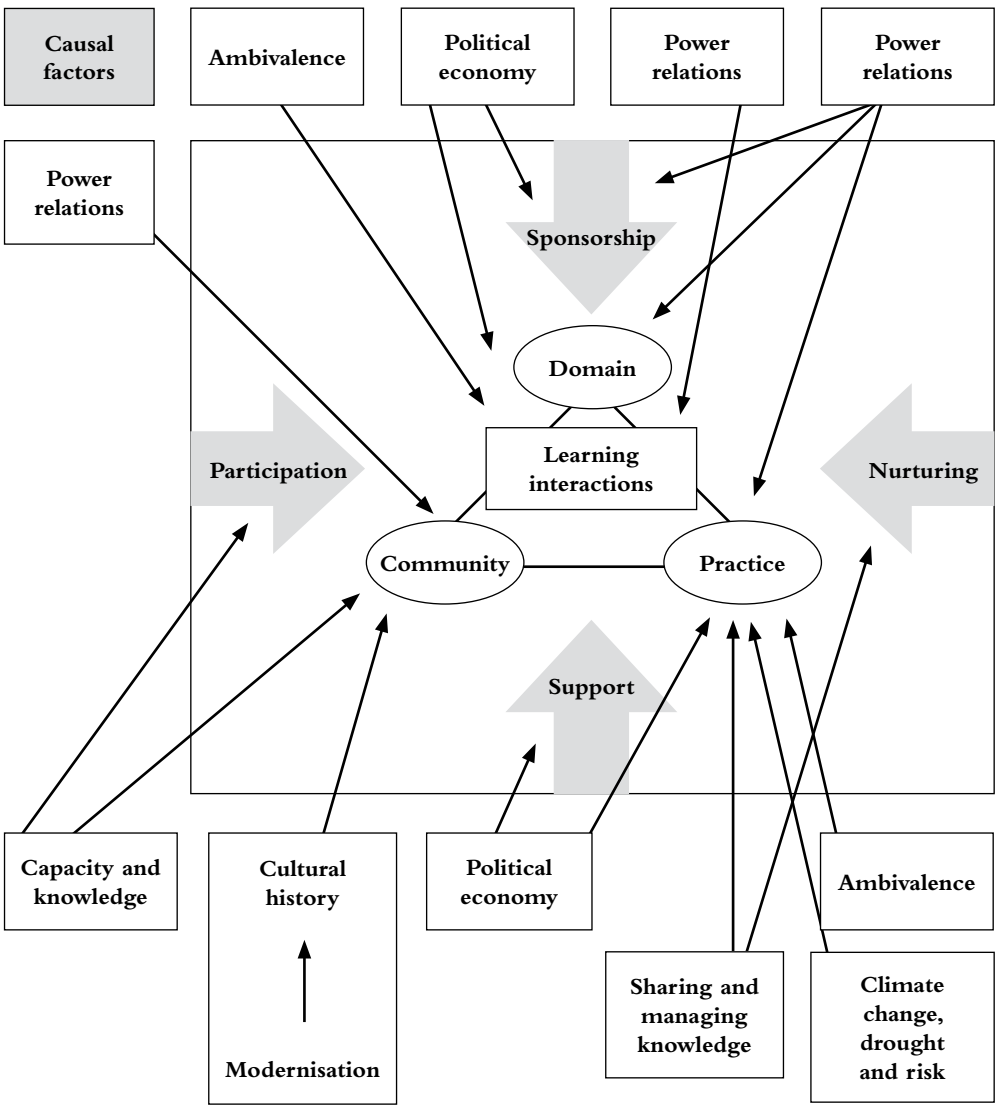
This study showed that learning processes oriented towards capability for risk negotiation in the everyday involve inter-generational knowledge sharing, drawing on new knowledge from training interventions, processes of trial and error, and dealing with ambivalent messages and uncertainties through reflexive processes of dialogue and social interaction. This provided insight into enhancing understanding of the processes of building capability for risk negotiation in the everyday (see Figure 2).

Figure 2 shows that the domain is what keeps the communities of practice of small-holder farmers together, and gives it identity. In this case the domain (growing of small grains) is changing to accommodate more sustainable approaches. However, forces exist that can confuse the knowledge in the domain, and these are ambivalent messages which include promotion of fertilisers, green revolution technologies such as monocultures, and inappropriate crops (for example hybrid maize in hot dry and rain-fed areas), while negating traditional locally adapted crops. However, as a community of practice has members learning together, with a little support from extension services and others, the promotion of local knowledges and varieties without such mixed messages as explained above has the potential to improve the practice of the community, and hence food security.

Figure 2 shows that there is a diverse range of factors that influence learning interactions. These different mechanisms influence how the learning interactions take place, for example, what actions are possible, what negotiations take place, what people reflect on and how people communicate (Wildemeersch, 2007). Actions referred to here are processes of social action linked to social learning, and these include engaging in participatory processes such as farmers

planning together to improve their nutrition garden and helping each other in small grains farming. Such actions 'are triggered by a particular need and a set of competencies' (*ibid*:100), in this case the need being food security and the competencies including agronomic practices of small grain production, processing, storage and use. Learning thus happens where there is a tension between capability and a deficit of capacity. This way 'social learning [takes] place in groups, communities, networks and social systems that operate in new, unexpected, uncertain and unpredictable circumstances … [solving] unexpected context problems' (*ibid*:100).

Figure 2. How underlying structures and causal mechanisms influence learning interactions and choices in communities of practice



A Theoretical Critique

It was clear from the study that a community of practice epistemology on its own was not adequate to explain the learning taking place among the farmers and with other players, such as family members, and external agents such as development workers for example. Inter-generational knowledge transfer, for example, cannot be explained by communities of practice alone, yet it came out strongly as a significant learning interaction. Hence a more in-depth study using other theoretical frameworks such as genealogy and cultural historical activity theory may need to be used to explore other learning interactions taking place and thus linking more with the historical context. In addition, communities of practice perspectives are associated with the notion of 'legitimate peripheral participation (LPP)' (Lave & Wenger, 1991), which inaccurately assumes that all so-called newcomers in a community of practice are novices who need apprenticeship before they can fully and adequately participate in the community of practice they are joining. Legitimate peripheral participation in this case would thus conflict with the idea of 'distributed cognition' described by Vygotsky (Daniels, 2001), and observed among the members of the communities of practice in this study.

Conclusion

The results of the study concluded that there are multi-level learning interactions that take place within communities of practice of rural smallholder small grain farmers, which may have positive or negative effects on their choices of food crops. The research also showed that these choices are influenced by a range of causal mechanisms, some of which can be addressed in extension and education programmes (e.g. the issue of ambivalent messages and valuing of traditional knowledge) while others cannot (e.g. macro-political economy). This has significance for considering a research agenda for climate change education research as it may not be possible to respond to the causal factors creating climate changes in rural community contexts (e.g. over-production of carbon dioxide in developed countries), but it may be possible to identify other aspects that one can respond to through education and extension, for example, enhancing diversity of crop production to be more drought resilient; re-appropriation of useful indigenous knowledge; reduction of ambivalent messages amongst extension services, etc. As shown by this study, this requires careful contextual and sociological analysis of learning interactions in communities of practice.

External interventions need to capitalise on and improve productive and learning-centred social interactions in order to assist farmers to make their own informed choices that can be easily adopted, and protect farmers' rights in order to enable farmers to adapt to changing circumstances, especially climate change (their changing domain). Vulnerable communities are sources of knowledge for adaptation strategies to climate change, if their socially constructed knowledge is valued, and if the power of distributed cognition that exists in communities of practice can be mobilised. As the curricula of agricultural training institutions and the policies in the Southern African Development Community are reviewed, an orientation to

sustainability needs to be investigated in terms of its responsiveness to the realities of climate change in order to be relevant to new needs and improve people's capabilities for adaptation. This research project represents an example of examining the relationship between learning and capabilities development in contexts of increased drought conditions (which are one of the effects of climate change in rural southern Africa). As such, its theoretical tools and empirical findings provide useful openings for further research in this area.

Notes on the Contributor

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Southern African Journal of Environmental Education, Vol. 26, 2009

Sigtuna Think Piece 7

Readings for Climate Change: Ecocriticism and Climate Change Education Research

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Abstract

This think piece elaborates possible research connections between ecocriticism and climate change educational research, addressing the overarching question of what cultural responses to climate change can offer climate change education and climate change education research. It investigates literary critic Louise Rosenblatt's transactional theory of reading in the context of ecocriticism and suggests a few possible climate change education research questions.

Introduction

In relation to the accelerating scientific and public concern about climate change and all its related matters, the interest in cultural responses to climate change is increasing. Consider for example the work done by the organisation *Cape Farewell* founded by the artist David Buckland in 2001.[1] Bringing together climate change scientists and various artists such as musicians, painters and authors, it is a good example of a trans-disciplinary and cultural response towards climate change. The belief that cultural responses to climate change have a crucial role to play in increasing knowledge and engaging the public runs through the wide variety of activities performed by scientists and artists connected to *Cape Farewell*. Another participant in the present climate change and sustainability debate is the exhibition *Green Architecture for the Future* at the Louisiana Museum of Modern Art.[2] The exhibition addresses issues such as sustainable cities, the relationship between city and nature, climate engineering, resource scarcity, population growth and interior design. Created in relation to the United Nations Climate Change Conference in Copenhagen in December 2009, the exhibition *Nature Strikes Back*, showing at The National Gallery of Denmark, portrays how the relationship between humans and nature has been portrayed in Western art from antiquity to today. The exhibition does not have an explicit focus on climate change as such. Rather, the aim is to give an historical background to present day views of nature and climate change.[3] Both *Cape Farewell*, the Louisiana exhibition and *Nature Strikes Back* are creative and innovative examples of how climate change and sustainability can be addressed through the creative arts and architecture. As participants in the climate change debate, these initiatives emphasise the importance of finding new ways of addressing and communicating climate change and its related matters to the public in ways that move beyond scientific discourse. However, telling stories of natural disasters, environmental catastrophes and human responses to events such as climate change is nothing new for authors

and filmmakers. The theme of human struggle for survival in *Robinson Crusoe*, the fight against extreme weather conditions in the film *The Day After Tomorrow* and the struggle for life after the extinction of the planet earth in Margaret Atwood's *Oryx and Crake* are just a few examples.[4] It was not until quite recently however, that literary scholarship began paying attention to environmental issues.

This think piece pays special attention to possible research connections between ecocriticism and climate change educational research, addressing the overarching question of what cultural responses to climate change can offer climate change education and climate change education research. It focuses in particular on the reading of literature and investigates literary critic Louise Rosenblatt's transactional theory of reading in the context of ecocriticism, and elaborates a few possible climate change education research questions, as discussed in more detail below.

Ecocriticism

Ecocriticism developed as a response to the modern global environmental crisis in the 1990s and has taken literary criticism to previously unexplored fields. The most commonly cited definition of ecocriticism derives from the first introductory ecocritical reader, *The Ecocriticism Reader:, Landmarks in Literary Ecology*, edited by Cheryl Glotfelty and Harold Fromm (1996: xviii):

> Simply put, ecocriticism is the study of the relationship between literature and the physical environment. Just as feminist criticism examines language and literature from a gender conscious perspective, and Marxist criticism brings an awareness of modes of production and economic class to its reading of texts, ecocriticism takes an earth-centred approach to literary studies.

Ecocritical scholarship was started through authors primarily interested in non-fiction nature writing portraying 'wild' nature involving classical authors such as Henry David Thoreau, Aldo Leopold, Rachel Carson, John Muir and others (Glotfelty, 1996:xxiii; Garrard, 2004:59–84; Lyon, 1996:276–282; Buell, 1995). The genre of nature writing contains a wide variety of approaches and subgenres but can briefly be defined as first-person narratives about the natural environment combining scientific and philosophical observations and reflections of the natural world (Lyon, 1996:276–282). Nature writing often takes on an enthusiastic and admiring attitude towards nature and there is frequently a strong divide between the natural world and the cultural world. Texts portraying the natural world have dominated much ecocritical scholarship. Accordingly, traditional ecocritical issues of interest concern representations of nature and human impact on the environment answering questions such as: 'How is nature represented in this sonnet? What role does the physical setting play in the plot of this novel? How has the concept of wilderness changed over time?' (Glotfelty, 1996:xviii–xix).

Texts portraying urban and 'intoxicated' environments were marginalised within early ecocritical research. However, voices calling for expansions of ecocritical boundaries both regarding research questions and texts have been emerging for quite a while. As a result,

modern ecocritical research has moved into the cities, to fiction and other kinds of visual narratives such as films, plays and, albeit to a lesser extent, artworks have also gained recognition around the ecocritical table.[5]

One aim of ecocritical research and ecocritical teaching is to contribute to an increased understanding of environmental issues in times of environmental crisis and is engaged in questions regarding the promotion of sustainable thinking. For example, on the home page of the main organisation for ecocriticism, the Association for the Study of Literature and Environment (ASLE), the 'mission' of the organisation is stated as:

> … to promote the understanding of nature and culture for a sustainable world by fostering a community of scholars, teachers, and writers who study the relationships among literature, culture, and the physical environment …

Thus, there is a clear ambition to increase knowledge and understanding regarding how we relate to and act on natural and cultural environments. Following this, ecocriticism seems to be a potentially valuable theoretical vantage point that can help to investigate what ecocriticism can offer climate change educational research. However, even though ecocritical boundaries have been expanded since its beginning, it seems to me that ecocritical research boundaries need to be even further expanded in relation to the development of climate change educational research.

Despite the interest in increasing awareness of environmental issues, few investigations focus on what students of ecocriticism learn while studying literature. Consequently empirical investigations of learning processes and meaning making in relation to the reading of texts are rare within ecocritical research. Therefore, in order to qualify the discussion about the meaning of ecocritical readings for learning about issues related to climate change, I believe that a more explicit research focus on students' responses to the reading of texts used in ecocritical classrooms would be fruitful and add knowledge to the meaning of reading in climate change education.

In the forthcoming section I will turn to Louise Rosenblatt's theory of reading as a transactional process, which serves as a guide for the forthcoming discussion of research connections between ecocriticism and climate change education research.

Reading as a Transactional Process

In *Literature and Exploration*, Rosenblatt (1938/1995) develops a theory of reading as a transactional process regarding meaning as being created in the encounter between reader and text. By using the concept of transaction, rather than interaction, Rosenblatt (1938/1995:xvi) emphasises the constituent relationship between reader and text:

> *Interaction* … suggests two distinct entities acting on each other like two billiard balls. *Transaction* lacks such mechanistic overtones and permits emphasis on the to-and-fro,

> spiralling, nonlinear, continuously reciprocal influence of reader and text in the making of meaning.

In the discussion of the reader as an active participant in the meaning making of texts, Rosenblatt distinguishes between 'efferent' and 'aesthetic' reading purposes. This line of thought is based on the idea that it is possible for readers to have different stances, or different 'focus of attention during the reading-event' (Rosenblatt, 1978/1994:23). The term 'efferent' derives from the Latin *efferre* and implies that 'the reader's attention is focused primarily on what will remain as the residue *after* the reading – the information to be acquired, the logical solution to a problem, the actions to be carried out' (Rosenblatt 1978/1994:23). Questions such as analysis of characters, summaries of plots and how female and male roles are played out in texts could all demand efferent activities. The same goes for the examples of ecocritical questions introduced in the beginning of this piece focusing for example on how nature is portrayed in particular texts.

Contrastingly, in aesthetic reading, the attention is directed to what happens during the reading-event, which means that the reader pays attention to personal associations, feelings, and ideas and 'the reader's attention is centred directly on what he is living through during his relationship with that particular text' (Rosenblatt, 1978/1994:25). Such readings would rather focus on eliciting readers' personal feelings and opinions in relation to the reading. Instead of focusing on what Thoreau means by 'to live deliberately', what he considers be 'the essential facts of life' or his style of writing in the famous quote from Thoreau's *Walden*:

> I went into the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived. (http://thoreau.eserver.org/walden02.html)

Illustrating an 'efferent' apporach, an aesthetic reading would gear students' attention to their immediate responses to the passage giving them the opportunity to express their personal thoughts in relation to the reading.

Rosenblatt claims that efferent reading approaches are more common than aesthetic reading approaches within the teaching of literature excluding the possible aesthetic 'lived through' experiences that the reading of literature can offer. Rosenblatt (1978/1994:29) is however careful to make sure that an aesthetic reading is something more than just 'free associations' and claims that 'The concept of transaction emphasises the relationship with, *and continuing awareness* of the text.' Furthermore, she (1938/1995:3) gives literary and aesthetic experiences special status within education and emphasises their importance for the development of self-understanding. She argues, 'In contrast to the analytic approach of the social sciences, the literary experience has immediacy and emotional persuasiveness' (1938/1995:7).

From this follows that the same text can be read both aesthetically and efferently (Rosenblatt, 1978/1994:25) depending on which attention, or which stance is adopted. The purpose of the reading will accordingly shape the meaning being made in the reading. For the purposes here, it becomes relevant to investigate what 'readers do in different kinds of reading' (Rosenblatt, 1978/1994:23) related to climate change topics. In order to be able to make claims on the place

of and the meaning of literature within climate change education, knowing what readers do and what activities they carry out in relation to the reading of various climate change texts may contribute to the development of a climate change education based on empirical research.

Adding Rosenblatt's theoretical perspective to empirical ecocritical research might be a fruitful way of addressing questions relevant to climate change education research. In relation to the uncertainties commonly connected to issues of climate change and Rosenblatt's claims that the reading of literary works would 'both have an intrinsic aesthetic value and make possible the development and assimilation of insights into human relations'[6] and play a pivotal role in developing critical readers, I find Rosenblatt's transactional theory of reading useful in order to come up with potential research questions in the intersection between ecocriticism and climate change education research. Ecocriticism has by now a well-developed theoretical framework and many ecocritical analyses have been carried out. However, as mentioned above, ecocritical research has not investigated students' responses to the reading of literature. Questions such as: what can students learn from ecocritical readings?; what happens during the reading process?; and do the readings have any bearing on the students' actions in every day life? are crucial questions for climate change education research.

Expanding the Boundaries: Ecocriticism and Climate Change Education Research

Empirical studies

Turning the attention to empirical investigations of ecocritical practice is my first suggestion of how the boundaries of ecocritical research can be expanded in order to become a fruitful contribution to the development of climate change education research. Due to the lack of empirical studies within ecocritical research, I think one potential area for this research would be to carry out empirical studies of students' responses to ecocritically relevant texts in order to find out what meanings are produced in these encounters. How do students respond? Empirical studies of students' responses to ecocritically relevant texts would also make it possible to test the potential of literary investigation for promoting environmental awareness and sustainable thinking. For example, in a forthcoming study we (Hansson & Östman, forthcoming) study students' responses to the reading of Thoreau's *Walden* focusing on how the students use the text to discuss their own views of nature and how they relate the text to their personal nature experiences. Taking Rosenblatt's ideas of aesthetic and efferent reading stances into account, it would also be relevant to investigate what stances dominate ecocritical teaching. Are the students given the opportunity to 'live through' the literary texts and/or are efferent stances more common? Is there equal emphasis on efferent and aesthetic readings within ecocritical teaching? How are literary works related to 'real' environmental and development challenges? In relation to climate change education research it would furthermore be relevant to investigate students' responses to different kinds of texts within the climate change discourse elaborating on different reading stances. For example, in what ways may aesthetic readings of the Intergovernmental Panel on Climate Change (IPPC) reports and efferent readings of climate change poetry and fiction help enhance understanding of climate change issues?

Asking questions relevant to climate change

Another expansion would be to investigate how climate change matters are addressed within ecocritical teaching. Is ecocritical teaching still traditional in the sense that the genre of nature writing dominates ecocritical classrooms? The challenges we are facing when it comes to the future of urban development in a changing climate make texts portraying such issues crucial from a climate change education perspective and therefore highly relevant for climate change education research. Therefore, it becomes significant to continue the critical discussion concerning the identity of the texts in focus for ecocritical teaching in relation to climate change. Issues such as for example adaptation and mitigation, insecurity and conflicting values are all crucial in the climate change debate and for all the people affected by climate change. Whether such issues are addressed in ecocritical classrooms seems another relevant research question to be addressed in climate change education research.

The meaning of art and aesthetic experience

The emphasis on aesthetic experiences expressed by Rosenblatt and the growing interest in cultural responses to climate change as mentioned above, makes the meaning of the arts and aesthetic experience within educational settings a potential research area in itself. What is the meaning of aesthetics and the arts in climate change education and in students' meaning making? How are the arts used in education? What aesthetic experiences do students express in relation to the reading of literature? Do artistic expressions automatically lead to aesthetic experiences and emotional expressions and responses to issues related to climate change? Such questions need to be empirically investigated as well.

Conclusion

In developing the arena of climate change education research, I think it is crucial that the arts do not only become mere appearances in relation to more established fields such as climate change science in the ongoing discussion about climate change in general and climate change education and research in particular. Viewing the arts as an equally important participant in addressing issues related to climate change – with equal status to scientific observations and investigations – will hopefully lead us a bit closer to the goal of a sustainable future in a changing climate.

Notes on the Contributor

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Endnotes

1 http://www.capefarewell.com (accessed 27 November 2009).

2 http://www.louisiana.dk/uk/Menu/Exhibitions/Green+Architecture+for+the+Future (accessed 27 November 2009).
3 http://www.smk.dk/naturestrikesback (accessed 27 November 2009).
4 Editor's note: It is difficult not to make the links to the Namafe paper in this edition here.
5 See for example Bennet and Teague, *Urban Ecocriticism* (1999) and Steven Rosendale, *The Greening of Literary Scholarship: Literature, Theory, and the Environment* (2002), Greg Garrard, Ecocriticism: The Ability to Investigate Cultural Artefacts from an Ecological Perspective, in Arran Stibbe and Heather Luna (eds), *The Handbook of Sustainability Literacy*, http://www.sustainability-literacy.org/multimedia.html (2009).
6 Interview with Louise Rosenblatt at http://www.education.miami.edu/ep/Rosenblatt/ (accessed 27 November 2009).

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Southern African Journal of Environmental Education, Vol. 26, 2009

Sigtuna Think Piece 8

Piecing Together Conceptual Framings for Climate Change Education Research in Southern African Contexts

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Abstract

This think piece considers a range of theoretical and conceptual tools that may assist with the emergence of a research agenda for climate change in education. It considers the conditions that are created by climate change in and for southern African contexts, and then deliberates which contextually related theoretical tools may be useful to frame research questions for climate change education. I consider the educational research implications of adaptation practices, reflexive justice and agency, reflexivity and capability, noting that a climate change education research agenda, not different to a wider reflexive environmental education research agenda dealing with transformative praxis in southern Africa, is essentially a sociologically and historically emergent 'researching with' agenda, and is in effect a social learning process. In putting together these conceptual framings for a climate change research agenda in southern Africa, I am interested in exploring how participatory social learning research may strengthen agency and reflexivity (development of capabilities) in response to socio-ecological conditions.

Introduction: Thinking about Climate Change Critically in Context

This think piece emerged from a slow engagement with the topic of climate change and its representation in environmental education texts, materials and courses in southern African over the past few years (see a review in Lotz-Sisitka, 2009). In considering these, it struck me that climate change education programmes in southern Africa were mimicking their counterparts in countries that were high emission producers, leading to ahistorical articulations of climate change education that lack responsive location. There is no shortage of climate change 'messages' to reduce carbon dioxide, to switch off lights, to stop travelling and to change to renewable energies (i.e. primarily mitigation responses targeted at individuals). And there is no shortage of messages that create fear and stress as the projected global disasters associated with climate change make it into the media, and then infiltrate into the consciousness of educators. These lack adequate analysis from structural, educational and contextual vantage points, and fail to provide adequate response strategies or alternatives that are contextually located. The question that I started to ask was, 'How is climate change manifesting in southern Africa, and what therefore are the contours of an appropriate educational response?' For an educational research programme, this question required not only a contextual analysis, but also contextually relevant theoretical perspectives that could help to develop research perspective in relation to the contextual analysis.

Contextually Relevant Theoretical Lenses

In this section I introduce three contextually relevant theoretical perspectives to guide the emergence of a climate change education research agenda. They are: adaptation and sustainability practices; reflexive justice; and reflexivity, agency and capability.

Adaptation and sustainability practices

An overview of how climate change is manifesting in a southern African context leads to a number of interrelated socio-ecological concerns, most notably: projected increase in malarial areas (i.e. increased health risk – in a region where HIV/AIDS and malaria already have a heavy toll on life); further loss of water security (due to projected decreases in precipitation), with associated further loss of food security (due to heavy dependence on small-scale, rain-fed agricultural practices and non-drought resistant crops which were introduced with mono-culture and hybrid seed production and sales); increased vulnerabilities for women, who are the primary food producers; coastal zone pressure due to projected sea level rise, particularly affecting artisanal fisheries and low-lying coastal cities such as Maputo, Cape Town and Walvis Bay. Loss of biodiversity has also been noted as being a significant projected impact. In South Africa (different in this respect to the other 13 southern African countries), where dependence on cheap fossil fuel energy to fuel the economy is high, there are also considerable challenges to mitigate carbon-dioxide emissions. South Africa has been identified as a country with one of the highest per capita carbon-dioxide emission levels in the world.[1] Thus, in southern Africa there is a need for both: mitigation practices and adaptation practices, with adaptation practices[2] being more pronounced amongst the majority of the population in the region. For this reason, I focus more on adaptation practices in this paper, and use the terminology adaptation and sustainability practices to be inclusive of mitigation practices and other initiatives aimed at responding to socio-ecological issues and risks.

Significant opportunities exist for a new paradigm of development in southern Africa that is based on promoting adaptation and sustainability practices such as diversity in food production; re-appropriation of indigenous knowledge and traditional resilience practices; empowerment of women; development of new responses to health risks; use and production of new 'green' technologies; the development of green and clean jobs which can improve working conditions; water conservation practices; use of more sustainable forms of energy; and development of collective agency practices that promote new social synergies amongst people across the region (amongst others). The reason for highlighting these issues and adaptation and sustainability practice opportunities that emerge from engaging them, is to note that switching off lights, and reducing carbon dioxide (the most popular climate change practices promoted in education programmes) may well not be the most significant responses to climate change in southern Africa – even though these are probably called for amongst elite communities in South Africa where fossil fuel energy use is high. Supporting agro-ecological diversity practices; use of traditional and new water harvesting technologies and practices; and giving attention women's empowerment (amongst others) may be more significant adaptation practices. Practices, as described by Schatzki (1996:89, as cited in Green, 2009:42–43) are:

- learning how or improving one's ability to do something by repeatedly working at it and carrying it out;
- a temporally unfolding and spatially dispersed nexus of doings and sayings;
- performing an action or carrying out a practice of the second sort.

Thus, for educational research, the question to clarify would be what adaptation and/or sustainability practices are most significant to focus on in climate change education praxis, and how are these to be determined (with communities, for communities, or through dialectical engagement with both forms of social engagement)? A further dynamic of this framework for climate change education is to develop understandings of the nature of practice, how practices are learned, and more insight into practice epistemologies. In the Rhodes University/SAQA research programme, we have started to identify how one might research the learning of change oriented sustainability practices (Lotz-Sisitka, 2008). For example, drawing on Bourdieu's insights into the *Logic of Practice*, and insights into the nature of environment and sustainability practices (which tend to emerge in response to risk), we have identified the following framework for researching practice:

Table 1. Analytical framework for describing sustainability practices[3]

• Sustainability practices are often constituted through response to risk and can be said to be characterised by an epistemology of risk (Beck, 1992; 1999; 2009); not everything is known about sustainability practices i.e. they are uncertain and our knowledge of such practices is fallible (Beck, 1992; Scott & Gough, 2004); • Sustainability practices in workplaces and in society more broadly are either manifestations of a) a change in work/social ethic or b) normalisations of new regimes of truth (where ethics are normalised into new practices) (Foucault, 1979); • Sustainability practices [and climate change responses] are constituted in a contested discourse context (Martinez-Alier, 2002; Dryzek, 1995; Lotz-Sisitka, 2009b). There is no clear consensus on the meaning and material configurations of sustainable development, although there are some indicators of what needs to be done (e.g. we know that we need to reduce energy consumption and carbon-dioxide emissions, but how this is to be done in different contexts is contested, and what priority is to be afforded to this, is shaped by various interests and power relations). Sustainability practices are therefore often characterised by conflicts of interest (with each other, and with the status quo) (Wals, 2007). • Bourdieu's (1980) *Logic of Practic*' describes the following dimensions of practice: • Practices are time and space bound (i.e. there is a temporal and a spatial dimension to them), • Practices are 'experience laden' in the sense that much of what is practiced is tacit or not made explicit but simply done, • Practices are not easily interpreted from descriptions of them; and • Practices are characterised by an improvisory and strategic logic.
Bourdieu (*ibid*) also explains that *habitus* affects our every action. *Habitus* is an underlying social structure shaping the way things are done. The *habitus*, however, can be interrupted, but this is not an easy thing to do. Janks (2008) argues that this requires learning to become more conscious of the unconscious aspects of practice, and to make these available for interrogation, reflexive review and change, which takes time, ongoing reflexivity and repeated practicing of the new form of practice. Bourdieu's theory of *habitus* provides a theory of our unconscious actions, and helps us to understand the complexity of the change process.

We have established that the learning of sustainability practices takes time, and involves various forms of cognition (Mukute & Lotz-Sisitka, 2009a) and that once-off educational interventions may not be the most useful form of educational engagement to inform and/or understand sustainability practices. Ongoing social learning processes associated with practices (e.g. working with and in communities of practice[4]) where distributed cognition, and different forms of cognition exist and can interact, may provide more useful units of analysis for researching learning and climate change responses.

Reflexive justice

Another dynamic associated with climate change discourse is the social-justice aspect. Climate change, as others have noted in various times and places, is a social-justice issue since the polluters are not paying, the consequences are distributed unevenly and impact most severely on the poor (Worth, 2009; Lotz-Sisitka, 2009a). Engaging this question requires recourse to critical social theory to make visible the structural features and mechanisms that shape the consequences of climate change. To neglect this could potentially lead to conservative, localised only or egoistic responses to climate change (Lotz-Sisitka, 2009a). As Nancy Fraser (2008) has indicated, and as Nunes (2010) writes, in the absence of global institutions that can be held accountable for global issues such as climate change, our only recourse is to produce local forms of political action that are at the same time global. This is more complex than simply 'acting locally', as 'there is no going back on the political consciousness of belonging to a single world' (Nunes, 2007:7). In an earlier paper I argued that for education, this requires giving attention to social learning processes that build local capacity for adaptation while also building capacity for social critique and advocacy that does not render local adaptation practices naïve or conservative (Lotz-Sisitka, 2009a). At the core of this argument lies the concept of reflexive justice, which Fraser proposes as being our only (current) alternative in the absence of effective justice mechanisms that can properly account for globalism's non-accountability.[5] Reflexive justice involves the ongoing practicing of social justice, within a frame of what Beck (2009) describes as methodological cosmopolitanism,[6] where it is possible to think of everyone as 'your neighbour', and to conceptualise the relationship between different actions in ever widening time-space configurations. In societies where inequalities remain deeply seated (such as South Africa) such a concept of justice is both necessary and important.

For educational research, this requires a focus on two types of questions: ethical deliberations in the educational process, and the practicing of reflexive social justice.

Reflexivity, agency and capability

A third, and equally important contextual dynamic for educational research in southern Africa is the history of inequality, disenfranchisement and loss of social cohesion wrought by colonial intrusions, inequalities of structural adjustment programmes, inefficiencies, and paradoxical continuities in colonial-type governance practices in postcolonial governments. This broader social history, together with the context of heightened risk and new opportunity discussed above, requires people to continuously reflexively make new life choices that are responsive to

current and future generations' needs, as well as contemporary socio-political, socio-economic, and socio-ecological conditions – no easy task.

It is important not to confuse the contextual histories of education and societies (i.e. poor education systems) with people's power and inherent capabilities for learning, resilience, adaptation and change. In response to continued patronage in development and educational theories and practices amongst development and education intervention organisations, a leader of a shack dwellers association in Cape Town famously wrote a letter to a left-leaning NGO titled 'We Are Poor, Not Stupid' (cited in Pithouse, 2009:169). In citing this, Pithouse argues that there is a need for a single axiom 'everybody counts, everybody thinks' (*ibid*). This recognises that everyone has recourse to the reflexive resources to develop individual and collective capability, even if their social and education systems and cultures have not previously needed to, or wanted to develop or enhance such reflexive[7] capability. Citing Rancière (2007:51–52), Pithouse (2009:169) argues that 'starting out from the point of view of quality, asserting equality as a given, working out from equality, trying to see how productive it can be and thus maximising all possible liberty and equality' is an important strategy to avoid reproducing inequalities and various hierarchies. With this emancipatory interest at the core of our work, we have been exploring the relationships that exist between learning, agency and social change in our research programme at Rhodes University (see for example Mukute, this edition).

We are currently, in our research programme, exploring various social learning methodologies to examine learning interactions and reflexivity, and the emergence of contradictions and tensions in practice as sites for expansive learning that foster individual, collective and relational forms of agency, and which lead to changed practices in diverse contexts (see for example Downsborough, Pesanayi & Mukute, this edition). This work draws on post-Vygotskian cultural historical activity theory (after Engeström, 1987, 2001), and on Bhaskar's (1993) theory of dialectical critical realism, which theorises emergence and transformative praxis. Bhaskar (1993) writes that transformative praxis is driven by informed desire, in the sense that agents have an interest in removing constraints on their freedom in order to satisfy their needs and desires. He argues that people are rationally compelled to absent malaise, ills and/or constraints, and are thus rationally committed to '… absenting practices, and thence to absenting all dialectically similar ills, and thus to absent all the causes of such constraints' (1993:237). We can see evidence of this in the environmental field for example, where initially we saw a commitment to absenting the immediate causes of environmental issues (e.g. through implementing end of pipe solutions to pollution), which led to further absenting practices (e.g. absenting of end of pipe pollution through cleaner production and sustainable design). The environmental movement has, as yet, not been able to fully absent all the causes of environmental issues, since these are complex and are intertwined with modern growth economics and globalisation dynamics which are yet to change. Absenting the causes of climate change are located in calls for carbon-dioxide emissions reduction through keeping oil and fossil fuel in the ground (i.e. changing the basic structure of modern society's energy requirements), changes in economic systems and lifestyles, and approaches to practicing reflexive justice. In this sense, adaptation and sustainability practices (as practiced now) can be seen as 'short term' measures that are required to deal with the consequences of climate change, since absenting the causes of climate change is a time-lagged

process in which consequences manifest while the causes remain unchecked. Transformative praxis, in the context of adaptation practices and climate change, can only really be achieved when there is no further need for adaptation or sustainability practices in response to climate change. Ironically, for this there is a need for ongoing adaptation and sustainability practices at various levels and scales.

Bhaskar's theory of transformative praxis, is based on an emergent theory[8] of agency. Such a theory of agency can explain how agency emerges from structure, and how, through social interaction, it has potential to or can transform structure (although such observation is not always visible in short time-space configurations). Bhaskar (1993) distinguishes between power1 (the transformative capacity intrinsic to agency) and power2 (as exercised, manifest, mobilised, ideologically legitimated and discursively moralised). Engaging with/in power2 relations is always a 'messy affair' (Joseph, 2006), and power2 affects the exercise of power1. This conceptualisation of power relations is important for climate change education research, and in the light of the social-justice dynamics raised above. Careful observation and distinction of these forms of power in educational research will be necessary to avoid '… naturalising the liberal model of human agency which takes for granted the existence of the strongly intentional rational actor having the capability and power to translate intentions into consequential actions' (Dean, 2006:124). This critique could also be valid in Sen's account of capability, if the meaning of his 'ethical individualism' is misunderstood as 'ontological individualism'.[9] Sen (1999:31) states that:

> … individual freedom is quintessentially a social product, and there is a two way relation between 1) social arrangements to expand individual freedoms and 2) the use of individual freedoms not only to improve the respective lives but also to make the asocial arrangements more appropriate and effective.

Sen's ethical point is that every human being has the potential to conceptualise or participate in conceptualising valued beings and doings and should be given the opportunities to do so – a fact that he realises is not equally possible for all individual actors whose lives are embedded in, and constrained by structures, histories and cultures and/or some forms of mental illness. In the light of these insights, it is important not to neglect working on the question of collective agency in environmental education research focusing on climate change, and the social contexts in and through which agency operates.

Mukute (2010) shows that in combining analysis of agentive talk[10] and reflective talk in processes of expansive learning, it is possible to identify and distinguish between individual, collective and relational forms of agency, and to see that there is more to thinking about agency than at the level of the individual only. His research also shows that engaging within expansive learning processes with communities of practice in sustainable agriculture practice activity systems allows for the mobilisation of such forms of agency (see Mukute, this edition and Mukute, 2010). This too, is important for climate change education research, since responses are likely to require not only individual actions, but wider forms of collective societal change, if adaptation and sustainability practices are to become institutionally located and widely

practiced as reflexive social-justice acts. We are interested too in how this work contributes to development of capability in the sense used by Sen, i.e. whether and how people come to value their new doings and beings that make up the adaptation and/or sustainability practices, as this will provide insight into the emergence of ethics embedded in new practices. For example, do communities value adaptation to sustainable forms of agriculture, or are these practised out of necessity or lack of other alternatives?[11] Agency, as described by Kabeer (1999:438), is pluralistic and multi-dimensional, and involves:

> … the ability to define one's goals and act upon them. Agency is about more than observable action; it also encompasses the meaning, motivation and purpose which individuals bring to their activity, their sense of agency, or 'the power within'[12]. While agency tends to be operationalised as 'decision-making' in the social science literature, it can take a number of other forms. It can take the form of bargaining and negotiation, deception and manipulation, subversion and resistance, as well as more intangible, cognitive processes of reflection and analysis. It can be excercised by individuals as well as by collectivities.

In our research programme so far, we have been less influenced by Nussbaum's (2000) list of capabilities[13] (although we recognise and respect the points about social justice that she makes, and the reasons for their articulation), probably because we have been more interested in the practical processes of capability development, i.e. how people come to articulate and express their valued beings and doings, and how this influences changed practice. The Nussbaum work, and deliberative initiatives to develop various 'lists' of capabilities in different contexts (e.g. Robeyns, 2005) are useful 'direction finders' for wider conceptualisations or reflexive engagement with processes of capability development, and could further enrich our research in future (see for example Kronlid, this edition).

In our most recent work (see Mukute & Lotz-Sisitka, in press b), we have become interested in micro-analyses that provide evidence of agentive decision-making and how and why people are motivated and supported to participate in change oriented practices (e.g. learning sustainable agricultural practices). This work is both descriptive, and expansive (after Engeström's 1987 notion of expansive learning), and what is increasingly of interest to us is the potential that social learning research (e.g. as practised by Mukute, this edition; see also Mukute, 2010) has for expanding reflexivity and capability in response to socio-ecological conditions and opportunities for change (see also Lotz-Sisitka, 2008). This, in Engeström's (2001) language, requires boundary crossing and the engagement of tertiary and quartenary[14] contradictions that exist between central activity systems and other activity systems that influence the central activity system (e.g. a water harvesting practice activity system and the local government extension activity system). Mukute's (2010) research also shows that critical realist ontology and causal analysis (explanatory critique) can provide better insights into the constitution of such contradictions so that they are not conceptualised only in terms of what people say (see also Leesa, 2007). This also involves understanding the nature of deliberative pedagogy and enquiry required in 'boundary zones' that allow '… practitioners to express multiple alternatives,

challenge the concepts that are declared from above by using their own experienced concepts, and through these debates create a new negotiated model of activity' (Daniels, 2008:128).

Summarising Some Starting Points for Climate Change Education Research

From the above discussion on contextually relevant theoretical perspectives for guiding climate change education research, it is possible to argue that a climate change education (or any environmental education) research agenda in southern African contexts could be guided by the following conceptual framework (which will need to remain open to reflexive review):

- Climate change education involves contextually located adaptation and sustainability practices, which implies a practice centred epistemology and ontology (i.e. knowledge emerges in and from practice). At the same time climate change education involves understanding and navigating risk, which implies a risk epistemology (i.e. not everything is certain or predictable, and global climate change appears to be heightening risk, and our perceptions of risk) – making for an open-ended and reflexive epistemological environment for learning;
- A theory of social justice that acknowledges the limitations of distributive justice theories, and that builds on a concept of reflexive justice, i.e. the ongoing practicing of social justice while all of the technical and legal aspects are worked out by governments in a complex (and almost impossible to achieve) global justice context. Such a theory of social justice requires methodological cosmopolitanism which requires us to think of everyone as if they were our neighbour, despite such physical proximities not being possible or probable. This is necessary to develop the critical purchase for absenting the causes of climate change through transformative praxis.
- A theory of agency that takes account of emergence (i.e. it is possible to bring about change engaging with structural constraints, and through socio-cultural interactions that strengthen reflexivity and collective forms of agency); but this theory of agency requires careful distinctions between Bhaskar's (1993) power1 and power2, and how power2 influences power1. The emancipatory project lies in absenting the constraining relations that power2 has over power1. It also requires giving attention to individual, collective and relational forms of agency.
- A theory of learning that takes account of the significance of social learning processes that are emergent and contextually situated, but which also require social critique and the transgressing of local-global spatial configurations, and past-present-future time configurations. This requires boundary crossing (after Engeström) and engagement with new concepts in 'boundary zones', through deliberations on tertiary and quartenary contradictions, and deliberations on how deliberations are carried into action (i.e. what practices are necessary and valued).

Some of this contextual theoretical work discussed here is, and has been 'tested' and developed further at the context-theory-empirical interface in some of the studies that are emerging in the Rhodes Environmental Education research programme (see for example Mukute &

Pesanayi, this edition; Mukute, 2010). However, clearer articulation of the links between adaptation and sustainability practices, the practicing of reflexive justice, and the development of agency, reflexivity and capability as social change process needs to be taken forward in future case-based research. This will involve a researching 'with' approach to research, or a new genre of participatory research where social learning research is, in itself, a process of emancipatory social change, or capability development.

Endnotes

1 These are discussed in more detail in other reports such as UNEP 2006, and *Africa Geographic* (2007), which summarised the main projected impacts of climate change in Africa.

2 Schipper and Burton (2009) note that adaptation practices have suffered 'benign neglect' in climate change discourses.

3 We see sustainability practices as being similar to adaptation practices in the context of climate change adaptations or adaptations to socio-ecological risk. Both are change oriented.

4 After Wenger (1998).

5 Evident in actions such as sweatshop employment practices by transnational corporations, the power of some governments to dominate the agenda at international negotiations such as at COP 15, and by recent warmongering instituted by the USA, UK and others.

6 Beck (2009) distinguishes between methodological cosmopolitanism (which he describes as developing better understandings of transnational actor networks and how they contribute to the defining and distribution of risks such as climate change); and political or normative cosmopolitanism and a world historical subject of cosmopolitanisation. This distinction is important to avoid the conflation of his concept of methodological cosmopolitanism and totalitarian concepts of cosmopolitanism (see Lotz-Sisitka, 2009a for a more in-depth discussion of this point).

7 Dean (2006) argues that educational experiences can enhance the practice of reflexive intentional agency, although authors critical of modern education systems such as David Orr (1995) indicate that educational experiences do not necessarily develop reflexive intentional agency that is ethically informed or practiced, particularly when environmental ethics are brought into the discussion on education and reflexivity.

8 This differs from voluntarist (rational choice) and determinist theories of agency. It also avoids conflation of structure and agency (Archer, 1995).

9 Robeyns (2005) explains that 'functionings and capabilities are properties of individuals. Hence the capability approach is an ethically (or normatively) individualistic theory. This means that each person will be taken into account in our normative judgements. Ethical individualism implies that the units of normative judgement are individuals, and not households or communities. At the same time, the capability approach is not *ontologically individualistic*' (67, my emphasis).

10 Mukute and Lotz-Sisitka (in press b), adapted Sannino's (2008) concept of agentive talk to identify features of agentive talk that also take account of how agents prepare to respond to structural constraints.

11 Such questions are important, as Mukute's (2010) research shows for example that sustainable agriculture in southern Africa suffers from 'double stigmatisation' and people may not necessarily

value being involved in sustainable agricultural practices, as such valuings of beings and doings are influenced by contextual issues such as poverty, available choices, histories of oppression, cultural changes and other dominant values that are promoted by modernisation and consumerism.

12 Power1 as described by Bhaskar (1993).

13 Nussbaum (2000, 2005) argues that capabilities should include at least the following: life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment. Her argument is not that these are the only capabilities, but that they are a good proxy for thinking about the goals of global development in an 'increasingly interdependent and globalising world' (2005:197). She argues that the capability approach to development is an 'outcome oriented approach'– and she argues that 'a world in which people have all the capabilities on the list is a minimally just and decent world' (*ibid*:210), and that a list of capabilities (such as the one she proposes) provides a basic framework for thinking about global social justice. She argues that 'Humanity is under a collective obligation to find ways of living and cooperating together so that all human beings have decent lives' (*ibid*:211). She also states that mobilising the capabilities approach is a 'practical job', a job for economists, political scientists, diplomats and policy-makers. She neglects educators here. Her view of capabilities differs from Sen's in the sense that Sen views capabilities as real opportunities, but for Nussbaum they also include talents, internal powers and abilities (Robeyns, 2005:77).

14 Engeström (2001:135) explains that 'contradictions within activity become 'a guiding principle of empirical research' and that different types of contradictions can be identified within activity systems – primary (within each constituent component of an activity system), secondary (between constituents of the central activity); tertiary contradiction (between the object of the dominant form of activity, and the object of a more culturally advanced activity system); and quartenary (between the central activity system and its neighbour activities).

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Sigtuna Think Piece 9

Climate Change Education Research: What It Could Be and Why It Matters

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Abstract

The purpose of this think piece is to situate climate change education research in the context of research traditions, approaches and methods that are common to the social sciences, education being part thereof. At the same time it is meant to give elements for exploring the ways in which climate change education research may be identical to or different from them. This paper deliberates what climate change education research could be and why it matters. The paper argues that for climate change education research within the wider context of Education for Sustainable Development (ESD) to have effect, a research programme should build on the best of different research traditions, while avoiding the pitfalls associated with each of them. In this respect the paper argues for methodological innovation and expansion of existing forms of research. It also sees a research programme in this area has having potential to expand both research and climate change education paradigms and create opportunities for discussion, debate and continuous learning.

Why does Climate Change Education Research Matter?

Climate change education research matters because both climate change education and research matter. For climate change education – within the wider frame of Education for Sustainable Development (ESD) – to be useful, to enhance its utility, to strengthen its effectiveness, and to allow for innovation, new perspectives and continuous learning, its practitioners need to reflect on what they are doing and what is being done and whether the climate change education practice and processes have the intended results. They also need to examine in a systematic way how associated educational results could be improved or enhanced and how the actual educational and pedagogical practice and methods could evolve and innovate, in order to reach larger numbers of people and have a greater and longer lasting impact.

This is where research comes in. In other words, climate change education research should reflect, do justice to and help advance the practice of climate change education and its defining characteristics. It should build on the best from different research traditions, while avoiding the pitfalls associated with each of them. It should be aware of the limitations and the potential of these traditions.

Each research tradition or approach is based on methodological and philosophical framework that circumscribes and privileges the questions to be asked and the methods to be used. Because climate change education is a rather recent addition to ESD and education more broadly, it could be in the forefront of formulating and testing innovative research methods and

approaches. Climate change education research could expand both research and climate change education paradigms and create opportunities for discussion, debate and continuous learning.

What could Climate Change Education Research be?

The purpose of this think piece is to situate climate change education research in the context of research traditions, approaches and methods that are common to the social sciences, education being part thereof. At the same time it is meant to give elements for exploring the ways in which climate change education research may be identical to or different from them.

In this think piece, climate change education is regarded as going beyond education, instruction or learning about climate change, its appearance, its causes and (possible) consequences. These elements are certainly an important part of it. Indicators of climate change, such as global warming, rising sea levels, atmospheric greenhouse gas emission levels and melting ice shelves have become household concepts. Similarly, there is increased understanding of the negative consequences of climate change, if the processes underlying these indicators remain unchecked. However, the science behind all this – drivers, mechanisms, processes and tipping points – is less familiar and less understood. Scientific instruction, thinking and reasoning are therefore more important than ever. However, climate change has a major additional dimension: the human one. It is certain that human activity is having a major impact on climate change and that the consequences of climate change are having a major impact on human activity. Therefore, it is another goal of instruction, training and learning to know about and understand the intricacies of the interaction between climate change, human behaviour and social formations.

For climate change education to be effective, insights into and understanding of climate change in all its dimensions are not sufficient. Climate change education effectiveness is considered to reside in the 'positive' outcomes and results of the behaviour, choices, decisions and actions of human beings as a result of having been exposed to climate change education, instruction, training or capacity building. In other words, climate change education effectiveness will only take place if 'transformation' and 'action competence' are explicitly included in the instructional and learning process. It is this same transformative action competence that is central to ESD.

ESD consists of a wide variety of learning experiences allowing individuals, communities and organizations to acquire competencies, knowledge and predispositions for becoming/being active participants in choices and activities leading to a sustainable future in terms of global and local environmental sustainability, economic equity and social justice (UNESCO, 2005). Action competence[1] refers to the intellectual, practical and life skills of learners to comprehend their world in its complexity and, in the face of uncertainty and adversity, to contribute to the necessary collective and individual action required for transformation and resilience to occur and to be effective.

To the extent that ESD, and by extension associated forms of climate change education, are dealing with the interaction of complex systems and considers human beings and human communities as the agents and actors who affect and are affected by these complexities, it differs from other types of education dealing with comprehending 'partial' realities and acquiring

knowledge and instrumental skills, such as physics education, some forms of environmental education or vocational skills training. In the same vein, ESD and climate change education research may differ from research focusing on 'partial' or 'instrumental' education, instruction and training. For both types of research, the learning process and its outcomes are legitimate objectives of inquiry. Also, the methods of both kinds of research need to adhere to the same general research criteria of being theory-based, and having the characteristics of reliability, validity and reproducibility. However, where ESD and climate change education have a transformative – or some would say 'emancipatory' – character, the practice of ESD and climate change education research should reflect this character both in the way it is conceived and is conducted.

Research and research traditions

In his keynote address to the 4th World Environmental Education Congress (Durban, July 2007), Bill Scott presented a similar perspective, more specifically with regards to environmental education research (published in *Environmental Education Research* in 2009). He described the evolution of the thinking about research as a social process: according to the commonly accepted view of scientific research, research is seen as an investigation employing systematic methods to observe and interpret phenomena. 'Although obviously broadly similar, the modern view is much more open in terms of outcomes, with a change of emphasis from generalisation and modelling, to a focus on knowledge generation and its application' (Scott, 2009:156), thus transforming research from a mere method or technique to a process, which in terms of '… environmental education research concerns developing … and/or measuring environmental awareness, ecological and issues-related scientific knowledge, issue investigation and decision-making skills, the empowerment of learners as environmental change agents, responsible environmental behavior …' (Scott, 2009:156 quoting Marcinkowski & Mrazek, 1996:iv). By extension this process view of research applies equally to research on ESD and on climate change education.

In education, as in the social sciences in general, there are a number of research traditions. These do not necessarily follow each other in time, one building upon the other or one replacing the other. They are traditions sui generis with their own strengths. They can and do exist simultaneously. The different research traditions combine a variety of approaches, methods and techniques, depending on research object and purpose, such as: surveys, observations, (quasi-)experiments, case studies (in the anthropological and ethnographic tradition – either stand alone or in a comparative fashion), econometric , psychometric and sociometric methods, longitudinal studies such as cohort and panel analysis, textual and content analysis, rate of return analysis, cost-effectiveness and cost-benefit analysis, etc. The next section will comment on a limited set of these traditions and methods with respect to their applicability and appropriateness in terms of possibilities for climate change education research.

Surveys and focus groups: Surveys of climate change education practices and of understanding, perceptions and beliefs among politicians, decision-makers, teachers, students and the public at large about climate change, its drivers and consequences, are useful tools for gathering

information for determining the 'lay of the land' when climate change education initiatives are being proposed and introduced. The data collected also can serve as a baseline against which further climate change education, interventions and impact can be measured and assessed. Usually, opinion polls cover a small number of questions addressed to large numbers of people.[2] In contrast, the focus group method helps to explore a limited set of issues or questions among selected persons but in greater depth. Thus they can go beyond a mere observation and description of people's beliefs and explore ways in which people consider that they can make a difference (or not) with respect to the issue under scrutiny.

Comparative and longitudinal studies: Surveys, at any geographical scale, are good for 'discovery'. The survey method, if used over time and with comparable populations, can produce a rich picture of the 'status' of these populations with respect to a small set of variables, and the changes thereof over time. For example, the Organisation for Economic Cooperation and Development's (OECD) Programme for International Student Assessment (PISA),[3] through its surveys of 15-year-olds in the principal industrialised countries, assesses how far students near the end of compulsory education have acquired some of the knowledge and skills essential for full participation in society. Recently, PISA published a study about how 15-year-olds perform in environmental and geoscience in 2006.[4] Currently, PISA covers a limited number of domains (reading, mathematics, science literacy) but it could be imagined that climate change education components (or a broader set of ESD components) could be included in future PISA editions. To the extent that other countries can participate in PISA or similar studies, the understanding of the ESD and associated climate change competencies of students (and others) across the world could be enhanced. However, surveys of this kind do not say much, if anything, about the conditions, environments and contexts in which the results (i.e. student achievement) have been produced; in other words, the variables that can explain the differences between student scores in different countries. More detailed and context-specific studies (especially in-depth case studies) are required to do that.[5]

While the tools of student achievement testing – whether in the classroom, the school, the school system or the country – are well understood and practiced as far as 'traditional' subject matter learning is concerned, it is a challenge to extend and adapt them to learning that goes beyond simple knowledge and skill acquisition. In the environmental education domain Scott and Gough (2003a, 2003b) distinguish three types of learning interventions. Type 1 and Type 2 interventions 'suppose that what counts as pro-environmental or good citizenship behaviours can be specified, and that, through learning, appropriate skills can be developed that will contribute to bringing about these behaviours' (Scott, 2003c:2). Traditional testing methods can certainly establish the extent to which these skills have been acquired. Adaptation in testing methods is required, however, when it comes to Type 3 learning interventions, in which, according to Scott (2003c:3), 'problems have multiple, contested definitions and shifting, contingent solutions where uncertainty about what best to do is the norm.' Learning in this context encourages critical thinking and open-ended enquiry and recognises uncertainty and its implications. What kinds of testing techniques are appropriate to assess the results of this learning? And would it be feasible to organise an international assessment of ESD and climate

change education in a similar fashion as the large-scale international learning assessment studies such as PISA and TIMMS?

The category of longitudinal studies also includes cohort or panel studies. This kind of research allows, for example, one to follow the 'performance' of a particular (natural) group or groups of students as they progress through different stages of education and learning. It is also possible to compare different cohorts or groups that differ on the major variable under scrutiny (see also the section on Randomised Trials below).

Case study: The international discourse on education and learning in general shows a tendency to concentrate around certain key words. 'Decentralisation', 'competencies', 'learner-centered pedagogy' – to just take a few examples – are recurring concepts that are adopted or at least used in highly different contexts and highly different social, cultural and educational systems and traditions. There is a need to subject this phenomenon to further scrutiny. It can be observed, for example, that the languages of climate change education – including concepts that are essential to Type 3 learning interventions (see above) – are increasingly becoming identical in space and over time. However, they are likely to cover and hide different (ideological) realities, perceptions and practices. Detailed case studies that confront actual educational and learning practice with the words and concepts of transnational educational discourse would be of great help in laying bare their 'accidental' and 'essential' characteristics. In addition, comparison of these case studies could provide insights in how new educational approaches, such as those associated with various forms of climate change education, are disseminated, adopted, adapted and even 'denatured' in certain contexts and circumstances. An interesting example of highlighting the dynamics and contradictions in the transnational educational 'discourse' is Carney's (2009) comparison of educational 'policyscapes' in Denmark, Nepal and China. It shows that similar concepts of higher educational reform have different (practical) meanings in different contexts, and that over time the meaning of a concept emerging in one context may almost turn into its opposite in the same or a different context.

There is a well-established tradition of anthropological and ethnographic case studies of classroom interaction and dynamics – figuring out what is happening in education's 'black box'. Of course, case studies can also be used for describing how (new) educational interventions and approaches are conceived and implemented in their own contexts (see previous paragraph), how they may be perceived and used by the community, the teachers and the learners, and how they may have different consequences, effects and results, depending on a constellation of 'environmental' variables. Kendall's (2007) study of education reform in Malawi is an example of an insightful use of the (ethnographic) case study method. It shows the extent to which the 'same' nationwide educational reform produces highly differing outcomes in three different communities, in terms of the genesis and practice of the reform and actual learning outcomes.

Randomised trial and (quasi-)experiment: Education and learning are always and necessarily context-bound; even more so when moving away from knowledge and skill acquisition to higher order learning skills and Type 3 learning interventions (see above). Therefore, they lend themselves very well to qualitative research methods, such as case studies. There are those who

argue that such qualitative research does little for 'scientifically' determining which factors or variables determine the effect, success or failure of an (new) educational intervention. For them, the randomised trial or experiment is the 'gold standard' of proof. This is premised on the assumption that new educational approaches or methods are analogous to new medicines or drugs: by comparing the difference between the results of 'administering' this intervention to one group while withholding it from another but equivalent group except for the intervention, the intervention's effect can be scientifically measured.[6]

As one can imagine, (quasi-)experimental designs and randomised trials in education are contested.[7] Apart from the actual difficulty in setting up true experiments (see for example Stufflebeam, 2005), objections have been raised about the possible ethical implications of randomly or arbitrarily allowing certain groups to 'enjoy' the intervention and others not. When, for example in the case of climate change education, the intervention's purpose is closely related to 'sense-making' (i.e. critical thinking and open-ended enquiry, while recognizing uncertainty and its implications), an experimental approach may not be that appropriate.

While randomisation of the 'treatment' can be highly controversial if not plain unethical, it could be used to one's advantage in actual situations where new (educational) innovations and interventions reach certain regions or groups of people earlier than others. This creates the condition for a 'natural experiment' – comparing the 'results' of the 'reached' and the 'non-reached' groups, although this too has ethically complex undertones. Of course, in order to be regarded as an 'experiment', one should assume that there is contextual congruence across sites and across the different time-space configurations involved.

The (quasi-)experimental research method should not be confounded with 'experimentation' as in 'trial and error', which could be one other method for developing and testing the workings and effects of innovative educational approaches such as climate change education. Experimentation in this sense refers to actively pursuing alternative paths, processes and tools in a search for achieving the transformational potential within climate change education. In order to do so and to be able to derive useful lessons, one should however adhere to the scientific research procedures of systematic observation, analysis and reporting.

Political economic analysis: The introduction of new educational approaches and methods, such as those that may be relevant in climate change education, does not happen in a vacuum. There is no tabula rasa on which the new discourse is being written and the expected new 'behaviours' are to be acted out. On the one hand, the intervention meets, clashes with, is rejected, appropriated or absorbed by existing actors, such as teachers, parents, community leaders, learners and school administrators. On the other hand, the new practices and methods are promoted by certain groups of actors and 'stakeholders' inside and outside the educational or learning system or environment, each with their own agendas and interests related to maintaining and altering influence, power and control about political, financial and administrative resources. Research in the political economy tradition is a powerful way to uncover the manifest, latent and conflicting interests, ideologies and mechanisms of certain social formations (groups) that may have a significant influence on how the intervention is going to adopted, rejected or transformed (over time). The Carney and Bista (2009) study of how in Nepal over a 10-year period, the practice

and meaning of 'community education' has been perceived, captured and modified by certain interest groups, fits well into this political economy tradition.

Where climate change education itself has the explicit purpose of empowering learners and enhancing their transformative action competence, not only *vis à vis* bio-physical conditions but also with respect to social formations that enhance or can mitigate the drivers and or (potential) consequences of climate change, understanding of its surrounding political economy must be considered a priority. A recent report by the Commission on Climate Change Development (Christoplos, *et al.*, 2009) stresses the central importance of local and institutional issues with respect to the human dimension of climate adaptation.

Text and content analysis: The content of a text or discourse, in for example textbooks or curricular material, can be subjected to a critical analysis in order to glean its explicit and often implicit meanings that determine its sense and orientation. Not only the structure of the text, but also its references and examples and the ways and social-political context in which it is produced, disseminated and used can be the object of enquiry. Numerous technical tools exist for undertaking a mostly quantitative analysis of the frequency with which certain words, sentences or concepts occur. For interpretative analysis more qualitative tools are available as well. A good recent example of using a variety of research methods and traditions (historical, anthropological, political) for textual analysis is the report by Freedman, *et al.* (2008) about changing the school history curriculum in Rwanda. It contains valuable insights about the array of opportunities and obstacles that people wishing to modify or introduce 'value-laden' education, such as ESD and climate change education, may encounter.

Communication and diffusion of innovations research: Climate change education should be considered an integral part of ESD, which is intended to provide a comprehensive view of and approach to education and learning. Therefore, climate change education is not just another 'adjectival' education, similar to nature education or traffic education. Nevertheless, climate change education is a somewhat new focus within ESD. As such one could determine and assess under what conditions and in what ways its ideas and methods are disseminated, picked up, applied and adopted, and how different groups in a population or society play a role in the acceptance, modification or rejection of this 'innovation'. There is a long and rich tradition of research on the diffusion of innovations (e.g. Rogers & Shoemaker, 1971), elements of which can be used in assessing the extent to which and the ways in which climate change education is adopted.[8] A recent useful addition to this tradition is the compilation of results of research in the psychology of climate change communication by the Center for Research and Environmental Decisions (2009).

Action research: The key characteristic of action research is that those undertaking the research and those being subject of the research are one and the same person or group. Education action research implies that the educational practitioner, very often together with the learners, is acting as the collector of data, the data analyst, and the interpreter of results. Action research is a well-established research tradition. Although nothing new *per se*, it seems to be particularly

suited for climate change education and ESD in general. It is through social learning, including its particular emphasis on reflexivity and the social construction of meaning that climate change education and ESD can reach their transformative potential. According to Wals (2007), social learning takes learning beyond individual memory work and cognition. It uses social constructivist perspectives to move interactional actions and experiences. By placing a premium on broadening the dimensions of learning and other legitimate ways of knowing, this perspective is a challenge to more traditional educational research and evaluation approaches. Creating space for the social learning perspective requires forms of inquiry and research that allow the researchers and the researched to engage in participatory process.

Future research and scenarios: The further development and evolution of climate change education within the framework of ESD could derive significant benefits from using the approaches of scenario building and future mapping and related techniques. The purpose of futures research methodology is to systematically explore, create and test both possible and desirable futures to improve decisions and learning. Its methods can be quantitative and qualitative. The value of futures research lies less in the accuracy of its forecasting rather than in focusing attention, planning and opening minds to consider new possibilities and changing policy and learning agendas. Because, in this sense, it matches with ESD's transformative nature, it may be particularly useful for climate change education. A didactically well-developed specimen of incorporating futures research and scenario building directly in the educational approach is Brunner's *The Mission* (1996).

Not unlike action research, which can be an powerful tool for social learning (see above), the process of constructing future scenarios and the subsequent backcasting, can open space for understanding complexity and broadening the dimensions of learning – going beyond instrumental knowing and creating opportunities for accentuating agency and responsibility in moving current realities onto a path of sustainability. *The Great Transition* by Raskin, *et.al.* (2002) exemplifies this approach.

For scenario building there are special techniques, such as Delphi. It has been around for a long time, but it is cumbersome and time consuming. A recent improvement, made possible by the advent of the Internet, is the 'roundless' Real-Time Delphi (RTD), in which respondents complete – as often as desired – an online questionnaire, the responses to which are recorded instantaneously. This allows for real-time interaction and continuous learning among the participants. The Millennium Project's[9] *The 2009 State of the Future Report* (Glen, *et al.*, 2009) includes a couple of RTD studies related to environmental or social issues including the futures of water, women, energy and human rights (Chapter 3). Chapter 5 introduces the *Futures Research Methodology Version 3.0*. It contains 'the largest, most comprehensive, internationally peer-reviewed collection of methods to explore the future ever assembled' (Glen, *et al.*, 2009:8).

Conclusion

As for any type of research, good climate change education research and evaluation in the empirical tradition would rest on the formulation and use of good theory, on reliable

observations and valid data and on transparent and reproducible methods of analysis. Climate change education and ESD are manifestations of times and realities that are in crisis. They require innovative ways of sense-making and empowerment. Research on the content, practice and outcomes of ESD and climate change education can make a significant contribution to enhancing their relevance and effectiveness. Research as part of ESD and climate change education practice can do the same. But not any research. Researchers and practitioners should make a careful and reasoned selection of the most appropriate frameworks and methods from among many research traditions and categories. This think piece has discussed a select number of such traditions, especially those that in one way or another have promise or include useful lessons for climate change education research.

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Endnotes

1 The concept of action competence is originally attributed to the work of Jensen and Schnack (1997), Danish environmental education researchers.

2 There are numerous examples of climate change surveys and polls on the web. One of them is the poll conducted on behalf of UNEP among young people in 2008, which found that nearly 90% of young people across the globe think world leaders should do 'whatever it takes' to tackle climate change (http://www.unep.org/pdf/survey_results.pdf).

3 See www.pisa.oecd.org.

4 OECD (2009).

5 Besides OECD's PISA, other international, comparative and longitudinal studies of educational achievement are conducted under the auspices of the International Association for the Evaluation of Educational Achievement (IAE, www.iae.nl): TIMMS – Trends in International Mathematics and Science Study, PIRLS – Progress in International Reading and Listening Study, ICCS – International Civics and Citizenship Education Study, and TEDS – Teacher Education and Development Study in Mathematics.

6 The Poverty Action Lab (http://www.povertyactionlab.org/research/rand.php) is a main proponent of randomised trials in health and education, especially in developing countries.

7 Not only in education, but also in health, environment and international development cooperation. For a view of the appropriateness of randomised trials in real-life settings see, for example, the 2008 IDRC interview with Michael Quinn Patton, http://www.idrc.ca/en/ev-30442-201-1-DO_TOPIC.html.

8 Including such concepts as 'innovators' and 'early adopters', 'opinion leaders' and 'change agents'.

9 The Millennium Project (http://www.unmillenniumproject.org/) 'was commissioned by the United Nations Secretary-General in 2002 to develop a concrete action plan for the world to achieve the Millennium Development Goals and to reverse the grinding poverty, hunger and disease affecting billions of people.'

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Sigtuna Think Piece 10

Reflections on the Sigtuna Climate Change Education Research Symposium

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Abstract

This think piece provides a short reflection from two Master's level students who participated in the symposium on Climate Change Education held at Sigtunastiftelsen on 28 March 2009. It summarises (from our point of view), some of the major points discussed. Our contribution to the think pieces also provides a 'lens' for reading or thinking about how young students are embarking into the world of both the challenge of climate change and the necessary transformations that need to be made in education to reflect the required knowledge to both prevent and mitigate the effects of climate change in the future.

Introduction

On 28 March 2009, a variety of interested researchers gathered at the Sigtunastiftelsen in Sweden to discuss the topic of education for climate change. The symposium was organised by the Institute for Research and Education in Sustainable Development (IRESD) in cooperation with Uppsala University and the Sigtuna Foundation. The participants came from a variety of cultural backgrounds and research fields. We were selected as student observers to watch the proceedings and to give our account of the content and process of the workshop at the end.

One of the most important aspects of the workshop was the equality principle between participants. Each was encouraged to leave their titles and respective hierarchies behind before the workshop began. This small measure was a pointer towards the fruitful, interesting and educational discussion that was to take place.

The workshop combined accounts of theoretical and research experience from Swedish universities, along with practical application and experiences from Africa, although in both contexts theory and practice were evident. In this short paper, we have made a summary of the main issues raised throughout the three days of the workshop and represent our observations and interpretations of the participants' work.

Some Perspectives on the Presentations and Discussions

The purpose of education

Akpezi Ogbuigwe, from the United Nations Environmental Programme (UNEP), raised some fundamental questions in the beginning of the conference regarding the conference topic on Climate Change Education: What is Sustainable Development? Who are we talking about?

What do we want to reach? What do we want to see in the future? These questions led her to the heart of the question: why do we in the North; that have the most knowledge, still have the biggest ecological footprint? She noted that in raising this question, it is valid to discuss the importance of action and change within ourselves to start with. It is easier to say or wish what other people should do, but the issues and questions on climate change are highly complex. This again leads to a more normative question: can we discuss how others should change if we cannot change ourselves? (Linking this to the conference content, climate change can barely be talked about without mentioning carbon-dioxide emissions from airplanes and the implications of this. Not only at this conference, but all over the world people are taking airplanes to fulfil their desires, whilst contributing to climate change in a way. How can we say that others cannot fly, if we cannot find a better substitute ourselves? Does this lead us to being hypocrites?)

Professor Heila Lotz-Sisitka at Rhodes University questioned: should we all be activists? In relation to climate change education the need for wanting to do the right thing is the key, not to force people to do what is the best, thus activist approaches to education may not lead to desired democratic results, a point also made by Professor Öhman. Education on climate change issues needs to be 'taught' in pluralistic ways that enable us to make a good choice for people around us and for the future of the world. Such education should equip us with capabilities to evaluate and reflect on how we act ourselves and how our actions may affect others.

These and other presentations led us to reflect on the way that courses at universities today are highly fragmented; the topics are taught in singular subjects of biology, geography, law, maths, economy, etc. The links between these courses, however, are very important for the resolution of complex problems such as climate change, and these linkages between disciplines and different forms of knowledge are not adequately valued in the education system today. This subject-separation does not reflect real life and is hard to apply in practical situations, especially in the context of climate change in a continuously changing world. The need for an interdisciplinary education form is crucial now and even more relevant for the future.

The separation between theory and practice, too, is big when it comes to the current education system, both at universities and in other forms of education. During the symposium it was obvious that the need for education to address issues associated with climate change is an urgent and vital area for future curriculum development and implementation. The discussions raised the issues of what the current situation is today. Firstly, a basic question on vision was raised: is it the role of universities to address what is right or wrong? This brought the discussion back to Professor Ogbuigwe's questions at the beginning of the workshop, namely what is our vision and how does this influence purpose and practice in education? In our view there are barely any interdisciplinary, reflective or evaluative discussions in universities and other parts of the education system today, yet education that brings in these topics is important. Discussion of what is right or wrong, what is human value, what do people value most and how are people conceptualising their relationship to nature are topics that could involve students and their teachers and professors in reflective processes that could affect education, and also the choices they make in life. This is in no way implying that education should tell us what is right or wrong, but rather that it should equip us to be more reflective over our actions.

Spaces for engaging with values questions in education

Despite the need for such educational renewal, Professor Leif Östman from Uppsala University said there is hardly any space for Education for Sustainable Development (ESD) in the university's teacher education school. Our question was then: what department or institute at the university should include education that addresses climate change questions, if it does not even fit into the department for teachers' education? As the curriculum is decided by the state, it tends to reflect the values of the state. But, since we live in a democracy this should reflect the people's thoughts. What does this tell us? Does this reflect the real values of the people?

In this context, we discussed to what extent the values and questions of people are represented in schools. When I (Ida) went to school, the only topic that touched upon questions of ethics, was the class called 'religion' where we discussed differentials between Islamism, Judaism, Christianity, Hinduism and Buddhism. The alternative form was called 'view on life' (humanism) where they discussed world-views and views of life, which raised moralistic issues. To be honest I do not think this has changed much since I (Ida) went to lower secondary school in 1992. There was a separation between the 'Christian' children and the 'non-Christian' children. Three out of a total of 20 went to the 'non-Christian' class, where they discussed views of life and more moralistic questions. This reflects a trend towards secularisation in Sweden, and this leads us to the question: is secularisation a factor in decreasing the interest of ethics in school?

Unfulfilled knowledge

Another topic that was discussed in the symposium was the concept of unfulfilled knowledge; that is, the ability to educate while the subject and learning outcomes are in a constant state of flux. There is currently a significant element of scientific uncertainty associated with the projected effects of climate change, its localised effects and the speed at which these effects will become apparent. This presents both opportunities and threats. Opportunities are in the ability to combine education more closely with the surrounding world, allowing communities to have a much greater role in the education of the next generation, and giving ownership of the possibilities which education accrues to the entire wider community. However, the threats are not to be underestimated, these can be primarily a vague and unfocussed curriculum, a reduced sense of achievement as the outcomes are not very specific leading to a variety of interpretations of the outcomes, which can be a positive or a negative.

Measuring performance

The symposium also discussed methods of measuring performance. This related not only to direct outcomes but also to indirect community wide outcomes. Several questions were posed by the various contributors; for example, what is the purpose of education? How can we be systematic in an emergent field? In our view, the question of measuring performance is a vital one in an educational programme. The relative success of a curriculum such as one that addresses climate change and sustainability issues must also face the issue that success is not merely measured in exam results and correct answers. It must be measured more in community activities, critical thinking, applied solutions and a possession of leadership skills.

Moral questions, values and ethical deliberations play an immensely important part in such education, all of which cannot be readily judged with traditional examinations or performance measurement approaches that are popular in education today.

Different contexts: Adaption/mitigation

Different contexts were also one of the main debate points. Here there were two separate concepts, that of different contexts in terms of North/South and also that of mitigation or adaption. The first concept is of course familiar to all, whilst the second is an important emerging factor, which will significantly alter results, goals and methodology. In differing circumstances it will be appropriate to have differing strands; however the process through which this is decided is yet to be formulated. Also, in each case there is a temporal element, i.e. we may move from mitigation to an adaption-based system. This is a further issue that ties into the difficulties in measurement; i.e. when should we choose mitigation or adaption strategies? Local knowledge and local leaders may prove to be the best judges of this; however this leads to an issue of formulating a comprehensive education curriculum, which leads to common learning outcomes whilst being sensitive to localised conditions.

Conclusion

In conclusion, there are several challenges and opportunities to take forward out of this symposium. The breadth of work being undertaken by the contributors underlines the expansive nature of climate change education. It questions both the basis and reasoning behind education. The difficulties and dilemmas posed in linking ethics and education systems should not be underestimated. However, in order to give students the opportunities to make a difference in their own lives and those of others, education must produce critically aware, well-rounded individuals. The current delineations between subjects do not adequately prepare students for the reality of complex interrelated problems. By linking learning to real life situations the student may learn by doing, such 'indirect' learning produces greater knowledge, as the student must understand the connections between education and knowledge. From the symposium, we can understand the objectives to be achieved by both North and South, while work on the indicators of these objectives continues.

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Through a Green Gaze: Tentative Indicators of a Green 'Text'

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Abstract

This paper[1] seeks to re-claim for the idea 'green', something of the depth and range of its philosophical and ideological ideas at the time of its emergence and early formation from the 1960s to the 1990s, ideas which appear today to be largely unknown, forgotten or deliberately sidelined. It also seeks to provide for political, economic and environmental opinion-makers and decision-takers, a list of indicators by which to assess the green-ness of a 'text'. The paper is also useful for educators wishing to examine the philosophical foundations of their practice and the texts that they use in educational work.

Introduction to 'Seeing Green'

'Seeing green' as United Kingdom green politician Jonathon Porritt (1984) phrased it, has been around since the 1980s as a proposed solution to our growing environmental problems. Yet what has filtered through into the mass consciousness – or, from a more cynical point of view, what has been allowed to filter through into the consumer mass consciousness – is a rather impoverished version of it. For example, during the 2007 festive season, one popular women's magazine, in its 'Environment' section, carried an article entitled 'Dreaming of a Green Christmas – Gifts that Won't Leave a Large Eco-footprint'. Readers are advised to '... think of items that shout 'green' – recycled goods and those that won't end up in a landfill. Where possible, choose local products because imported goods have a larger carbon footprint' (Rassool & Warren-Brown, 2007:56). The article covers topics such as indigenous gardening, 'conscientious' (organically produced) wine drinking, environmental awareness-raising books, solar-powered radios and ornamental lights, organic body and skin-care products, and bike riding to reduce carbon emissions (56–57). It is true that all these topics are part of the green message, but what has been forgotten, or intentionally/unintentionally sidelined, or is simply unknown, is the radical, Western counter-cultural, and some would say, subversive, nature of their 'seeing green' context.

This paper seeks to reclaim for the idea 'green', something of the depth and range of its philosophical and ideological ideas at the time of its emergence and early formation from the 1960s to the 1990s. And, to provide for political, economic and environmental opinion-makers and decision-takers, as opposed to environmental and political philosophy scholars, a list of indicators by which to assess the green-ness of a 'text'. Here, 'text' is understood widely to mean not only printed texts, such as development policy recommendations or policy papers on

socio-economic issues, but also 'texts' such Al Gore's acclaimed film about climate change, *An Inconvenient Truth*.

Seeing green: More than reform environmentalism

Seeing green is not to be confused with that point of view called 'reform environmentalism' which is often encountered in conservative models of sustainable development.

Achterberg (1993:84) notes that in the literature:

> ... two visions of the nature and solution of environmental problems are traditionally distinguished. First, there is a 'superficial' or reformist vision ('environmentalism'). According to this vision, environmental problems are mainly management problems, soluble within the context of the dominant political and economic system, and without any rigorous change in our values and culture. Second, there is a profounder vision, aiming at more structural change ('ecologism': for example, 'deep ecology'), according to which a radical change in our attitude towards nature, and therefore also in our political and social system, is necessary ...

Seeing green rejects reform environmentalism, sometimes called anthropocentric[2] reformism, as insufficient to address the ecological crisis. Reform environmentalism:

> argues that the root of our environmental problems is neither anthropocentric attitudes about humanity's place in nature, nor the political-economic structures that embody those attitudes. Rather, air and water pollution, wasteful use of natural resources, and the like, stem from ignorance, greed, and shortsightedness. Such factors may be addressed by enacting legislation, changing public policy, increasing education, altering tax laws, returning 'public lands' to private ownership, emphasising moral obligations to future generations of humans, promoting wise 'stewardship' of nature, and otherwise encouraging more prudent use and more equitable allocation of natural resources. According to these reformists, while nature has value only as an instrument for human ends, those ends range from the food provided by plants and animals to the aesthetic pleasure provided by a beautiful wild landscape. (Zimmerman, 1993:viii)

The 'profounder vision' of which Achterberg speaks, can also be called 'seeing green'.

Seeing green's key ideas: A summary

Seeing green comprises so much more than simply eco-friendly consumerism, recycling, or energy consumption that seeks to reduce our eco-footprint while carrying on our lifestyles as usual. Its stories are about the pathological Western-cultural construction of what it is to be a human being, and of the Self/Other relationship – Self divided against self, against other human beings, against 'the female' as value system, against women, against nature, against animals. Seeing green proposes that our current, and increasingly global, ecological crisis is but one manifestation of this pathological Self/Other construction. It argues that there will be no

lasting solution until this pathological relationship is healed, in thought, word and in public as well as private deed; that is, in our cultural practices, and in our political and socio-economic institutional structures.

Seeing green comprises at least five key ideas, all related to a view of the Self/Other relationship different to that found in dominant Western cultural thought. It problematises firstly, whether 'the good life' really is global capitalist techno-industrialism, which seeks to bring as much as possible of humanity's and nature's activity within the economy and the market system, and which values instrumental efficiency, materialism and consumerism.

Then secondly, there is within seeing green, a strong current of feminist and ecological critique of what is argued to be a predominantly 'masculine', hierarchical, patriarchal, and atomist view of what it is to be a human being – a Self in which reason is divided against emotion, mind against body, the 'male' against the 'female', for example. Thus thirdly, on the green view, there must be both personal transformation towards the adoption of ecological/post-patriarchal values, and radical political and socio-economic changes, to achieve a green, or ecological society.

Crucial in this transformation is rejection of the dominant idea that human progress – 'development' – requires the conquest, mastery or exploitation of nature. It is this idea, seeing green argues, that legitimates the omnipresent instrumental ethic[3] towards the natural world. As key fourth idea, seeing green proposes an ethic for nature which 'crosses the species divide'. That is, in one way or another, it extends the sphere of ethical behaviour beyond human beings only, to include some or all of nature for its own sake, not merely for human-instrumental reasons. There is agreement that long-range, wide ecological sustainability matters not only economically, but morally.

Finally, a key idea of seeing green is the call to mission, as it were. Adherents of seeing green are required to try to implement the necessary changes in self and society, by living out their personal beliefs in the public sphere.

Seeing green's ideas form an entire alternative worldview

It cannot be claimed that a 'seeing green' world-view represents a 'spectacular synthesis' of ideas (Ferris, 1993). It comes in darker and lighter shades of green too. This diversity is to be expected, since seeing green draws its inspiration from so many different 'new social movements', political ideologies, philosophies and religions, many having their own internal variation as well. The more important of these are perhaps the animal liberation movement, the ecology movement, feminism and eco-feminism, the peace movement, the counter-cultural movement, and the New Left political movement, but with contributions also from some alternative Christian movements, and the human potential and alternative health movements, to name but some. It is thus no easy task to present seeing green's diversity and complexity, either compactly or simply.

Yet there is a coherence of key ideas that can be discerned, and which in their detail, comprise an entire and alternative worldview to that of the dominant Western social paradigm. The subversivity of seeing green, some would argue, is why mainstream Western thought has been so quick to assimilate its less dangerous ideas (e.g. reducing carbon emissions, recycling,

the polluter pays principle), while quietly sidelining its more unsettling ideas (e.g. there is more to life than capitalism as economic and socio-cultural system; we should respect nature's agenda too, not only our own).

All the customary elements of a world-view (Macnamara, 1980) can be found in seeing green – theories which address the major personal and social questions, such as 'What is True?' 'What can we know, and how can we know it?' (epistemology). 'What is real?' 'What is the nature of reality, of human and non-human nature?' (ontology/psychology). And, 'What is Good?' 'How should we live?' (morality and ethics). A world-view should also contain a political ideology, that is, an analysis of political reality, a picture of the Good Life, and a theory of political action or strategy to achieve it (Dobson, 2000:164). One can expect too, one or more 'grand' narratives that hold the whole world-view together, and legitimate its critique and visions.

It is possible, I suggest, to propose tentative[4] indicators of each of these aspects of a green world-view, and use them to assess the green-ness of any text. To do so, one can phrase each indicator listed in the next section, as a question. As example, the second indicator can be rephrased as 'Are the ideas of androcentrism, or anthropocentrism, or hierarchy, or patriarchy, critiqued in this text?' I present next an overview of 18 potential green indicators, before then explaining them in more detail.

Tentative Indicators of a Green World-view: An Overview

One would expect a green 'text' to contain most of the following world-view aspects and indicators:

Legitimating narratives

1. Ecology is seen as normative
2. The ideas of androcentrism, anthropocentrism, hierarchy, and patriarchy, are critiqued
3. Western capitalist techno-industrialism as definition of 'the good life', is challenged
4. Spirituality is recognised as necessary for personal and social transformation

Epistemology

5. Rationality/rationalism as sole way of knowing is questioned

Ontology/Psychology

6. A holistic, organismic, purposive, view of reality/nature is proposed
7. There is philosophical concern for a reconceptualised human being/nature relationship
8. There is philosophical concern for a reconceptualised Self

Ethics, with focus on an ethic for nature

9. There is an account of the ethical generally, which differs from standard (or 'masculine') western accounts

10. The ethic for nature is ecological sustainability, understood as long-range, and 'wide', and not as only human-instrumental environmental sustainability

Ideology: Real-world seeing green politics in an ecological society

Some views on social reform

11. Fundamental, ecologically-informed, post-patriarchal reformation of society's values and structures are proposed
12. Living in solidarity is advocated
13. Non-violence and radical peace are advocated

Some views on the natural environment

14. Long-range, wide, ecological sustainability is placed on a genuine par with, if not ahead of social or economic sustainability

Some views on the economy

15. The economy is ecologically reoriented
16. Animals are treated ethically

Some views on the political process

17. Grassroots ('direct') democracy is advocated
18. Living/enacting your personal moral beliefs in the public-political sphere is encouraged.

The Green Indicators Explained

In this section, I present green 'stories' on the indicators of each world-view aspect. 'Stories' because it is not possible to present one categorically correct version of a green viewpoint. But as in any elusively complex but beautiful melody, seeing green comprises major and minor themes, harmony and counterpoint. To keep the descriptions of the indicators reasonably short, I have not discussed the variations, even contradictions, which do occur within the stories. But the synthesis presented here does convey the major ideas of 'seeing green'.

Legitimating narratives

1. Is ecology seen as normative? In the mid-1960s, some saw the newly emerging natural science ecology as a 'subversive' science, its ideological status that of a resistance movement (Deep Ecologist Sessions, 1995:102), its social implications revolutionary. Social ecologist Bookchin (1965, in Bookchin, 1974:68) wrote of ecology's 'awesome message to humanity ... in a new social dimension'. He argued that ecology conveys both a critical message (what humanity is doing wrongly: broadly, seeking to dominate nature; disturbing its balance), and a reconstructive one (what humanity ought to be doing: broadly, re-harmonising itself with nature; preserving nature's richness, complexity, diversity). The imbalances humanity is producing in the natural world, for example, the current reversal of organic evolution from diverse complexity to increasing homogeneity, are caused by the imbalances which humanity has produced in

the social world, such as the 'appalling contradictions between town and country, state and community, industry and husbandry, mass manufacture and craftsmanship, centralism and regionalism, the bureaucratic scale and the human scale' (68).

To varying degrees, social ecologists, deep ecologists, and 'green' as a new social movement in the 1970s, all welcome natural science ecology as partly normative for their epistemological, ontological and ideological views. Particularly valued are qualities in nature such as self-organisation, self-reliance, egalitarianism, symbiosis (mutualism, interdependence, cooperation, toleration, partnership, harmony rather than conflict); diversity, and unity in diversity; complexity; stability (equilibrium, 'balance'); richness (abundance); and spontaneity. 'Ecology' is the value within which all issues in society are to be assessed, and from which personal and social values, and social structures and practices, should be derived.

2. Are the ideas of androcentrism, anthropocentrism, hierarchy and patriarchy critiqued? Feminists/eco-feminists contend that while androcentrism[5] is a supposedly gender-neutral understanding of being and living, it is actually a socially constructed 'masculine' or 'male'-values view. Its dualistic, hierarchical and dominating, or 'power-over' logic generates a Self divided against self, against human Other, and against nature as Other. They argue that it is therefore an even more fundamental conceptual framework than anthropocentrism within which to understand the green-suggested pathology of the human-human, and human-nature relationship. Non-anthropocentrism, perhaps most easily recognised through its acknowledgement of nature's value-for-itself, is a key marker of a green text. An anthropocentric text on the other hand, tends towards considering nature as a collection of resources-for-humans, whether these resources are understood as material or aesthetic.

Androcentrism also encompasses seeing green's powerful critique of the ideas of hierarchy,[6] and patriarchy,[7] as well as their cultural and social expressions as colonialism, nationalism, statism, parliamentarianism, militarism, classism, sexism, racism, tribalism, and authoritarian bureaucracy in human affairs. Pathological ideas of hierarchy and patriarchy, they argue, provide the justification of 'naturism' – any way of thinking about, or acting towards nonhuman nature 'that reflects a logic, values, or attitude of domination' (Warren, 1990:141).

The rhetoric employed in this legitimating narrative is that of liberation for all oppressed groups: liberation for women from patriarchy; liberation for animals from speciesism[8] or inegalitarianism; liberation for nature from human domination; liberation for ourselves from our dominator role, amongst other human beings, and in nature.

3. Is Western capitalist techno-industrialism as definition of 'the good life', challenged? Seeing green critiques visions of 'the good life' equated with the values of global western capitalist techno-industrialism. Its alternative visions include a reconceptualisation of what it is to be a better human being (indicator 8), a reconceptualised human-nature relationship that rejects anthropocentrism (indicator 7), and a different understanding of authentic development.

The ideology of 'progress' is critiqued. Social ecologist Bookchin rejects any understanding of progress that involves the idea of hierarchy: the domination of people, or the idea of dominating or controlling nature (Bookchin, 1993). Eco-feminist Shiva critiques the Enlightenment model

of progress as dependent on a 'masculine' model of what it is to be human. She criticises notions of progress that elevate 'modern scientific knowledge and economic development' to 'sanctity' (e.g. Shiva, 1988:xiv, in Hayward, 1995:3), or which include the idea of human transcendence of dependence on nature (Mies and Shiva, 1998:489). Deep ecologists critique that understanding of progress that equates development with economic growth, and equates a society with its economy (Sachs, in Sessions, 1995:429–431).

Under New Left and counter-cultural influence, as well as in terms of ecology normatively understood (indicator 1), seeing green problematises capitalism as cultural/socio-economic system, inter alia for:

(a) assuming universality of western economic concepts, such as 'development' understood as ever-increasing commodity production: economic growth becomes practically equated with moral desirability (idea from Mark Sagoff, in Botzler & Armstrong, 1998:517, footnote 5). In this assumed universal understanding, subsistence living is equated with 'poverty', and nature is assumed to be 'productive' only when generating goods and services for profit in the marketplace;
(b) encouraging increased production for consumerist wants rather than the satisfaction of vital needs;
(c) leading to increased poverty, and increased international economic inegalitarianism. In the Third World, advanced capitalism tends on the one hand to create 'new elites', while increasing the economic gap between haves/have-nots, between men and women, and between the North and South;
(d) being ecologically impossible to universalise on a global scale, without encouraging militarism to secure access to natural resources; and
(e) reducing cultural diversity through its homogenising nature.

It is also critiqued for its aggressive, competitive, expansive and greedy spirit, its ecological destruction, its 'commodification' and intensive media-marketing of almost every aspect of life, and its overvaluing of materialism and consumerism. Supposedly 'green' consumerism, which fails to query materialism (the pursuit of wealth understood as ever-higher standards of living) as value, does not escape critique either.

Alternative forms of development that do not reproduce patriarchal oppression of women, do not rest on materialism and consumerism as values but meet people's fundamental needs, value their dignity, recognise the role of spirituality in human development, protect cultural diversity, recognise ecological limits and protect nature's diversity, which are regionally appropriate, tend towards increased economic self-reliance, harness renewable energies and soft technologies, and maintain international peace, are all recommended. Two positive examples are the 'eco-development' model (Bartelmus, 1986:46), subsequently overshadowed by 'sustainable development', and Norwegian resource economist and peace activist Johann Galtung's work (Naess, 1989a:98–99). A negative example is Shiva's (1988, 1990) 'maldevelopment'.

So seeing green rejects the overvaluing of aggressive individualism, materialism and consumerism inherent in capitalism and industrialism. Its understandings of the good life and authentic development are characterised by radical egalitarianism. In the public sphere,

'solidarity' development politics deliver what is needed locally to combat poverty, hunger and sickness, not what promotes Western economism, and an ever-higher standard of living. In the personal sphere, the new understanding of the good life manifests itself, for example, as voluntary simplicity (Elgin, 1981). This does not mean a life of grim-lipped self-denial, but a rejection of materialism and consumerism as ends in themselves, an embracing of a lifestyle-of-enough, and also, a statement of visible solidarity with have-nots.

Seeing green's radical egalitarianism in resource sharing, and solidarity of lifestyle with have-nots, appears in sustainable development discourse too, but as a less radical 'equity' (Hayward, 1997:97). Poverty reduction assumes in sustainable development discourse, the same kind of legitimating narrative status which seeing green accords to a western counter-cultural critique, or to ecology as normative. But ecological economist Martinez-Alier (1987:xi), for example, takes the cynical view that poverty reduction as story is deliberately cultivated by Northern (and 'new' or emerging) elites in order to deflect too much probing into their own inegalitarian pursuit of resource-intensive, and ever higher standards of living. It is often noted that this standard of living, for example that of the USA, 'is not replicable in the rest of the world because it implies such a disproportionate use of the earth's resources' (Martinez-Alier, 1987:237).

Martinez-Alier points out that underlying the economic growth for poverty alleviation viewpoint is an ethical question not always clearly spelt out, particularly in the context of the developed world *vis à vis* the developing world. If continual economic growth is possible, then developed world countries currently enjoying the high standard of living aspired to by the rest of the world (southern African new elites included), are not called upon to introduce any fundamental change to their lifestyle – 'tinkering' perhaps, but not a fundamental reorganisation. By 'assuming miraculous technical change and economic growth in the future' (Martinez-Alier, 1987:236), it is argued that developing countries will eventually reach the same high standard of living as in the developed countries. There is thus no need to give up 'the last great conservative ideology' (15) of growth, or to become involved in the painful business of redistribution of wealth. But, if continued growth is not possible, if our energy reserves are indeed limited, and not capable of delivering the same high standard of living across all peoples and all countries, should the developed countries then not be sharing the available resources in an egalitarian way, starting right now? And, closer to home, what about Die Grünen philosopher and activist Rudolf Bahro's contention that the elites in developing countries should also be engaging in the same kind of egalitarian, distributionist thinking, rather than pursuing what he called the 'Mercedes culture', or '... our auto-culture, the "good life" of Washington, London, Paris and Frankfurt' (Bahro, 1984a, in Bahro, 1986:161–162)?

4. Is spirituality seen as motivation in personal and social transformation? Calls for spiritual renewal to end the 'religion' of economism, the philosophy of materialism, and the pathology of individualism common to both, are part of seeing green. Personal spiritual transformation is seen as essential in bringing about the new social transformation; spirituality is the practice needed 'to dismantle ... previous psychological structures and be socialised anew' (Bahro, 1983, in Bahro, 1986:90). The sources of seeing green's spirituality are religious, secular and diverse: alternative forms of Christianity such as that advocated by St Francis, or the Christian mystics;

Eastern lifeways such as Buddhism, Hinduism, Taoism; Earth or goddess worship; animism, and naturalism (respect for evolutionary process) are some. Spirituality in the green world-view also expresses itself as a rejection of domination, as a commitment to living in authentic community with other human beings, and in a partnership ethic with nature. Spirituality is seen as the link between the reconceptualised human being, and an ecologically sustainable society.

Epistemology

5. Is rationality/rationalism as sole way of knowing critiqued or problematised? Seeing green problematises the primacy of reason and rationality as ways of knowing and acting, on various grounds: as divorced from the body as epistemological agent (i.e. the validity of feeling in knowing is denied; body as moral agent is denied); as abstract, and universal; as generating a dualistic ontology; as favouring the analytical above the holistic; the value-free above the value-laden; and devaluing particular and local knowledge. In a seeing green worldview, the validity of subjectivity, emotion, intuition, empathy, sensitivity, involvement, and value-recognition in knowing is acknowledged.

Particularly, and consistently, perhaps as heritage of the neo-Frankfurt School/counter-cultural critique, seeing green problematises that form of rationalism which legitimates a rational-efficient, instrumental use of the Other, whether people or nature. Instrumental reason, examples of which are economic rationality and rational self-interest, are critiqued for their ethically bankrupt use of the Other for own ends. Rational-instrumental, exploitative forms of science, and of technology, which demean and dehumanise the human being, which exploit nature, and which provide short-term, 'quick-fix' solutions to the ecological crisis rather than encouraging a review of fundamental values, including the predominantly anthropocentric human-nature relationship, is also part of the green epistemological critique.

In addition to rationalism (provided it is not instrumental-only rationalism), seeing green embraces alternative holistic, dialectical, both/and, process and standpoint epistemologies. The discursive influence of language in epistemological and ontological views is problematised: the Other, including nature, women, and animals, must also be liberated from oppressive epistemological and ontological constructions in our words.

Ontology/psychology

6. Is a holistic, organismic, purposive view of reality/nature proposed? Nature as a random phenomenon of separate, independent, human-usable parts is rejected (e.g. what has been called, the 'supermarket' view [deep ecologist Naess, 1989b, in Sessions, 1995:244]). Instead, there is a holistic view of reality conveyed in non-hierarchical, and non-mechanistic metaphors such as gestalts, systems or networks. Nature is seen as a single organism, or systems of organisms, or ecological gestalts. These are alive, manifest consciousness, subjectivity, or mind, have their own 'agenda' as it were, their own interests ('conatus'; 'nisus'), which are becoming, or self-development, or self-evolution towards greater complexity, diversity, self-reflexivity. They are also understood as possessing a capacity for self-organisation and self-direction ('autopoeisis') in achieving their 'agenda'. In early Die Grünen real-world political programmes for example, this self-organisation is primarily understood to manifest itself in a dynamic ecological balance

and stability, which should not be disturbed[9] (Die Grünen, ca. 1985:22). This ontological view (mind, nisus, conatus, self-organisation, in dynamic equilibrium) provides an objective basis (e.g. Bookchin, 1995, in Biehl, 1997:214) on which to ground a new human-nature relationship ethic (indicator 10).

7. Is there philosophical concern for a reconceptualised human being/nature relationship? Dominant Western understandings of the world assume a sharp human-nature divide. In green stories, a call for a critical review of this 'discontinuity problem' is central. In one eco-feminist view (Plumwood, 1991, in Warren, 1996:170), this must entail a simultaneous reconceptualisation of what it is to be a human being, and a reconceptualisation of Self, 'especially ... [the Self's] possibilities of relating to nature in other than instrumental ways'. These last two aspects are taken up in green indicators 8, and 10.

Green philosophers and ideologues call for a fresh start for a humanity which has failed to live up to its potentiality for symbiosis, and which has become 'warped' through the idea of hierarchy (Bookchin, 1990:258), or pathological Western individualism (Bahro, 1984b: 214–217). Eco-feminists critique the assumed human-nature divide as derived from an 'androcentric premise' on rationality, Self and Other. Instrumental rationalism underwrites 'human chauvinism', 'whereby things are valued only to the extent that they are useful to Man'. The androcentric premise comprises five key ideas:

(1) the creation of masculine and feminine archetypes, their polarisation, and the elevation of values defined as masculine (rational, competitive, dominating, calculating) above those defined as female (emotional, nurturing, caring, accommodating);
(2) the idea that 'masculine' Man is autonomous. 'This false sense of masculine autonomy underlies the alienation and anthropocentrism to which many environmentalists trace the modern crisis';
(3) a patriarchal association of women with nature seen as 'feminine';
(4) masculinity is to be measured by distance from the 'feminine', by autonomy, and by the amount of '*power over*' others; and
(5) the assumption that what is actually a 'masculine' model of experiences and values is gender-neutral and universal (Birkeland, 1993, in Gaard, 1993:24, 25, her italics).

In Die Grünen's real world political statements, there is a demand for a human being recreated on an ecological basis (Die Grünen, 1980:4).

8. Is there philosophical concern for a reconceptualised self? Essential in bringing about the possibility of relating to nature, and to other human beings, in a non-instrumental way, is a reconceptualised Self. The dominant Western view of what it is to be a fully developed, fully functioning human being – atomist, rationalist, autonomous, individualist and competitive, with an associated inimical, instrumental stance towards other people, women, nature and animals – is rejected as pathological.

The new Self in green stories, derived variously from metaphysical understandings of reality, to emphatic naturalism and normative understandings of ecology, is fully liberated, reintegrated,

symbiotically connected, embodied. The role of spirituality, metaphysical or secular, in bringing about 'inward' transformation towards seeing green (changed personal and social values, and related social-structural change) is explicitly recognised.

Because the new human being is conceptualised as capable of mature, self-responsible, and ethical behaviour, there must be complete liberation, complete freedom. Freedom is ideally understood as self-chosen, self-directed, spontaneous, creative activity, within human-scale communities that are in harmony with each other, and with their natural environment. Liberation from the one-dimensional view of the human being as *Homo economicus,*[10] from humans' entrapment within techno-industrialism, freedom for women from all expressions of patriarchal oppression, and freedom for nature from human domination, are all included in the green vision.

In the reconceptualised human being, and in the reconceptualised ecological society, 'masculine' values are rebalanced – not replaced! – by 'feminine' values, also sometimes called 'post-patriarchal' values, or the 'feminine principle'. This latter concept, easy to understand intuitively but elusive to articulate, is described variously as comprising the 'soft' values, such as partnership, caring, compassion, non-violence, nurturing, non-defensiveness, accommodation, a welcoming of interdependence; 'intimate communion with the natural world' (Spretnak, 1990:14) and the desire to conserve it; or the recognition of diversity as asset, not threat; the abandonment of reductionism, duality and linearity; the rejection of the alienation and subjugation of women and nature (Shiva, 1990:190).

The separated spheres of the modern human being (*Homo economicus*) are reintegrated: city and country, passion and rationality, mental and physical activity, work and play, mind and body. Green epistemology acknowledges the 'embodiedness' of knowledge: feeling is readmitted into knowing; in green ethics, the body is readmitted as moral agent, for example, in what we count as food. On the green view, education, work, health practice, recreation, and political praxis, should all be oriented toward addressing and promoting the development of the whole person, not merely *Homo economicus*.

In the reintegrated person, there is also a relational rather than atomist sense of Self – a 'self-in-relation'. We acknowledge our connection to, and develop our sense of community with not only other human beings, but with all living beings. The reconceptualised human being is part of nature, not separate from it, not transcendent over it. There are calls for harmony with nature, based on a recognition of a 'necessary interdependence of all beings', rather than the predominant Western cultural value of human opposition to, struggle with, mastery and subjugation of nature (Hayward, 1995:31, 59). Our non-instrumental connectedness includes the usually underplayed or completely eliminated emotional values of identification, empathy, compassion, and care.

Ethics, with focus on an ethic for nature

A key premise in green stories of morality is that often unexamined, but dichotomising epistemological and ontological assumptions underpin our Self/Other ethic. Seeing green proposes a new, different account of the ethical (indicator 9), and tends towards a same ethic for both humans and non-humans. A new consciousness, informed by alternative views of the human/nature relationship (indicator 7), what it is to be a better human being (indicator 8), and

the recognition that nature has its own interests (indicator 6), which are independent of their usefulness to human beings, provide the motivation for a new nature ethic (indicator 10). For lack of a word or short phrase capable of encompassing all the nuances and variations within the various versions of a seeing green nature ethic, I call it an empathetic, caring, respectful partnership ethic, one which also recognises nature's value-for-itself. However it is described, it distinguishes itself from reform environmentalism in that it is not merely an anthropocentric-instrumental ethic (however enlightened) that views nature as resources for human beings.

9. Is there an account of the ethical generally, which differs from standard (or 'masculine') Western accounts? Seeing green rejects mainstream Western dichotomising epistemological and ontological assumptions, which underpin and justify instrumental rationalism towards the Other. The usually unquestioned assumption of morality based on a rights concept is used, but problematised, because it is based on an individualistic, competitive view of what it is to be a human being. Traditional western accounts of morality are widened to reinstate those aspects of morality that have been devalued in accounts of moral behaviour, particularly emotion and the role that the human capacity for empathy, identification, and care, for example, should play in morality. Instead of only the abstract, and the universal, context is readmitted – the personal, the particular, the process/history which preceded the actual ethical decision needing to be made. Preservation of sense of place – an emotional, not merely rational-instrumental connection with the land – is thus also recognised as a moral concern. The body is readmitted as moral agent, for example, in what we eat and wear. The seeing green partnership ethic includes the valuing of cultural diversity, and recognition of future generations' needs, as moral concerns. Sometimes 'future generations' appears to mean future non-human generations too, for their own sake, not merely for humans' sake.

10. Is the proposed ethic for nature, ecological sustainability, understood as 'wide', and long-range? The scope of seeing green's ethic for nature is extended beyond human interests only. 'Wide' means that nature's value-for-itself (based on its purposivity and autopoeisis), and not only its value as economic and aesthetic resources-for-humans, is recognised. Human treatment of wild and commercially farmed animals is firmly brought within the sphere of moral philosophy and ethical practice (indicator 16). It is thus a wider understanding than the natural resource management ethic of mainstream versions of environmental sustainability encountered within sustainable development models (Jacobs, 1995).

Still, the philosophical scope of the seeing green nature ethic varies widely, to include ecological sustainability for some or all of nature, whether animate, inanimate, individual, species, ecosystem or ecosystemic process. This ecological sustainability is to be achieved philosophically through ethical approaches such as assigning legal standing to sue, thus rights, to some of nonhuman nature; 'biospherical egalitarianism' which means empathetically respecting every life form's equal or same right as your own to 'live and blossom'; actively employing human creativity to restore and maintain biological evolution towards mutuality, diversity, and increasing subjectivity; or practising an ethic of care. One seeing green real world approach has

been to advocate policies and programmes which express a non-violent, partnership ethic with nature which protects the life basis for all living beings (indicator 14 as indicative example).

'Long-range' in seeing green really does mean, long-range, and not the customary short-term rational-economical view, or the vague phrase 'future generations' (which on closer examination usually turns out to mean, just one generation), which tend to occur in political or business-as-usual documents. One long-range view sometimes given, is 'the lifetime of the grandchildren of our grandchildren' (Naess, 1992, in Sessions, 1995:463), i.e. a seven-generation view.

Alternative forms of political, economic, and social organisation are proposed to provide the supportive context for the reconceptualised Self, the reconceptualised human-nature relationship, and the new partnership ethic for nature.

Ideology: Real-world politics in an ecological society: Some views on social reform

11. Is a fundamental, ecologically informed, post-patriarchal reformation of society's values and structures proposed? Decentralisation and human-scale are key green social values. Their ideological context is opposition to all forms of hierarchy, domination and coercion. Local autonomy (self-determination, self-management, self-reliance), and direct democracy are further key values in green, post-hierarchical forms of political and socio-economic organisation. Instead of the power-over mentality of patriarchy, hierarchy, militarism and bureaucracy, seeing green advocates participatory, non-aggressive, non-competitive, non-hierarchical and egalitarian forms of organisation and decision-making.

The decentralised, human-scale community (not to be confused with the local authority) is the basic political, social, economic and ethical unit of the transformed society. It is well-rounded, in that it has psychologically and spatially reintegrated the separated areas of our lives. It is also ecologically appropriate, and integrated with its physical surroundings. The eco-community is seen as the supportive physical, social, economic and psychological context for the reconceptualised human being, the reconceptualised Self, and the ideal way to combine ecological sustainability, solidarity in living, and personal self-realisation.

In the more radical anarchist-utopian influenced green stories on ecological/post-patriarchal social reformation, statism, parliamentarianism, and the capitalist market economy are rejected altogether, in favour of radical forms of decentralised political and economic self-management such as communitarianism. Human-scale eco-communities/communes control their own political, social and economic affairs. Their boundaries are determined by natural features and biomes, rather than history and nationalism.

12. Is living in solidarity advocated? The value of solidarity is derived inter alia, from symbiosis (interconnectedness and interdependence) in ecology normatively understood, as well as from Gandhian principles such as *advaita* (radical ontological non-duality), *ahimsa* (non-violence), and *aparigraha* (non-possession).

Today, 'living in solidarity' is roughly translated in mainstream development models as 'social responsibility', or 'social justice'. In green stories, the solidarity concept is richer. Identification with the Other means that one espouses 'solidarity politics', that is, living in genuine

community, partnership, cooperation, gentleness and non-possessiveness with other human beings. Nature is included in green solidarity politics: 'How can we be non-violent to nature unless the principle of non-violence becomes central to the ethos of human culture?' (Gandhi in Swaminathan, 1990:xiii).

Above all else, living in solidarity – 'partnership' – requires a rebalancing of 'masculine' and patriarchal values with 'feminine' qualities and values in our personal and social-structural spheres (indicator 11). In a sense, living in solidarity also requires reclaiming our own estranged, or denied other half (indicator 8).

More specifically, living in solidarity also includes:

(a) sustained attention to women's full emancipation; reducing/eliminating their oppression and exploitation (for example, eliminating domestic violence against women; equalising their education, work, and recreation opportunities; ensuring that they are in control of their own fertility; and promoting non-patriarchal gender roles in society, because 'male'-defined gender roles for women have been '... part of *the means* of domination and subordination in patriarchy' (Davion, 1994:292, her italics). As examples, both men and women are to be involved in house-caring, and child-rearing; there must also be a revision of socio-economic structures to support such non-patriarchal sex and gender roles;

(b) the valuing of cultural diversity;

(c) social inclusion – ecology's egalitarianism translates into ideas such as 'a social ecosystem': secure social services, a basic, but sufficient income for all (the green 'Social Wage' idea is discussed again at indicator 15), and the social inclusion, and rights protection, of the marginalised (prisoners, social-welfare cases, the elderly, the disabled, the mentally ill as some examples);

(d) holistic health care, which addresses the whole body-mind person, delivered as close to home as possible, and emphasising transparency, self-determination and self-responsibility in the healing process. Health care must also address those social-structural factors which are detrimental to health, such as techno-industrialism's poisoning of air, soil, water, and food, high noise levels, stress engendered through automated work processes, and the cooptation of the medical industry by profit-seeking companies;

(e) spatial reintegration to match our psychological reintegration. Human habitat spatial planning should seek to reintegrate the areas of our lives artificially segregated by techno-industrialism: living space, place of work, recreation, education, and shopping for example. Spatial planning should seek to restore feelings of solidarity, and human scale, in daily living, rather than concentrating people in mega-cities; to provide and protect green spaces; and to preserve architectural and other expressions of the aesthetic in humanly scaled cities. Citizens must be given genuine participation opportunities in urban planning;

(f) integral education designed to develop the whole person, to support self-realisation, to produce people imbued with the post-patriarchal values needed in a new ecological society, and not just to ensure a person's economic usefulness to society. Holistic education also seeks to reintegrate learning and living. Genuine participation in the

political process is also seen as part of a person's well-rounded education. Finally, living in solidarity, means living in solidarity with future generations as well.

13. Are non-violence and radical peace advocated? The most fundamental expression of living in solidarity is the active practice of non-violence and peace. Deep ecologist Naess considered peace to be one of the three criteria[11] of a truly green society (Naess, 1993:219). Peace is understood radically, not merely as absence of war, but as an end to power-over thought and action:

(a) no militarism, as this is a symptom of aggressive, dominating, competitive, possessive relations with others, particularly when used to ensure access to natural resources and markets. No militarism includes radical disarmament, and the conversion of death-dealing industries to life-affirming production.
(b) there should be no inherent violence in society's structures, for example, no intentional or unintentional, formal or informal abuse of any section of the population, as in disproportionate health risks for the poor, women or children from eco-hazards, or the holding of people longer than the legal period in detention without being charged before a magistrate, because of administrative delays in the judicial system.
(c) there should be no physical violence; no hate speech or behaviour in either the public or private spheres.
(d) on the green view, radical peace includes ethical trade practices, particularly in relation to natural resources.

Some views on the natural environment

14. Do policies and programmes place long-range, wide, ecological sustainability on a genuine par with, if not ahead of social or economic sustainability? In real-world green politics, philosophical concerns about long-range, wide ecological sustainability translate into policies and programmes that recognise the planet's ecological limits as the ultimate 'bottom line' for all endeavours of the current generation, as well as of future generations.

To assure ecological sustainability, 'stronger' rather than 'weaker' environmental sustainability policies should be pursued. In trying to decide whether or not a text tends towards stronger (more green) or weaker environmental sustainability, it is helpful to ask of it three questions: 'What is to be sustained?' 'For whom?' and 'For how long?' In texts tending towards weaker versions of environmental sustainability, the answers are likely to favour short-term human interests. (Look carefully for example, at biodiversity protection programmes – is their ultimate aim to preserve biodiversity for its own sake, or for its as-yet unknown benefits for humanity?).

Other sub-indicators of green policies and programmes would be calls to stabilise, then reduce the human population growth rate; to reduce non-vital intervention into natural processes, or at the least, to apply the precautionary principle; to set aside large areas of pristine or near-pristine nature from human techno-industrial progress to ensure richness, biodiversity and habitat conservation; and to adopt the principle of reciprocity in agriculture.[12]

Green policies on energy carry traces of their genesis within the radical social critique of early ecological economics thinkers (Martinez-Alier, 1987). There should be egalitarianism in the sharing of energy resources, and local direct democracy in their management. There are calls to reduce consumption of non-renewable resources, and to consume renewable resources only within their regenerative capacity. There must be increased reliance on renewable energy, the increased use of energy-saving, people- and nature-friendly transport systems (mass public transport and cycle paths in urban areas, within a spatial planning approach to human habitat which has reintegrated, for example, the severed areas of work, living, play and shopping), and comprehensive national rail networks; increased public spending on research into alternative energy sources such as solar, wind and bio-gas. On the whole, seeing green rejects nuclear energy, because it endangers the environment (the 'safe' waste disposal means currently employed essentially pass the problem to future generations), and threatens base democracy.

Environmental education must be provided both in schools and in continuing adult education, and should be aimed at revealing and changing the dominant Western techno-industrial consciousness, not only raising environmental awareness and knowledge. Above all, the economy must be ecologically reoriented.

Some views on the economy

15. Is the economy ecologically reoriented? Green stories on an ecological re-orientation of the economy should be understood within the alternative stories of the human-nature relationship (indicator 7), what it is to be a better human being (indicator 8), an alternative conception of 'the good life' and alternative models of development (indicator 3), and the conviction that ecological sustainability (indicator 10) is the ultimate 'bottom line' of any human economic endeavour. This latter is in contradistinction to those models of sustainable development which assume that a simultaneous 'triple bottom line' – economic, social and environmental sustainability – is possible. In real-world development politics though, it is often so that the economic and social are given primacy above the environmental.

An ecologically oriented economy specifically recognises ecological limits. Natural resource accounting has been introduced to keep track of the economy's mix of human, social, and renewable and non-renewable environmental capital. In 'stronger' versions of environmental sustainability for example, little or no substitution of one form of capital by another is permissible. However, in 'weaker' forms, there is no regard for the exact mix of capitals, because the one is considered substitutable for the other. Indicators of development, such as Gross Domestic Product (GDP), have been 'greened' to reflect natural resource consumption and degradation. Waste generation, pollution, and wastefulness in production, consumption, and disposal are reduced or eliminated. At the least, the 'polluter pays' principle is applied.

Some other markers of an ecologically oriented economy are that: (a) It prioritises life-affirming economic activities, rather than, for example, munitions or nuclear energy production. (b) It would favour community-based rather than industrial production, and base-democratic rather than hierarchical management: what should be produced, where, and how (particularly the use of technology) should be determined and controlled by those involved. (c) Production should also be for needs, not for exchange and profit, be ecologically appropriate,

and intended for local use. This latter aspect can be traced in green consumerism today as the concept of reducing 'food miles' travelled. (d) Production processes favour eco-friendly and non-demeaning technologies rather than instrumental technology, and provide creative activity, not meaningless labour. Unavoidably tedious but necessary jobs are shared. (e) Misleading encouragement to materialism and consumerism is critiqued. (f) There is a demand for fair trade practice, both in the home and export markets. (g) The economy must also deliver social justice, protecting the marginalised and the weak, for example, through a basic social income for all. Namibia's NGO-initiated Basic Income Grant pilot scheme is a good example of this green viewpoint.

16. Are animals treated ethically? the philosophical ultimate premises which bring animal wellbeing into accounts of the ethical vary from ontological conceptions of human-nonhuman continuity, to arguments from sentience (Singer, 1973), rights (Regan, 1983), and the feasibility of legal standing for natural objects (Stone, 1974). Common though, is a call for radical changes to scientific and economic structures and practices, as well as personal practices, which negatively affect animal wellbeing. Some more, and less, radical demands are to eliminate completely, or almost completely, animal experimentation, including vivisection, and product-testing on animals; to dissolve, or radically reform, commercial animal production; to stop commercial culling, sport hunting, trapping of wildlife, and related trade, and to stop the confinement and use of animals for entertainment. Animal torture is forbidden in law and strictly enforceable. There are calls for complete or partial moral vegetarianism,[13] both as personal ethical practice and public economic boycott of industrialised animal production methods.

Some views on the political process

17. Is grassroots ('direct') democracy advocated? In green stories, 'grassroots' democracy means direct democracy, and not the Western liberal model of indirect or representative democracy. Green direct democracy stories are to be understood within an anarchist political critique of hierarchy, the feminist critique of patriarchy, and the normativity of the assumed absence of hierarchy in ecology.

Decentralised decision-making and human-scale functioning in the political, socio-economic and environmental spheres are seen as the necessary counter to the kind of hierarchy, bureaucracy, and technocracy particularly prevalent in industrialised/industrialising societies, which disempower ordinary citizens. There are radical demands for self-determination (self-choice), self-direction, self-management, self-responsibility. Such free, unfettered, creative not enforced, choice-from-below, is understood to contribute to the anarchist/humanist vision of the fully functioning human being. It also represents, in feminist critique, liberation from patriarchal, power-over relationships, and liberation from the patriarchal viewpoint that the personal is not political – in the feminist critique, the personal is political.

Direct democracy's most radical expression is face-to-face democracy in eco-communitarian living. In less radical understandings, direct democracy means authentic citizen participation in the political process. Such active and responsible participation in the political process is held to be an essential part of an individual's holistic development. This requires society's

management to be de-professionalised, simplified and made transparent, so that power can be returned to ordinary citizens, where it belongs. Understandings of citizenship are far wider than merely voting once in a while; citizens' initiatives and public referenda are part of citizenship too. Mainstream notions of 'participatory democracy' and 'public participation' represent rather watered-down expressions of even seeing green's less-radical understandings of direct democracy.

Genuine democracy respects fundamental rights, understood widely as having not only political, but also ecological, economic, cultural, and religious dimensions, and including the rights of minorities. Government is fully accountable to parliament, and parliament is fully accountable to its citizens. Democratic governance makes public information transparently available, and free of party-political interest, to enable genuine citizen participation. At the same time, it respects the privacy of its citizens' personal data, and guards against uncontrolled use of techno-surveillance.

Direct citizen action is considered in seeing green as an essential element of both the public democratic process and self-realisation. Direct action may range from mild social influence actions (letters, petitions, demonstrations, marches, street theatre for example), to economic boycott, or forming 'neighbourhood assemblies' with moral if not legal power, to influence local management by the local authority, or outright civil disobedience. All direct action should however, to be 'green', be non-violent in nature.

18. Is living out/enacting your personal moral beliefs in the public-political sphere encouraged? Adherents of seeing green are urged to undertake 'Self-work', understood variously as clarifying for yourself what your ultimate premises on questions such as 'What is True? Real? Good?' actually are, and attempting at least to formulate them into a reflected-upon worldview. To be green, this worldview should include room for non-instrumental relationships with the Other, including nature. Some eco-feminists would argue that ridding ourselves of 'patriarchal programming', and refusing to play 'patriarchal games' should be part of our Self-work too (Birkeland, 1993, in Gaard, 1993:20, 54).

In seeing green, personal lifestyle choices flowing from a reviewed world-view represent not only a quest for self-realisation, or inward transformation, but a political demand for social-structural change too. Hence the green support for direct democracy and direct action to achieve such change. Some writers within deep ecology and ecofeminism have formulated philosophical-political platforms (Naess, 1986, in Sessions, 1995:68, and Birkeland, 1993, in Gaard, 1993:20 respectively) to guide political action based on the new ecological/non-patriarchal consciousness.

Conclusion

What can we learn from these tentative indicators of a green world-view? We can firstly reflect on our own world-views – perhaps formulate them consciously for the first time, and so be able to compare them with the version of a green world-view presented in this paper (other versions are possible, given seeing green's immense richness).

As importantly, we can learn, using these green indicators, to assess the credentials of 'texts' that claim to be green. The distinction drawn at the start of this paper – that seeing green is so much more than the mainstream reformist environmentalism described there, cannot be overemphasised. The crucial difference between the two approaches is that where reform environmentalism requires some not-too-arduous adjustments to our business-as-usual, and lifestyle-as-usual (with legislation and tax-breaks/penalties to help us along), seeing green uncomfortably demands that we review our most fundamental values, including our predominantly anthropocentric human-nature relationship, and strive to make the required changes in ourselves, and in our society. And to say that we are trying to do that, publicly. Green consumerism is simply not enough to deal with the ecological crisis.

Now that the ideas with which this paper began – recycling, carbon-footprint reduction, bike riding, and solar-powered goods – have been replaced in their green worldview context, do they really 'shout green'? Or, judging by the tentative indicators of green presented in this paper, are they mere whispers of what 'green' is about?

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Endnotes

1 This paper is based on a doctoral thesis (Harper, 2008). The paper's title 'Through a Green Gaze' is derived from an idea in McLaughlin (2003).

2 Anthropocentrism is a '... stance that limits moral standing to human beings, confines the scope of morality and moral concern to human interests, and regards nothing but human wellbeing as valuable intrinsically' (Attfield, 2003:188).

3 An instrumental ethic is one which ignores the Other's 'agenda' or interests, considering it subordinate to one's own means and ends

4 Tentative because these indicators have only been tested empirically once (Harper, 2008). They are however in line with other descriptions of a green world-view, such as those of Goldsmith (1992), Hayward (1995), Metzner (1994), O'Riordan (1981), Porritt (1984) and Sterling (1990).

5 A 'male', disconnected sense of Self; a patriarchal orientation, and a power-based morality (Gaard,

1993:2, 3, 6; also Kheel, 1990, in Diamond and Orenstein, 1990:129–131). The (male) disconnected Self views everything else as 'Other' to itself, and thus as a potential object of management, exploitation, domination, or oppression. It manifests itself structurally and systemically as hierarchy and patriarchy (Birkeland, 1993, in Gaard, 13–59).

6 'The cultural, traditional and psychological systems of obedience and command, not merely the economic and political systems to which the terms class and State most appropriately refer. ... I refer to the domination of the young by the old, of women by men, of one ethnic group by another, of "masses" by bureaucrats who profess to speak of "higher social interests", of countryside by town, and in a more subtle psychological sense, of body by mind, of spirit by a shallow instrumental rationality' (Bookchin, 1982:4)

7 The 'male-dominated system of social relations and values' justified by the systematic devaluation of the feminine principle (Birkeland, 1993, in Gaard, 1993:17). The 'structure of patriarchy' is considered to rest on the 'four interlocking pillars' of 'racism, sexism, class exploitation, and ecological destruction' (Collins, 1973).

8 Speciesism is 'the belief that we are entitled to treat members of other species in a way in which it would be wrong to treat members of our own species' (Singer, 1973b, in Zimmerman, *et al.*, 1993:27). For example, racists 'violate the principle of equality by giving greater weight to the interests of members of their own race when there is a clash between their interests and the interests of another race. ... Similarly those I would call "speciesists" [human beings] give greater weight to the interests of members of their own species when there is a clash between their interests and the interests of those of other species [animals]' (Singer, 1979:361 in Botzler & Armstrong, 1998:361). In short, Singer argues that speciesism is a prejudice, just as is racism.

9 This idea is no longer confined to green politics. In a recent sermon, Archbishop of Canterbury Dr Rowan Williams noted 'that "human greed" threatens to distort the fragile balance of the Earth' (http://news.sky.com/skynews/article/0,,30100-1298358,00.html, accessed 25 December 2007.

10 An abstract concept meaning a human being concerned with maximizing utility, defined as want-satisfaction. 'The source of value is found in subjective individual wants, not in the needs of other human beings or other species.' Any normative evaluation of a person's definition of 'want' as equivalent to personal preference, is usually avoided in mainstream economic theory (Botzler & Armstrong, 1998:517)

11 The other two are wide ecological sustainability and social justice.

12 This means for example, preference for the human scale rather than agri-business in farming, for organic production methods that protect soil fertility, for organic, non-genetically modified foods, and concern for animal welfare.

13 Moral vegetarianism would include abstention from meat, for example, on anti-violence and anti-killing grounds. Others might embrace it on the grounds that it is elitist, or a wasteful use of resources.

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Steps Towards Averting Desertification in the Sefiane Rural Community, Algeria: The Role of Environmental Education

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Abstract

Desertification reflects and contributes towards societal problems such as poverty, underdevelopment and lack of food security. For mere survival purposes, many people feel they have no option but to engage in environmentally unsustainable activities that further contribute to desertification and perpetuate the cycle. Constraints in successfully dealing with desertification have been identified as being a lack of adequate and validated information on the different aspects of the phenomenon in individual areas, a lack of sustainable development plans for desertified areas, a lack of active awareness-raising campaigns, a lack of appropriate training on assessment and mitigation of desertification and the neglect of local stakeholder involvement in addressing land degradation and desertification. This paper provides a contextual profile of desertification and land degradation processes in the Sefiane rural community in Algeria, focusing on how the community's survival is affected by their current farming activities. A qualitative study using a snowball sampling technique to identify respondents was conducted. Data collection tools included observation, interviews and questionnaires. The research findings, which highlighted activities that farmers engage in that compromise their ability to sustain their environment and their livelihood, were considered and used as a guideline to develop a framework for a contextually relevant environmental education programme that could empower the local community to address the land degradation and sustainable agricultural concerns in their community.

Introduction

> A cloak of loose, soft material, held to the earth's hard surface by gravity, is all that lies between life and lifelessness. (Wallace H. Fuller, 1975)

Algeria, the second-largest country after Sudan on the African continent, is situated in northern Africa, bordering the Mediterranean Sea between Morocco and Tunisia. Algeria is an arid to semi-arid country with irregular rainfall. The total area of the country is 2 381 740 km^2 of which some 80% is desert. Only three per cent of the land is arable, 13% constitutes meadows and pastures and 2% is under forests and woodlands. The terrain comprises a discontinuous coastal plain, a parallel range of the Saharan Atlas mountain system in northern Algeria, a high plateau and the desert.

Along the Mediterranean the winters are mild and wet and the summers are dry and hot. Inland it is drier with cold winters and intensely hot summers. In eastern Algeria, the average

temperatures are somewhat lower, and on the steppes of the high plateau winter temperatures hover close to freezing. A prominent feature of the Algerian climate is the sirocco – a dusty, choking south wind blowing off the desert, sometimes at gale force. The climatic and environmental conditions are influenced by the presence of the great deserts in both the south and the east; by human activity (urbanisation and the creation of industrial infrastructures) and by harsh natural conditions that include drought, flooding, forest fires, strong winds and freezing conditions that may even include snow (Coutsoukis, 2004).

Civil unrest and the resulting regional conflicts as well as the lack of environmental awareness, sensitivity and concern among the population have jointly contributed to the destruction of human settlements, infrastructures and environmental resources (Phillips, 2007). Current environmental issues in Algeria include soil erosion, rangeland destruction and land degradation caused by overgrazing, unsound farming practices, indiscriminate collection of fuel wood, uncontrolled fires, inadequate supplies of potable water and the pollution of rivers and coastal waters by the dumping of raw sewage, petroleum-refining wastes and other industrial effluents. Global warming is contributing to changing climate patterns and plays a role in the desertification of vulnerable areas (UNEP, 2000).

Estimates by Abdelgawad in 1997 already indicated that 82.74% of Algeria's country area was desertified and a further 9.66% was, and continues to be vulnerable to desertification. Abahussain, Abdu, Al-Zubari, El-Deen and Abdul-Raheem (2002:541-542) point out that despite continuous efforts to combat desertification, little has been achieved in terms of halting its spread and reversing the process. Among other constraints identified in their research, they point out that a lack of adequate and validated information on the different aspects of the phenomenon in individual areas, a lack of sustainable development plans for desertified areas, a lack of active awareness campaigns, a lack of appropriate training on assessment and mitigation of desertification and the neglect of local stakeholder involvement in addressing land degradation and desertification hold back the reversal of the desertification process.

Underlying Concepts

To clarify the premise upon which the research reported in this paper rests, it is necessary to provide a cursory explanation of certain principal concepts that underlie the study.

Desertification as a phenomenon

The term 'desertification' was first coined by French scientist and explorer Louis Lavauden in 1927 but only gained prominence almost two decades later in 1949 when Aubreville, a renowned botanist and ecologist, published the book *Climats, Forets, et Desertification de l'Afrique Tropicale* (Aubreville, 1949). Aubreville suggested that land destruction – which would lead to desertification – was caused by tree cutting, indiscriminate use of fire and flawed cultivation practices that exposed the soil to water and wind erosion. Aubreville reasoned that desertification was due to human activity and was caused by communities' indiscriminate and destructive habits.

Decades later, at the United Nations (UN) Conference on Desertification held in Nairobi in 1977, desertification was defined as being:

> the diminution or destruction of the biological potential of land, that can lead ultimately to desert-like conditions. It is an aspect of the widespread deterioration of ecosystems, and has diminished or destroyed the biological potential, i.e. plant and animal production, for multiple use purposes at a time when increased productivity is needed to support growing populations in the quest of development. (UN Secretariat of the Conference on Desertification, 1977)

Dregne (1983) points out that in different areas and among different peoples 'desertification' may mean degradation of grazing lands, destruction of vegetative cover, wind erosion, degradation of productive land into a wasteland, degradation of vegetation and soil – all of which are manifestations of the process described in the UN document.

Perez and Thompson (1996) summarise the process of land degradation by pointing out that pastoral rangelands deteriorate due to overgrazing. There is a reduction in the proportion of edible perennial plants and an increase in the proportion of inedible species. The reduction and death of vegetation in dry seasons increases the area of exposed ground. This is followed by a deterioration of the surface conditions that are vital to sustain plant growth. Impoverishment of plant-water relations is especially pronounced, and ephemerals now respond poorly to rain. With the consequent increase in runoff, sheet and gully erosion sets in on sloping ground, and the topsoil and its nutrient store are lost. These changes result in an environment that is inhospitable to plant growth and consequently unsuitable for pastures. With continuing erosion, formerly productive lands may be lost. These changes are more drastic where devegetation occurs in strategic areas such as on watershed uplands and marginal lands. The processes leading to degradation and desertification are even more rampant where soils are exposed and disturbed in dry land cultivation. As density decreases, the risks of wind erosion, water erosion and the adverse effect of increased solar radiation on bare soils are dramatically increased. Surface albedo (reflectivity), also enhanced by a reduction in the vegetative cover, is a major contributor to desertification processes (Glantz & Orlovsky, 1983).

Furthermore, when the exposed soil is trodden and compacted by herds of livestock it loses its ability to hold moisture and to support plant growth. Consequently, edible plant species are lost and inedible species overrun the area. A similar situation can arise from unsound agricultural processes, which sap the soil of nutrients, overload it with salts, dry it out and compact or seal its surface. This causes waterlogging that removes air from the soil and allows toxic substances to accumulate (UNEP, 1992).

Unsustainable activities as discussed above are prime causes of desertification, but equally, the inappropriate decision-making of policy-makers, unsustainable utilisation and inept management of arable lands and pastures, the lack of awareness of environmental resource management by land users and managers, and poor knowledge of ecological and hydrological systems in arid regions are other principal factors that contribute towards desertification.

Environmental education as a means to address desertification issues

There have been almost four decades of development since the concept of modern environmental education was introduced at the United Conference on Environment and Development (1972). Over the years fuller clarification of the underlying principles, objectives and purpose of environmental education has evolved. The assumption has been that environmental education is an indispensable means of dealing with environmental issues and risks and finding solutions to environmental problems. It is believed that as an approach it has the potential to strengthen people's capacity to acquire and develop knowledge, values, attitudes, skills, decision-making ability and ethical behaviours that contribute towards and are beneficial for the environment; to address environmental and development risks and issues; and to be more aware of and better understand environmental complexities. At the World Summit on Sustainable Development (2002) the critical linkages of environmental education with sustainable development and social-justice issues, poverty alleviation and the judicious use of natural resources was highlighted, following similar discourses in Agenda 21 ten years prior to the World Summit on Sustainable Development (Rose & Bridgewater, 2003:264).

The competencies listed above, which environmental education has the potential to develop, can collectively be described as environmental literacy. There are several definitions of environmental literacy, but all contain elements that refer to people's knowledge about, awareness of, concern for and ability to understand how the environment – both physical and natural – functions and how humans interact with, are affected by and in turn affect the environment. To be environmentally literate, individuals require a holistic understanding of the environment. However, environmental literacy, which requires the ability to perceive, decode, analyse and use information, differs from one person to another and consequently people's ability to process and analyse information varies. Environmental literacy tends to be manifested in people's behaviour towards the environment: the ways they use, conserve, maintain and coexist with the environment (Hares, *et al.*, 2006:129). The underlying implication consequently is that an indicator to determine the success of environmental education processes would be to establish how environmentally literate an individual is.

Several recent studies indicate that raising the environmental literacy of communities through environmental education has been successful in dealing with desertification and related issues. In certain of these studies, contributory factors were identified that played a part in the success of the intervention. The table below provides a summary of the results of selected environmental education initiatives and also lists those factors which contributed to the success of the project or intervention

Table 1. Summary of results of selected environmental education initiatives.

Country and issue	Factors contributing to success	Source
Burkina Faso, Yatenga region – alleviation of land degradation	Incorporating the existing cooperative development associations to provide access to appropriate and context relevant knowledge that is obtained from local farmers	Annorbah-Sarpei, A.J., *et al.*, 1993
Ghana – forest reclamation and management	Linking communities, networking, using local knowledge and belief systems	Annorbah-Sarpei, A.J., *et al.*, 1993
Kenya, Kerio Valley – land degradation due to erosion	Ensuring community participation in planning and implementing initiatives; transparency of decision-making, local knowledge a key ingredient of initiatives	Annorbah-Sarpei, A.J., *et al.,* 1993
Zimbabwe – land degradation due to drought	Acknowledging and respecting local culture; outside knowledge is complimentary to local knowledge	Annorbah-Sarpei, A.J., *et al.*, 1993
Africa general – African pastoralism	Understanding the dialogue between scientists, policy-makers, educators and the environment; dialoging with cultural geography	Warren, A., 1995
Kalahari, South Africa - rehabilitation of rangeland	Understanding the social, economic and environmental dynamics of the situation; respect for and inclusion of indigenous knowledge in the intervention strategies	Van Rooyen, A.F., 1997
Botswana, Boteti – land management of degraded lands	Eliciting local community participation in planning and administrative procedures to contain desertification	Darkoh, M.B.K., 2000
Namibia, Spitzkoppe – water management to ensure water security in arid regions	Raising interest and confidence of the community to find their own solutions	Bethune, S. and Schachtsneider, K., 2004
Indonesia, Sumatera – forest rehabilitation and management	Building in social activities to give individuals and community the responsibility for managing the project	Hidayat, H., n.d.

In summary of the above and from comments made by other researchers about the usefulness of environmental education interventions to address issues related to land degradation and desertification (Stern, 2000; Winslow, *et al.*, 2004), it becomes clear that environmental education initiatives that aim to enhance environmental literacy in contemporary situations need to consider, in addition to the basic education provided in terms of knowledge of the

environmental issue, skills to deal with the issue and attitudes that are pro-environmental all of which inter alia:

- diagnosing problems thoroughly through dialogue with those in the area;
- finding localised, community-based solutions;
- respecting local culture, perspectives and resources;
- building on traditional beliefs that are pro-environmental;
- strengthening existing environmental efforts;
- improving systems for knowledge exchange;
- following an integrated ecosystems approach to enhance environmental literacy;
- allowing for multifaceted interventions that vary depending on existing and emerging needs;
- developing portfolios of options rather than recipe-like solutions;
- establishing local self-reliance; and
- using science and technology to guide and not dominate the initiatives.

Environmental education initiatives seemingly need to seek to influence processes rather than to define conditions and end results. The approach should be adaptive and reflective rather than focusing only on the achievement of a pre-planned end product (Leach, *et al.*, 1999:242).

Education for sustainability

The central role of education and training for sustainable development is to increase people's ability to understand, adapt to and appropriately transform the environment for the satisfaction of their own and their community's needs, remembering that the underlying principle of sustainable development is to ensure that it should also be possible to meet the needs of future generations.

The concept of sustainable development is rooted in a systems thinking paradigm. Key to sustainability issues is the need to recognise that its achievement is dependent on understanding the interaction between the various dimensions of the environment – the natural, social, cultural, economic, political and ethical. In short, sustainable development as described in the Brundtland Report (UNCED, 1987:43) has four main implications:

1. a concern about the relationship between the use of resources, population growth and technological development and advancement;
2. a concern about the production and distribution of resources of food, energy and industry among the developed, developing and underdeveloped nations of the world;
3. a concern about uneven development such as the gross imbalances between the rich and the poor nations, and about economic dominance and ideological differences; and
4. a concern about environmental degradation and ecological disaster.

Sustainable agriculture which is a strategic concern in this study is defined as agricultural practices that are economically viable, socially acceptable, environmentally friendly and technically appropriate. Failing to capture the full factors, actors, structures and relationships that interact to impact on the prospects of sustainable development in terms of sustainable

agriculture limits the analytical understanding of and intervention process to address the issue as well as achieving positive outcomes (Milton & Ochieng, n.d.).

To adequately address desertification and land degradation issues in a bid to achieve sustainable agriculture, it is necessary to follow an inter- and multidisciplinary approach that recognises the importance of process and not only product. Ideally, local sustainable development initiatives can engender learning processes – the benefits of which go well beyond the projects themselves pointing the way to solutions of other problems.

Initiatives to Address Desertification in Algeria

Over the past decades, desertification as a critical environmental issue has been a topic of serious study. In June 1989, in Agadir, Morocco, the Association for Development and Cooperation was established to find ways to curb desertification since it was becoming a critical environmental concern. Solutions were sought from the environment itself. The cultivation of edible perennial plants that are native to hot deserts was proposed as a means of holding back the invading desert sands (Eden Foundation, 1989:1).

These initial steps to prevent or address the impact of desertification were followed by others. International organisations such as the United Nations (UN), non-governmental organisations (NGOs), environmental experts, academics, farmers and pastoralists met in Murcia (Spain) between 16 and 18 June 2000 at the Mediterranean NGO Network for Ecology and Sustainable Development Conference to discuss national programmes to combat desertification, land use during drought and sustainable development (MED Forum, 2000).

In March 2002, in Djerba, Tunisia, two working groups were established to work on sensitivity mapping on desertification and incidences of drought at the Desertification Information System for the Mediterranean Technical Workshop (DISMED, 2002). A significant highlighting of the gravity of desertification as a critical environmental issue occurred at the conclusion of the Convention against Desertification session held on 15 July 2002 by the UN Secretariat of the Convention to Combat Desertification (UNCCD). Mr N'Diaye, of the UN Secretariat of UNCCD, emphasised that desertification is a global issue, which unfortunately has not been accorded due importance in today's society. He emphasised that 110 countries worldwide are now seriously affected by desertification (UNCCD, 2002). The three concluding points of his discussion were the following:

1. desertification constitutes a serious problem on a global level as well as a local one;
2. desertification is one of the major causes of poverty in many parts of the world; and
3. in order to combat the problems caused by desertification, good governance is required in combination with democratic participation from countries globally.

The Algerian Minister of the Environment, in response to these pronouncements, announced the following:

- the establishment of an Institute of the Deserts of the World with a scientific council made up of prominent scientists under the aegis of the World Desert Foundation,

- the convening of a high-level Sustainable Development Conference in Algiers to promote an integrated land and water resources approach towards combating desertification, and
- the submission of a proposal to the then Secretary-General of the UN, Mr Kofi Annan, that 2004 should be declared the International Year of the Deserts of the World.

At Dubai's Festival of Cultures and Civilizations of World Deserts, held in April 2005, representatives from 40 countries, including President Abdelaziz Bouteflika of Algeria and then-President of South Africa, Thabo Mbeki, adopted a charter calling on the world to unite to fight desertification (Agence France-Presse, 2005). Despite these and other initiatives, desertification continues and threatens the lifestyles and livelihoods of many of the communities who live in vulnerable areas.

Research Context and Design

One of the regions adversely affected by land degradation, rangeland destruction and desertification in Algeria is the Sefiane rural community (population 11 700) in Batna province (population 247 500) (Statoids, 2002). Batna City is the fourth-largest in Algeria, and Batna province is made up of 22 districts and 61 municipalities, of which Sefiane is one. Unemployment in the villages and rural areas is high and the communities live in relative isolation from modern services. The local people are known as *chaoui* in Berber, which means 'free men'. The name has its roots in a history of their ability to avert invasion or subjugation by local and foreign powers.

Figure 1. Map of Algeria indicating the location of Batna province in which the Sefiane community is located.

(Source: http://dic.academic.ru/dic.nsf/enwiki/292912)

Research design

As indicated above, Abahassain, *et al.* (2002) identified a number of constraints in addressing land degradation and desertification, one of which was lack of awareness and training about desertification and land degradation and the lack of local involvement in addressing the issue. Taking these identified constraints as a point of departure, the aim of the research was to determine to what extent Sefiane community members were aware of the deterioration of the environment, how the community contributed towards the process of desertification and what the impact of desertification and land degradation is on this rural community. In searching for ways to address the problem, an investigation was also carried out to determine how community members could be assisted to enhance their ability to take action against the process of desertification and land degradation to enable them to make a sustainable livelihood. In order to achieve the outlined research aims, it was necessary to:

- determine existing living and environmental conditions of the Sefiane rural environment;
- establish what pastoralists' and agriculturalists' day-to-day actions and behaviour comprised and how these impact on the environment; and
- use the research findings as a point of departure to establish a framework for an environmental education programme aimed at raising awareness and increasing environmental literacy among the community.

Interaction with and observation of the community at work was undertaken in search of relevant data. The research tools used were observations coupled with a research survey comprising questionnaires and focus group interviews in which local subsistence farmers or agriculturalists and pastoralists from the Sefiane community – people whose livelihoods are inextricably linked to the soil – were the primary respondents. Of the total of 80 farmers in the community, a sample of 48 was selected.

The Sefiane farming community is widely dispersed. Depending on grazing conditions and the availability of water, shepherds are known to graze their herds far from one another and they often move to outlying regions in search of suitable conditions. Only the agriculturalists are more or less confined to a particular region. Consequently, a non-probability snowball sampling technique was used to set up the research population of information-rich respondents. The researcher first identified and met with an agro-pastoralist who is well-known in the region and discussed with him the purpose of the research. This person then suggested another two likely respondents and so it continued. Of the total of 50 pastoralists and 30 agro-pastoralists in the community, a group of 30 pastoralists and 18 agro-pastoralists were purposefully selected on the basis of accessibility and relative permanency of residence.

A holistic approach to the research was required since the first aim of the study was to establish existing levels of environmental knowledge, skills and attitudes among the research population. It was necessary to construct a general view of the region and then focus on the targeted population with descriptions of the people themselves, the nature and circumstances of their living, their interaction with each other, the way they went about securing their existence, their everyday activities and actions and their interaction with the environment.

Field research that consisted of direct, non-intrusive, unstructured observation that allowed monitoring of human interaction with others and the environment was undertaken. Field observations that comprised a series of visits at frequent intervals to the region were undertaken between May 2005 and April 2006. Field notes in the form of key words or thoughts were made on site with more descriptive narratives being added after the observation. Photographs were also taken to support observations. Key concerns considered during the observation process included ensuring that detail was captured, discerning what was important to record and interpreting actions and interactions of those being observed. Observation data gave indications of activities, behaviour and attitudes.

Analysis of the observation data was used to set up the qualitative question schedules used in the questionnaires and interviews. The completion of the questionnaires was guided by the researcher in instances where literacy levels were low. Individual and focus interviews were selected as a data-collection tool because of the assurance this provides in obtaining the required data, and the adaptability of interviews to enquire into arising issues while yet staying within the bounds of the design protocol. A focus group interview was conducted towards the end of the research period with a member of the local authority and agricultural support structure.

The data arising from the observations, interviews and questionnaires was analysed through a process of encoding. The encoded data was then interpreted and subsequently organised and condensed into themes and categories associated with each theme. This process contributed to analysis of the research data and descriptive reporting.

Research Findings

The presentation of the research findings is aligned with the stated research aims.

Existing living and environmental conditions

People in Sefiane lead a harsh lifestyle where mere survival demands great physical effort. Agriculture predominates and the residents depend on small-scale subsistence-oriented cultivation of crops to feed their families. Any excess produce is sold to generate income for other necessities. Nomadic pastoralism is also practised by a significant proportion of rural farmers and many combine agriculture and animal husbandry in order to subsist. Each member of the family plays an active part in the farming. The youth tend to follow in their parents' footsteps since few have had the opportunity to attend school and find other means of employment.

The potential stocking rate in the region would be about 8 ha per sheep. Currently the actual stocking rate is 0.78 ha per sheep. The number of livestock is therefore 10 times greater than the number the pasture should carry. This is only possible because of the high level of concentrated feeding, which supplements natural forage. However, the impact of the livestock on the natural vegetation is enormous. Due to overstocking the best grazing and areas around water points are badly trampled and the soil is compacted, which leads to loss of soil quality, lower water permeability and increased run-off. This considerably increases vulnerability to erosion.

Overgrazing also affects the vegetation. Good grazing plant species are eaten before they have time to set seed or form regrowth for the coming season. Overgrazing results in the root system of the plants dying. The plants disappear entirely and only unpalatable species such as *Atractylis serratuloides* and *Peganum harmala*, both of which are characteristic indicators of pasture degradation, remain (URBT, 1978). The result is a reduction in vegetative diversity. Overgrazing also causes a decrease in the cover of perennials and of the biomass and ultimately this leads to the degradation of soil quality.

Impact of respondents' actions on the environment

Activities among the agriculturalists that have significantly contributed to land degradation and consequent vulnerability of the land to desertification include:

- deforestation and devegetation to clear the land for crop cultivation;
- deforestation to build windbreaks or crop enclosures;
- cultivation of marginal lands and fragile ecosystems;
- overcultivation and reduction of fallow time;
- poor agricultural practices, such as inappropriate use of fertilisers, which contributes to the build-up of salts;
- improper tillage and drainage, which leads to soil compaction;
- unsustainable use of water, which is a limited resource; and
- inability to follow their better judgment due to pressure to produce adequate resources to sustain life.

Practices that lead to land degradation and desertification of which evidence was found among pastoralists include:

- overgrazing;
- failure to reestablish or restore grazing;
- allowing herds to trample emerging shoots without giving them time to develop;
- remaining in an area for so long (because it is close to a watering point) that the area is denuded of vegetation, the soil is compacted and becomes desertified; and
- deforestation to create shelters and enclosures for herds, leaving the land bare and exposed to wind and water erosion.

Several of the respondents acknowledged that their actions contribute to land degradation and that they are thus contributing to desertification, yet they feel there is no alternative: they have to produce food for their families and for their livestock to survive. Although it is obvious to all that natural resources are under stress, survival remains the foremost issue – not necessarily the standard of survival, neither the sustainable utilization of the environment.

Programme framework for increasing environmental literacy to address land degradation and desertification issues

The purpose of developing and implementing a programme to address desertification and to introduce sustainable living initiatives in the Sefiane community is to improve the level

of comprehension and appreciation of the problem, to reduce poverty and to enable the community to establish sustainable agricultural and pastoral patterns based on sound ecological principles. To alleviate their plight, the farmers need to adopt farming practices that nurture the land and that do not degrade the environment, rendering it incapable of supporting their families or their herds.

Suggested Programme Approach to Address Further Desertification and Improve Livelihoods

General programme design

Based on the data analysis above, a programme approach is proposed here. Initiatives that enable the local community to better utilise and protect their environment are crucial to addressing the problem of desertification. The level of environmental literacy needs to be improved through education to empower the community to take charge of their resources in an ecologically sound manner. A participatory approach could be followed since this is likely to foster individuals' commitment and encourage involvement in and the development of local democratic forms of organisation.

Based on this premise, the proposed programme could give participants the opportunity to engage in an informal environmental educational programme where they can experiment, take on responsibilities, interact, develop their knowledge and skills, and learn to work together and to practice democratic negotiation and decision-making while dealing with environmental and sustainable development issues.

Integrating environmental education into the different aspects of farmers' and pastoralists' lives could encourage them to take a more active interest in the environment they live in. Based on the contextual analysis reported above, the issues experienced by the farmers suggested intrinsic conditions needed to inform the design, development, presentation and implementation of the programme are that it should:

- draw on the community's unique local knowledge relating to farming and existing sustainability issues;
- strengthen the existing knowledge base, information and monitoring systems;
- be participatory and interactive;
- promote shared responsibility for and contribution to the programme;
- empower individuals and the community at large; and
- support participants to become self-sufficient in combating desertification and following sustainable development principles.

To achieve this, presentations may be needed that are descriptive, informative, explanatory, practical and interactive. Although a firm theoretical basis is essential for all learning, learning should be through lively and stimulating practical explanatory presentations. Displays, practical demonstration and participatory activities should be given preference since this could assist farmers to try out new more sustainable practices. Learning interactions could include seminars, sensitising meetings, information sessions, use of posters, leaflets, local conferences, social

gatherings and informal yet structured exchange of opinions, with mini lessons presented orally and supported by illustrated leaflets using accessible language, since the literacy level of the participants is low. Field trips to different farming enterprises where various farming approaches, methods and techniques are used could be organised to allow for farmer-to-farmer knowledge exchange.

Key content issues

Any intervention to find a solution to the land degradation practices among the Sefiane farming community (as outlined above) would need to be tailored specifically to the identified knowledge and skills limitations, and thus be both contextually situated, and make use of other sources of information that may not be available in the existing community context. Three key areas of content that could be introduced into the programme through locating the content in context, include the following:

Land degradation, desertification and sustainable agricultural practices: As indicated above, soil degradation is a major contributing factor of desertification. It is generally acknowledged that the planting of trees and other plants that retain water and maintain soil quality has an important role to play in addressing this matter. To curb desertification and withstand the creeping sand, the Sefiane community needs to have the skills to ensure appropriate management of existing natural vegetation in areas not yet affected by desertification. This will secure the conservation of biodiversity, protect water sources and promote the sustainability of agricultural development and pastoralism. The rehabilitation of desertified dry lands for productive use for agropastoral/agroforestry purposes necessitates soil and water conservation, soil rehabilitation and the increase of vegetative cover through aforestation and reforestation. It is essential to reduce wood-fuel consumption and explore alternative sources of energy. The development of and dissemination of knowledge about sustainable agricultural methods is essential to reduce the causes of desertification. It is important to reduce pressure on marginal lands, reduce overgrazing of rangelands, control the use of chemicals, rehabilitate degraded lands and reforest deforested areas.

Specific aspects that need to be covered in the proposed programme include:

- an analysis of actual practices in the community that is dependent on and makes use of environmental resources;
- clarification of ecological, environmental and sustainable development concepts;
- relation between the above issues and farming practices;
- factors that contribute to environmental degradation and desertification and the effect of desertification on the life of the community;
- means of dealing with and combating environmental degradation and desertification and reducing stress on the environment, which could include knowledge and skills related to revegetating denuded areas, planting living windbreaks that have more permanency, establishing perennial and drought-resistant plants between the windbreaks (later to be replaced with locally adapted large and needle-leafed trees), establishing

green-belt plantations, ensuring the protection of existing forest reserves, establishing communal woodlots and introducing soil conservation measures;
- ways to facilitate sustainable development within the community, such as learning about food cycles through the practical process of planting, growing, harvesting, composting and recycling, establishing soil balance through crop rotation, use of natural insecticides and pesticides, and using manure and compost to replenish soil nutrients and as an alternative energy source;
- farming methods that best suit the prevailing circumstances and that take cognisance of the vulnerability of the environment; identification of suitable crops for cultivation; multi-cropping and employing sustainable cultivation and irrigation methods;
- identification of areas best suited to agriculture/pastoralism and the appropriate use and management of these areas;
- developing and implementing alternative strategies for water conservation such as harvesting rainwater instead of relying solely on established water sources, using drip irrigation and other water-conservative measures such as burying clay pots underground to provide plants with water instead of using the traditional method of flood irrigating, which is prone to large-scale evaporation, and using planting pits and cross-furrowing; and
- developing and implementing strategies to manage and monitor initiatives that address desertification and sustainable development.

Sustainability issues and sustainable livelihoods: What is sustained in a sustainable community is not economic growth or development, but the entire web of life on which long-term survival depends. A sustainable community is designed in such a way that its ways of life, business, economy, physical structures and technologies do not interfere with nature's inherent ability to sustain life (Capra, 2001:21). One of the key challenges of sustainable development – and a reason why it is so difficult to achieve – is that so many interrelated, complex factors need to be taken into account. The types of interactions required in the Sefiane community can be classified as:
- ecological integrity, ensuring that livelihood activities do not irreversibly degrade natural resources within an ecosystem; and
- social equity, which suggests that livelihood opportunities are more equally distributed.

The initiatives to improve livelihood systems in the Sefiane and similar communities should aim to enable the rural population to sustain their lifestyle and make it ecologically and financially viable. Due to the intrinsic constraints of impoverished communities such as the Sefiane to establish initiatives and infrastructure to combat desertification, government and NGOs should be tasked with developing commercial, agricultural or economic systems that enhance the means of survival and relieve pressure on the environment. Projects should aim to build local capacity through planning and implementing rural development at the grass-roots level by targeting the most underprivileged. Initiatives should aim to contribute to increasing, diversifying and guaranteeing stable incomes through the provision of sustainable access to financial services for target-group members. To support the sustainability of any projects

introduced into communities like the Sefiane, community members could take (and be assisted to take) the following specific actions:

- seek recognition, approval and assistance from their community leaders in order to gain protection and support for their actions and initiatives;
- devise strategies to amicably resolve any problems among group members;
- devise plans of action that will engage all participants in group projects that benefit all the members equally;
- put in place disaster and emergency plans (in cases of acute desertification and drought);
- identify individuals and organisations that might offer free assistance;
- open up lateral communication routes to all community members – young and old – ensuring that these opportunities are available to women to contribute to the economic development of the community; and
- emphasise respect, equality and social justice among the members of the community.

Farmers need to form working teams and foster relationships with one another. The experienced could help others profit from their experience, exchange ideas, share costs in project work, raise questions and solve them together. The government could encourage farmers and agro-pastoralists by subsidising budgets, investing in common projects, and supporting profit sharing through partnerships.

Programme management: In current community development initiatives, the necessity to adopt a consultative managerial approach to ensure local community members' involvement and commitment to the initiative is no longer contested. Local people's opinions need to be heard and their voices considered in the design and implementation of any strategies devised to address issues within their communities. A decentralisation policy mandates individual communities to deal with their unique environmental problems themselves. Up to now, interventions at local level by government or local authorities' initiatives were insufficient to achieve any meaningful success. Previous research indicates that if local communities are empowered through environmental education processes to take local collective action, the initiative is more likely to be sustainable. These collective actions in impoverished communities need to be adequately supported by government and NGO infrastructures through technical and financial support.

Closing Comments

Desertification reflects and contributes towards social problems, such as poverty, underdevelopment and lack of food security which implies that fighting desertification is integral to eradicating poverty and ensuring sustainable living (Annan, 2003). However, for mere survival purposes, many people feel they have no option but to engage in environmentally unsustainable activities which further contribute to desertification and perpetuate the cycle. It is imperative that this cycle be interrupted. An established means is through appropriate and effective educational interventions.

A sustainable system is a dynamic entity that integrates both the opportunities and the assets available to a group of people to ensure their survival. However, this system is influenced by interactions with and exposure to a range of ecological, social, economic and political permutations that may support or hinder the group's capacity to make a living. The recommendations which emanated from this study are an attempt to set up and maintain such a system, which would be part of the solution to the problem of desertification which faces the Sefiane rural community in Algeria and several others in vulnerable semi-arid regions globally.

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Cultural Historical Activity Theory, Expansive Learning and Agency in Permaculture Workplaces

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Abstract

This paper reports on how Cultural Historical Activity Theory was used to identify and analyse contradictions; model and implement solutions in the learning and practice of permaculture at one school and its community in Zimbabwe. This is one of three sustainable agriculture workplace learning sites being examined in a wider study on change-oriented learning and sustainability practices (Mukute, 2009). It gives a brief background to permaculture and the School and Colleges Permaculture Programme (SCOPE) in Zimbabwe. The paper focuses on how contradictions were used as sources of learning and development leading to 'real life expansions'. This demonstrates and reflects on the value of an interventionist research theory and methodology employed in the study to enhance participants' agency in sustainable agriculture workplaces.

Introduction

There are many ways in which knowledge has been conceptualised. In this paper, I look at how knowledge has been used for the development of agency. Knowledge, in this sense may be seen as 'capacity for action' as derived from Francis Bacon's observation that '*scientia est potentia*', which suggests that knowledge derives its utility from setting something in motion (Stehr, 2001:497). The translation of Bacon's observation to 'knowledge is power' is somewhat misleading because, as Stehr (2001) notes, *potentia* means capacity. The notion of agency has been a subject of discussion by leading scholars such as Archer (1996), Sibeon (1999), Giddens (1984) and Emirbayer (1997). In this paper I will use agency in the sense that Engeström (2008) used it – taking intentional transformative action based in an interpretation of the situation and after a search for resolutions to contradictory motives, tools or conditions. Agency in this sense is therefore found residing in causing human action as Table 1 shows.

Cultural Historical Activity Theory (CHAT) informed the study, which also employed the associated methodology of Developmental Work Research (DWR), discussed in more detail below. The methodology shows how the study moved from the interpretive to the agentive, resulting in agency by research participants.

Table 1. Three layers of causality in human action (Engeström, 2008:17)

Interpretive layer	In the actor	Takes into account according to this and that logic	If X, then Y Rule, law
Contradictory layer	As participant in collective activities	Is driven by contradictory motives	Searching for resolution by often unpredictable actions
Agentive layer	As potential individual and collective agent	Takes intentional transformative action	Inventing and using artefacts to control the action from the outside

The Context

The paper is drawn from a workplace learning research project on how and why farmers are incorporating sustainability in their agricultural practices and how such learning and practice can be expanded, that is, how their agency can be enhanced. The project is based on three case studies of permaculture in Zimbabwe; organic farming in South Africa and Machobane Farming System in Lesotho (Mukute, 2009). This paper discusses the Schools and Colleges Permaculture Programme (SCOPE) in Zimbabwe – one of the three case studies in the wider study. Permaculture is a land-use design system that seeks to create the most beneficial and productive relations between elements in a system while respecting and copying nature (see Table 2).

Table 2. History and main features of permaculture

	Permaculture practice (Mollison, 1991)
History	• Developed by ecologist Bill Mollison in the 1970s in Australia in response to industrial-agriculture pollution, land degradation and biodiversity loss. • Introduced in southern Africa in the late 1980s.
Main features	• Create beneficial relationships between different elements in the system. • Grow as many diverse species as possible and use as many diverse production processes for nutrition, medicine, beauty, spiritual and economic value. • Take the long view and plan for long-term sustainability. • Recycle, reuse and reduce waste. • Build and enhance the number of beneficial relationships in a system to achieve stability. • Copy the processes of nature to allow an environment to sustain itself naturally.

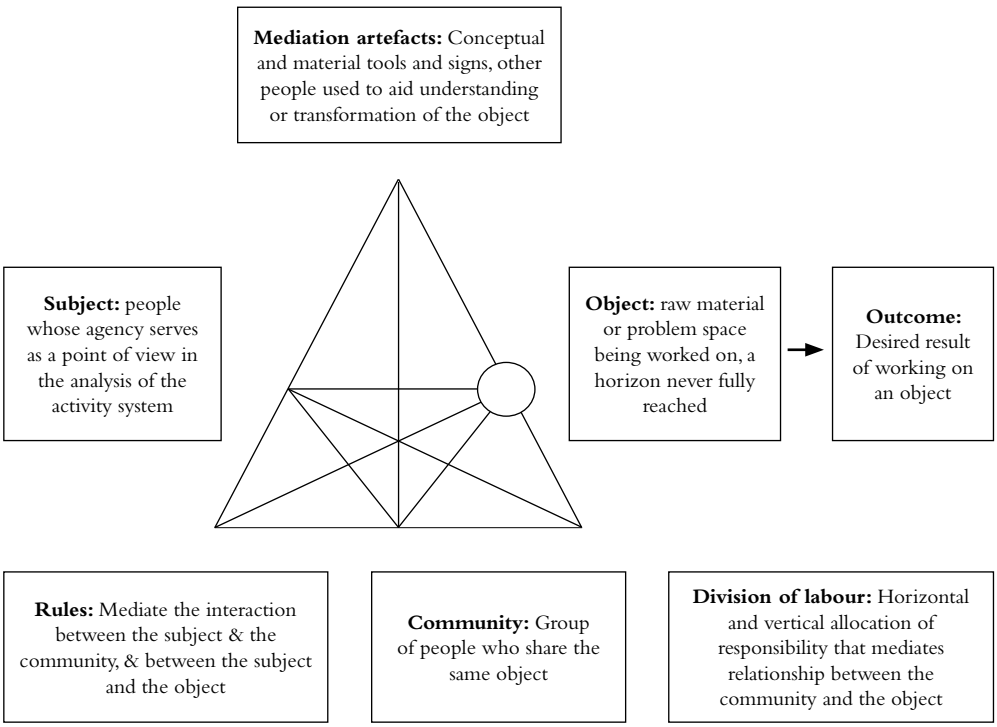
SCOPE was developed to promote, 'sustainable land use of school and college grounds and homesteads in the surrounding communities' and the integration of ecological principles into the curriculum (Nyika, 2001:125). It was started in the mid 1990s in Zimbabwe, with support from the Ministry of Education which allowed the programme to work with pilot schools (Mtetwa, 2006). Between 1994 and 2008, the number of schools involved in SCOPE

increased from two to 126, covering all the districts of the country. Today 13 teachers' colleges and six colleges of agriculture participate in the programme, with two universities providing advisory support. SCOPE introduced a cluster system at district level where six or more schools are supported by a lead member to establish permaculture in the school and the surrounding community. Following its success in Zimbabwe, a regional SCOPE programme was established in 2007 to provide training and support to other countries (M.W. Nyika, personal communication, 5 September 2008). The introduction of permaculture in schools and colleges where the mainstream curriculum was built on conventional agriculture and the agricultural policies of the country created structural tensions that are still being grappled with today. This programme was considered as an appropriate case study of workplace learning research since, while being located at schools, it provides a centre of learning for farmers, and involves agricultural extension staff. Schools often provide important centres of learning in rural community contexts, and as such were considered appropriate for a study on workplace learning for farmers in a southern African context.

Cultural Historical Activity Theory and Expansive Learning

Cultural Historical Activity Theory (CHAT) provides a theory and methodology to examine how groups of people with different experiences and perspectives working on the same object can work on new problems and jointly develop new knowledge or tools to address the problems (Engeström, 1987, 1999; Daniels, 2008). Learning within a CHAT perspective is seen to take place in two main ways: through internalisation and externalisation. Externalisation happens when a person or a group of people creates new knowledge or solutions. Internalisation takes place when an individual makes sense of available cultural capital in his/her social relations, thinking and actions. Learning that encompasses both internalisation and externalisation, is called expansive learning (Engeström, 1999). Second and third generation CHAT provides the scope to work with local and broader contexts that have a bearing on the learning of sustainable agriculture practices. Second generation CHAT covers rules, community and division of labour, subject, object, and mediation and tool relations (Figure 1). The third generation covers a number of second generation activity systems that are interacting.

Figure 1. Second generation activity theory



(Adapted from Engeström, 1987)

Engeström (2001) identified five principles guiding CHAT:

1. The prime unit of analysis is a collective, artefact-mediated and object-oriented activity system seen in its network relation to other activity systems;
2. Activity systems are multi-voiced and are a nexus of many points of view, traditions and interests. Multiple layers and strands of history are embedded in the rules and division of labour. The multi-voicedness of the activity systems is a source of both tension and innovation;
3. Activity systems take shape and are developed over long periods of time and should be analysed in terms of their local history, objects, outcomes and genealogy of conceptual tools that have shaped it over time;
4. Contradictions between and within activity systems are potential sources of change and development; and
5. Activity systems have the potential for expansive transformations, which occur through relatively long cycles of qualitative transformations.

Engeström (1987) identified four kinds of contradictions; *primary* - which happens within elements of an activity system; *secondary* - between elements of an activity system; *tertiary* – which happen when the object of the central system clashes with that of a historically

more advanced activity system; and *quaternary* - which occur between central activity and its neighbouring activity systems. Engeström (2001) noted contradictions in activity systems are a guiding principle for empirical research. Within Developmental Work Research (DWR), CHAT methodology provides an expansive learning process which is concerned with iterative knowledge construction and application that emerges from contradictions that exist in or between activity systems. Expansive learning has the following stages:

1. Questioning: drawing on researched evidence to question existing practice or existing wisdom;
2. Analysing: tracing and analysing the history and current dynamics of learning and developmental problems in the practice;
3. Modelling: involves the construction of new ways of working or engaging with practice;
4. Examining the model: experimenting with the new model to fully grasp its dynamics, potentials and limitations;
5. Implementing the model: working with the model in real life situations and monitoring its impacts;
6. Reflecting: Using monitoring data to evaluate the model for refinement;
7. Consolidation: Implementing the refined model into a new, stable form or part of practice (Engeström, 1999).

Research Process

The research project being reported here employed double stimulation during Change Laboratory workshops, with 'mirror' data gathered prior to the Change Laboratory workshop providing the first stimulus and the expansive learning process providing the second. Change Laboratory workshops are a methodological tool used by Engeström and developmental work researchers to study the agentive learning process, and resultant changes.

Data collection

One of the more significant methodological points in CHAT is the process of researching with people involved in various activity systems. The first level of engagement with research participants took place in August 2008 and involved three semi-structured individual interviews and two semi-structured group interviews. The group interviews were for a group of four farmers and another of three teachers and are represented by Z2 and Z5 respectively.[1] Four farmers and six permaculture facilitators participated in the research. In February 2009, a five session, four day Change Laboratory workshop was run and in September 2009 a feedback workshop was held. The details of the Change Laboratory workshop are described in Table 3.

Data analysis

The primary approach to data analyses was double hermeneutic which was used because it resonated with the interventionist research process, developed over time with the participants in the case study sites. Cohen (1989) pointed out that first order analysis is linked to the agent's awareness and second order exceeds it but preserves it with a view to altering the agent's knowledge and foster change.

Table 3. Summary of data generation and sharing in Change Laboratory workshops

Session	Focus/thrust	Case Details	Research participants
One	Orientation to the workshop and tools and doing a historical timeline of the practice in the area under study	This involved sharing the activity systems and the expansive learning cycle. It also involved the telling of their different histories with permaculture.	Workshop was attended by 4 farmers, 4 permaculture facilitators; 4 pupils and 1 government agriculture extension worker. It took place over 4 days and for about 10 hrs. Researcher served as facilitator and had an assistant
Two	Identification of contradictions by participants and presentation of mirror data (contradictions) by researcher	Issues were identified in three groups of teachers as facilitators of permaculture; pupils; and farmers. The government agriculture extension officer worked with the group of farmers. The researcher presented mirror data. The workshop participants then ranked issues and worked on five.	
Three	Analysing contradictions	Contradictions were analysed in mixed groups of permaculture facilitators, pupils and farmers to take advantage of distributed cognition. They were analysed in terms of history, causes and effects.	
Four	Developing model solutions (and critiquing them)	Participants broke into two groups, and each developed solutions to three problems. Each had to write a letter summarising the causes, effects and model solution being suggested. The plenary presentations served as the first stage of critiquing the adequacy of the model solutions.	
Five	Way forward	Participants decided to form a committee and elected office bearers to carry the process forward. The committee included people and stakeholders who were absent. Targets for lobbying and persuasion were also identified.	
Six	Feedback workshop	Research participants reported on the progress they had made in implementing their modelled solutions. I reported on what was emerging from the research, thanked them for participating in the research and bid them farewell as I was 'leaving the field'. The workshop lasted three hours.	Attended by 4 pupils,2 farmers, 4 teachers, the researcher and research assistant

Findings

Interpretation of learning and practice motives

Early analysis of data revealed why farmers, teachers and pupils in SCOPE learn and practice permaculture. This paper focuses on farmer motives and this part of the process lies in the interpretive layer of Engeström's three-layered causality for human action and forms part of the first stage of the expansive learning cycle (Table 1). The study suggests that the motives for farmer learning and practising of sustainable agriculture are several and do cover the three forms of sustainability discussed by Yunlong and Smit (1994) – economic, social and ecological. In particular farmers are interested in increasing food production, income generation and resource base potential. Table 4 shows some of the reasons why farmers engage in permaculture. There were also intrinsic motives cited by farmers. For example in Group Interview #Z2, a point was made about going into farming because it is in one's veins:

> *Researcher:* What motivated you to go into farming?
> *Farmer AB:* I was born to a farmer. I grew up farming ... I have been farming since the 1980s.

The study also focussed on permaculture facilitator's motives for teaching permaculture, which were primarily to promote human health and wellbeing, as well as agrarian sustainability, food production, and education for sustainable development.

Table 4. Summary of farmers' motives for learning and practising permaculture

Farmers' object	Evidence and descriptions
Food production & income generation; affordability; and soil and water conservation; agro-biodiversity	*Researcher*: Could you explain your scores,[3] especially the high score on the economic? *Farmer Mu:* You see, there is very little one must spend in order the produce. Besides, with intercropping, you can produce a lot of crops at the same time, each with a different value. The other thing that we do here is to make sure that there is something growing in each part of the garden during most time of the year. You see that the tomato crop has been harvested. We have plans for these beds. What makes this kind of agriculture sustainable is that you produce one crop after another, continuously. *Farmer AB:* The social is high because you do not talk about survival of the fittest. Everyone, even the poor people can practise Permaculture or sustainable agriculture. Most of the resources are locally available. For manure you can go and collect humus from the mountains. I know of some families whose lives were transformed by zero tillage. *(Interview # Z2)*

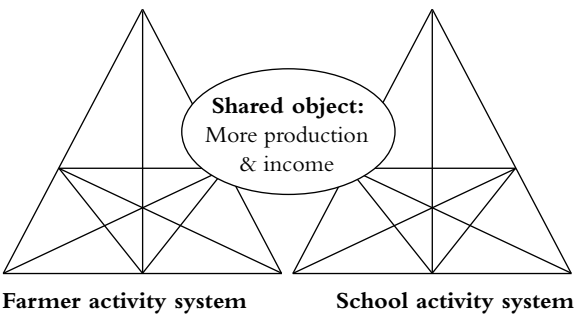
Table 5. Permaculture facilitators' motives for 'teaching' permaculture

Permaculture facilitator object	**Evidence from descriptions**
Promote agrarian and sustainability education (education for sustainable development)	*Facilitator JW:* During that time, Andrea Mercier was looking at how Fambidzanai could be used in relation to *Education with Production*. I recommended that we offer permaculture as the main theme at the Fambidzanai Training Centre. *(Interview #Z4)* *Facilitator PS:* For me the most frustrating thing is when we go far to train farmers and never have an opportunity to follow up. I did this once recently when I taught a group of farmers in Mashonaland Central. There is no way of telling whether the learning is being applied. What could easily happen is that the farmers did not get something right and they practice it and it does not work. *(Interview #Z3)* *Facilitator AM:* The course, which is on Integrated Land Use Design, is attended by pupils, community members, who are farmers and community leaders. After the course, the school often gets its seeds and other materials for the garden and the orchard from the surrounding community. The school and the community conduct look and learn visits together. The exchange of planting materials is continuous. *(Interview #Z1)*
To promote human health and nutrition	*Facilitator MY:* More recently, and in response to the HIV and AIDS pandemic, we introduced a nutrition garden for orphans. From it, we sell vegetables and the money is used for paying the orphans' school fees. SCOPE also bought two goats towards the orphans' project. Each child has a chance to get a goat, which they can use to build small livestock in the family as serves as a potential source of income in future *(Interview #Z5)*. *Facilitator PS:* The surrounding community has good access to herbs on the ground, which is important given the problems associated with AIDS and the low availability of drugs. The school has even established a nutrition garden to support orphans … In permaculture, a farmer grows many different crops including maize but when they value they just look at maize yields and ignore the pumpkins, cow peas, sweet canes and other crops which may also have higher nutritional value. *(Interview #Z3)*.

Working with contradictions for learning in change laboratory workshops

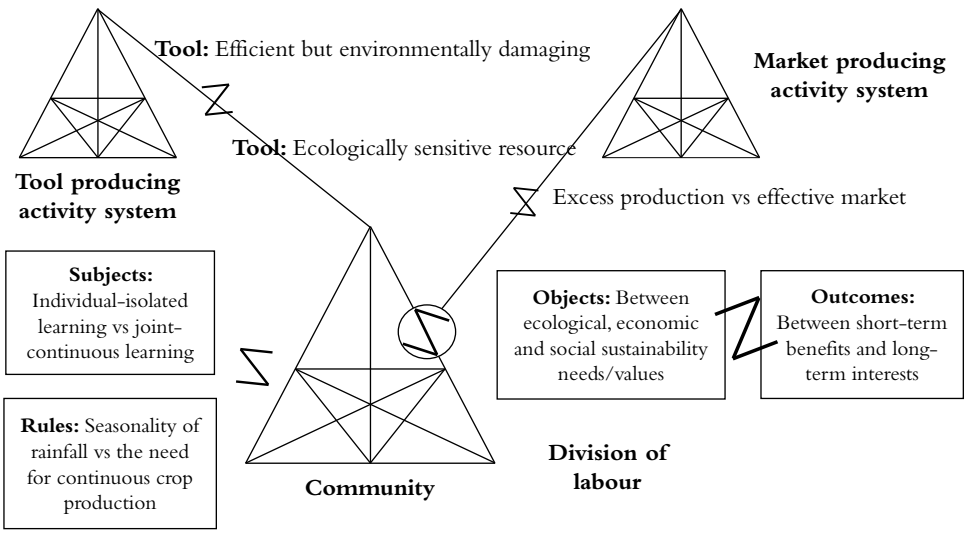
As the research programme has an interest in change oriented learning, a key aspect of the analysis was the identification of contradictions, as these, according to Engeström (2001) provide spaces for expansive learning. This constitutes the contradictory layer (Table 1) and the first stage of the expansive learning cycle. Participants in the SCOPE Change Laboratory workshop were permaculture facilitators in the school, permaculture pupils and farmers, and a government agricultural extension worker from the community (Table 3). Based on 'mirror' data generated in the interpretive stage, a shared object between farmers in the community and permaculture facilitators in the school was developed and is depicted in Figure 4. The shared object of the two activity systems was increased food production and income generation of the area.

Figure 2. Shared object of farmer and school activity system



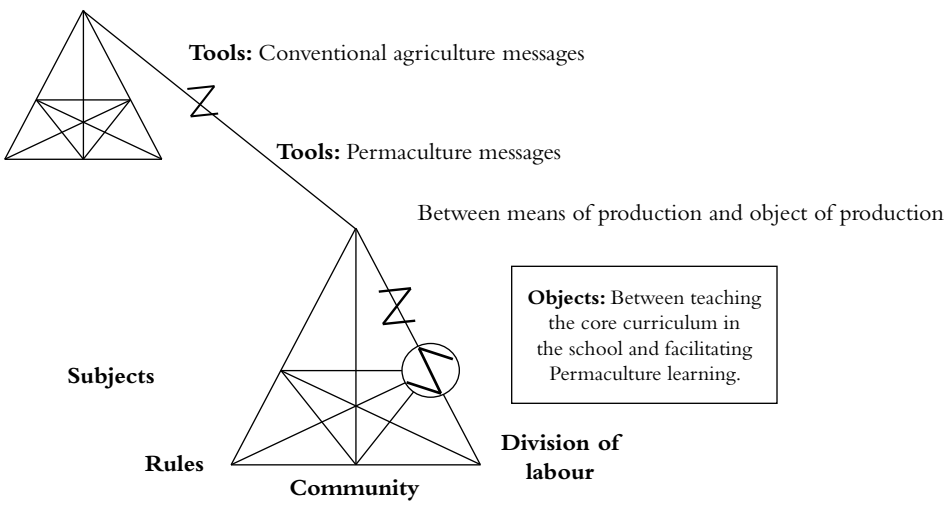
Contradictions in two SCOPE activity systems: The contradictions in the farmer activity system in the SCOPE case study are represented in Figure 3. There are primary, secondary and quaternary contradictions revealed in the farmers' activity system which were between short term benefits and long term interests of permaculture as ecological processes take long to establish and maintain, while short term benefits can be obtained from using fertilisers and other methods that are not ecologically friendly (a contradiction in the object and in the mediating tools); between individual, isolated learning, and collective forms of learning; between the social, ecological and economic dimensions of sustainable agricultural practice; and between the produce and the time it took to produce and the availability of market mechanisms.

Figure 3. Contradictions in the SCOPE farmer activity system



The contradictions in the St Margaret Primary School activity system are shown in Figure 4, which also shows three layers of contradictions: primary, secondary and quaternary. These included contradictions between conventional agriculture messages and permaculture practice messages, between the means of production and the object of production (not enough time and resources for the anticipated results); and between the teaching responsibilities of the facilitators – mainstream teaching and permaculture teaching.

Figure 4. Contradictions in the St Margaret Primary School activity system



Problem analysis and solution modelling: During the workshop, the contradictions cited above were discussed as learning and development problems because that is more familiar language to work with. After conducting and analysis of the problematic situations, the next stage was to analyse them, with a view to developing solutions. Contradiction analysis belongs to the second layer in the causality table (Table 1) and to the second stage of the expansive learning cycle. Solution modelling marks the beginning of the agentive layer and is the third stage of the expansive learning cycle. The analysis and the model solutions are captured in the two letters that research participants developed in relation to their shared object and the production and marketing related tensions that they were facing. In order to draft the letters, participants conducted an analysis of the problematic situations which they had ranked. The analysis involved looking at the history of the issue, its causes and effects. Research participants then broke into two mixed groups where they outlined solutions before tasking some members of the group to design letters, which were read out in the respective groups for improvement before sharing in the plenary. The letters that were shared in the plenary, which are of interest to this paper are indicated below. The problem of water and electricity in the school, which the letter to the headmaster discusses, deals with the contradiction between the means of production and the object of production and the letter drafted by farmers is concerned with the problem of marketing and transport and the contradiction here is between the (surplus) production – supply and effective demand.

A committee to take on the tasks as another part of the model solution: Research participants decided that for their solution to be implemented, they needed a structure to carry these forward and they formed a committee during the 5th session of the Change Laboratory workshop. Its task was to polish the draft letters and present them to the responsible authorities for action. The committee further committed itself to recruiting more members from the community in order to strengthen its capacity. The formation of the committee was therefore part of the 3rd stage of expansive learning cycle and part of the agentive layer of the causality table (Table 1). The actual taking of the letters to other groups in the community, which happened outside the Change Laboratory workshop, was the 4th stage of the expansive learning cycle. The research of the actions from here on belonged to the agentive layer of the causality table.

Traces of agentive talk[4] in the letters and interviews

Both letters show that the research participants were interested in taking action, exercising agency and this is captured in their agentive talk. For example, both letters conceptualise a number of options or envision new models of the activity – the networked activity system in this case. These are stated in the form of recommendations. Each outlines concrete actions that should be taken to address the need state in the school. The letter to the councillor has a more explicit commitment by the research participants who undertake to mend the road as a stop-gap measure towards ensuring that their surplus produce which would contribute to economic sustainability could be achieved. The tone of the letters also suggests that the solutions being proposed are doable.

Table 6. Letters as model solutions

Letter to address agriculture production problems in the school (excerpts of solutions)	**Letter to address marketing problems faced by farmers (excerpts of solutions)**
To: The Headmaster, St Margaret Primary School r.e.: Water problem at St Margaret Primary School. Dear Sir/Madam This letter serves to enlighten you about the level of water problem at this institution. We will include the problems, cause, effects and trends in this write-up. At the end I will try to make recommendations for this problem. The real water problem came when there was an electric breakdown along the line which leads to our school … Remember teachers will be motivated to work where there are enough resources. Hence with this shortage of water, your school might end up with less qualified personnel … After all permaculture activities were generating income for the school. Because of this situation, the school is no longer benefiting from the project. As a means of trying to alleviate this problem, we have decided to write this list of recommendations for you to consider: Recommendations We thought you could start by educating the community about the importance of water and its sources. The community should also respect electric wires as they provide a service to the community. Another important recommendation is that you should provide alternative ways of providing water for the school such as drilling boreholes, use of windmills which uses wind instead of electricity. If funds permit, you should think of buying a diesel engine or a solar powered engine. Generators also can substitute electricity problem. If you and your committee still insist on ZESA power, you should try to form a committee, which should have to communicate with ZESA to find out what stops them from coming to make the repairs. Once the committee gets communication from ZESA, it will sit down with the local community to arrange for what the ZESA people want. If it is possible for ZESA, then the community will have to do it. Yours faithfully Group B	To: The Councillor, Chigondo Ward r.e.: Marketing and road network I write to let you know the above project which is in your ward has some problems which need your attention urgently. The problem has reached a high level of production of permaculture produce… Marketing: The produce is of high quality and toxic free because we discourage the use of artificial chemicals both for spraying and soil enrichment … At the same time, most of the perishables are decaying and being sold at a loss. Road network: Since our road is not regularly serviced, the few motorists who use it are charging unmanageable fares of which we end up working for them and not for our reward. So if this situation remains, there is going to be a decline in the group's production and general development in your ward. Hence we are requesting you to forward our plea for assistance as you sit for council meetings. As a group, we have agreed ourselves to fill in some of the bad patches in the roads which have been caused by erosion. This is a temporary solution. We ask you to put a proposal for a tarred road in your agenda. Once our proposal meets a positive response, we believe there will be great change in the group, community and the ward at large. Yours sincerely Group A (Group Secretary)

Prior to the holding of the workshop, during data gathering, there were many instances in which research participants used agentive talk, some of it to suggest that growing permaculture practice was very likely based on current and emerging developments and others that suggested envisioning new solutions and situations. Some of the statements are captured below:

Facilitator JW: The sustainable development discourse has created a huge potential for sustainable agriculture. There is a will which there never was 20 years ago.

Researcher: Anything else you would like to say on the subject?

Facilitator AM: Nothing. However, I wish to point out that the discussion has got me thinking about a number of issues that I have always taken for granted. I hope that this study will help SCOPE reflect on some of its work so that it can improve.

Researcher: What can be done to improve learning of permaculture among farmers?

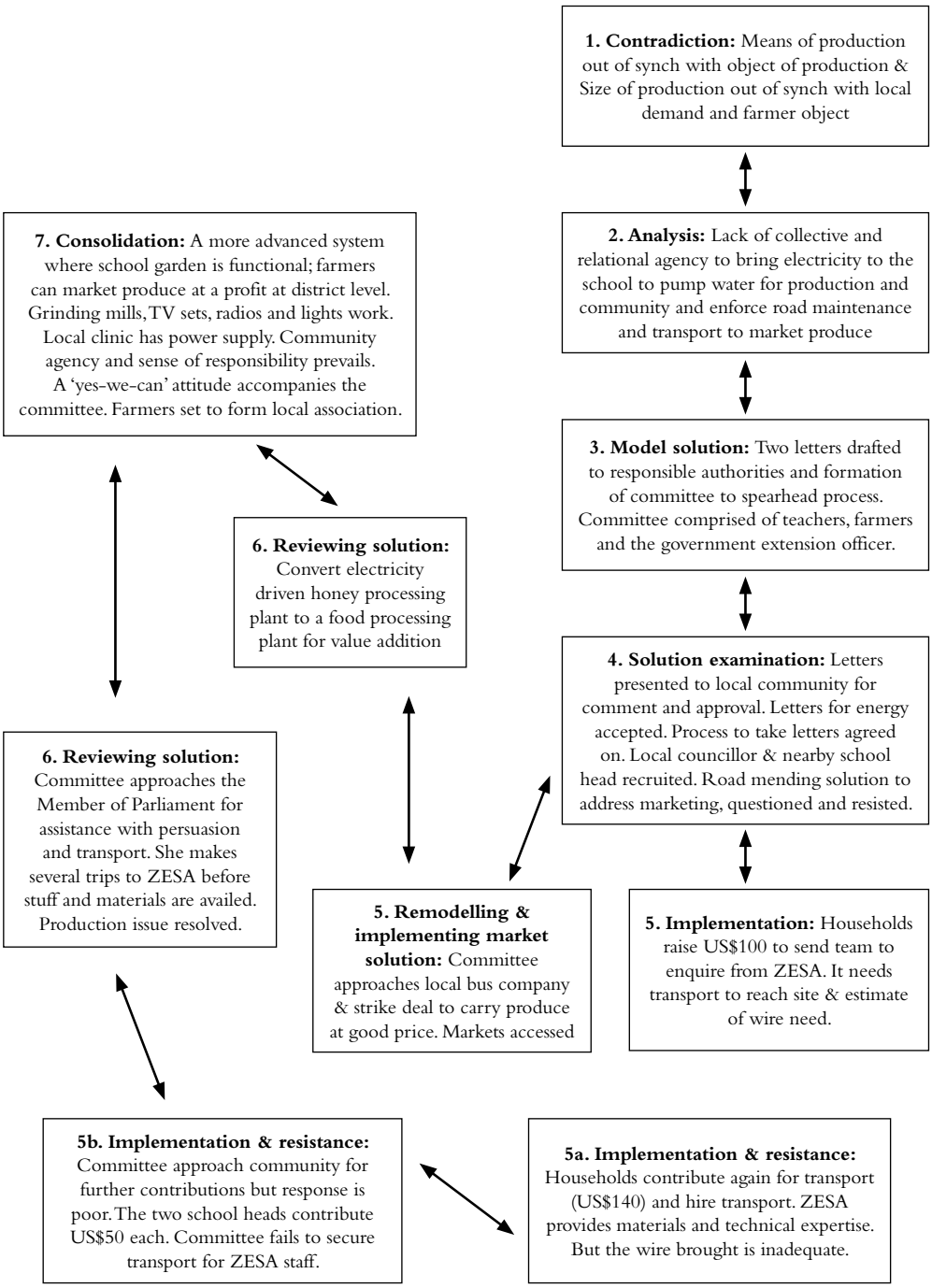
Facilitator JW: One of the keys is to try and get farmer education happening among farmers on a continuous basis. Farmers need to have their own study groups. There is need to develop a culture of learning at farmer level. This is how farming improved in Europe in the late 1800s and early 1900s. The idea of folk schools in Denmark is a case in point.

Facilitator PS: Right now we have worked on one cluster in the district and do want and need to move to other clusters but there are no resources for this. Our vision is for every school in the country to practice permaculture.

Farmer AB: For anyone to succeed, they must have a goal in life ...What we want here is to produce first for food security and then for the market. We treat farming as an industry, a business. In this sense, we see ourselves as commercial farmers.

Seven months after the development of the solution, I, as developmental-work researcher, met with research participants to share progress made in connection with the study. In the meetings, which constituted the 5th session of Change Laboratory workshops, it was clear that the research participants had proceeded along the expansive learning cycle. They had taken action, implemented, exercised agency, and were considering another intervention in anticipation of new contradictions as shown in Figure 5.

Figure 5. Expansive learning process in the SCOPE case study



Discussion of the Expansive Learning Process

Figure 5 summarises the expansive learning process that happened in the farmer and school activity systems, which culminated in improved real life situations – or change oriented learning and sustainability practices. They drew on the distributed knowledge and power that was available in their activity systems. Their actions were creative and transformative. The germ cell of the process appears to be two layered: the formation of a (developmental) committee to work on the transformation of the situation; and the drafting of concrete proposals as to what could be done to address production and marketing limitations in the face of the need for food in the school system and the lack of water to produce it; the excess production among permaculture facilitators and the high cost of transport to market the produce. This involved identifying and articulating contradictions, deliberation and reflection, and 'agentive talk' (i.e. articulating intentions to act, and showing how prior experience can be mobilised into feasible practices). A number of obstacles were encountered along the way which made the path to a more advanced activity system[5] non-linear. The process of addressing the issue appears to have increased the capabilities of the members of the community in terms of negotiating, making connections with those with political and cultural capital as well as for mobilising resources from the community. The other capability which appears to have been build is attitudinal which generated a 'yes-we-can' mentality, despite substantive contextual complexities (e.g. high costs, etc.). In short the research process increased the group's individual, relational and collective agency.

Conclusion

This paper has shown how empirical research by interviewing several actors in the SCOPE activity system revealed the understanding and logic of farmers and permaculture facilitators in learning and practice of permaculture. In the process of gathering evidence, the research was able to surface contradictions beneath the problems that were highlighted by research participants through looking at the their collective activities – as farmers in the school community and as a school practising permaculture – illuminating contradictions in two interacting activity systems in one case study. The study also shows how agentive talk was captured in the letters and subsequently how those letters were used as tools in talking concrete actions that not only marshalled the contributions of the headmaster and the councillor to whom the letters were addressed but also resulted in the recruiting of more members of the community, including a nearby school and the local member of parliament. Households in the community contributed money that was invested in addressing the contradiction. In the action of addressing the need for production in the school and the lack of tools to produce, mobilisation of individual, relational and collective agency took place. During the process of implementing the solutions, a series of problems were encountered and research participants, together with other members of the community demonstrated reflexivity. The study suggests that the expansive learning process can be an effective tool for researching change-oriented learning and sustainability practice where the intention is to stimulate responsible action and set change in motion.

Notes on the Contributor

Mutizwa Mukute is a PhD student in Environmental Education at Rhodes University. His research, from which this paper is drawn, focuses on exploring and expanding learning processes in sustainable agriculture workplace contexts based on permaculture in Zimbabwe, Machobane Farming System in Lesotho, and organic farming in South Africa. E-mail: mmukute@yahoo.co.uk

Endnotes

1 This is important to note because where a series of connected statements are made on a particular point, the reference to the interview only comes at the end, after the last speaker.
2 Research participants' names (e.g. Mu, AB, PS) were coded in all cases to maintain anonymity while at the same time be able to trace their contributions.
3 Research participants were asked to assess three dimension of sustainability in agriculture by giving a mark out of ten and this constituted a score.
4 Agentive talk includes explicating new possibilities or potentials by drawing from the past positive experiences; envisioning new models of the activity; and committing to concrete action (Engeström, 2008).
5 A more advanced activity system is one that has resolved structural contradictions and it become better than before and therefore more historically more advanced.

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Understanding Social Learning Processes in a Citrus Farming Community of Practice

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Abstract

This paper focuses on what would traditionally be termed 'non-formal' learning processes in the context of a case study examining how citrus farming communities in the Patensie Valley in the Eastern Cape in South Africa were learning conservation practices. Communities of Practice theory was used to provide a conceptual framework for researching these learning interactions. Through historical and other qualitative research methods, I was able to establish that farmers in this community of practice learned mainly through responding to change and uncertainty, through forming and drawing on networks and community structures, through intergenerational learning, and through various interactions with each other. The historical research also pointed to the significance of policy and market-based changes in farmer learning, and their attachment to the land, which is shaped through historical associations with the land, and through embedded relations in farming practice cultures. The paper provides an example of how Communities of Practice theory, complemented by historical research, can be used to understand non-formal learning.

Introduction

Researching and research design can be an extremely challenging process, deciding what methods to use, which literature to review, what orientation the research is going to take and how the data should be analysed. As a researcher with a background in the natural sciences I was very familiar with undertaking quantitative research and believed that education was a process of teaching someone something new in a formal way. As I began to transition from the natural sciences to the social sciences it became clear that learning was a far more social process then just being taught something by a more experienced individual. Learning does not stop once people leave formal education environments, people continue to learn over the course of their lifetime and people learn most of what they know outside of school and formal learning environments (Wals & Heymann, 2004; Rickinson, 2006). Learning is a human process; it does not begin and end of a specified time (Wenger, 1998). There are often situations in which people have gained knowledge and understanding from experiences outside of school where simple conversations and storytelling with friends and family members has provided insight and learning opportunities (Elliott, 1999; Smith, 1999; Field, 2003).

Earlier research undertaken with Conservancies revealed that groups of landowners form voluntary partnerships around a common future focus, mainly conservation of biological diversity and sustainable land use (Downsborough, 2005). Through various interactions such as

meetings and forums these landowners formed powerful groups for the communication and sharing of information. I thus became interested in the less formal ways in which adult farmers learn about conservation practices. It was this interest that led to the investigation of the ways in which farmers learn conservation practices and how this learning informs action, which is the focus of the study that I report on here (Downsborough, 2007). The study that I report on here took place in a citrus farming community in the small town of Patensie in the Eastern Cape, which forms part of the Cape Action for People and Environment programme as it is situated alongside the Baviaanskloof Megareserve.

As researcher, I was particularly interested in finding out how farmers came to know what they know about conservation practices in farming and how they learn about conservation. In terms of the research design I began to grapple with the ways in which the learning processes taking place in this farming community could be investigated and analysed. A reading of the literature led to Lave and Wenger's (1991) notion of Legitimate Peripheral Participation as a means to understanding learning processes. Further reading into Wenger's work uncovered the notion of Community of Practice which refers to 'a group or groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly' (Wenger, 2000). One of the key elements within a Community of Practice (COP) is the idea of a shared practice.

Benzie, Mavers, Someekh and Cisneros-Cohernour (2005) claim that Wenger's notion of a Community of Practice provides a useful theoretical framework for researching the social processes of groups in contexts such as the workplace or a local community:

> The strength of working with an analytical framework that has the concept of Community of Practice at the centre, is that it emphasises the situated nature of knowledge and brings matters of context to the fore. It highlights the relationships both between individuals and between individual and community. In this way, it is well situated to supporting accounts that capture social complexity. (Benzie, *et al.*, 2005:185)

By using Community of Practice as a guiding perspective and analytical framework in this study, I was able to gain insights into the learning and learning processes that were taking place (with) in the citrus community.

Research Process

Data was generated through three main methods; a) 17 semi-structured interviews with farmers and key informants in the area, b) document analysis (minutes of farmers meetings and historical documents) and c) personal observations both of the area through photographs and the farmers' meetings attended. A contextual profile provided a useful means of gathering historical information pertaining to farming, settlement, history of citrus export and past events that have shaped the community into what they are today. The contextual profiling assisted in gaining a deeper understanding of what constituted the Patensie citrus farming community as it was of critical importance to the research to determine if the citrus farmers were indeed a

Community of Practice and not just a community of interest. Semi-structured interviews were used as a means to gather information on how farmers came to be established in the area, how they knew about farming, what conservation practices they undertake and what some of the challenges they face were.

Findings

Data analysis took a two-phase approach. The first phase analysed the data generated through the historical research process and the contextual profile. The key findings from this phase included:

- There have been key economic, political and environmental events that have shaped the Patensie citrus farming community (e.g. introduction of new environmental regulations in international trade agreements gave rise to a range of new conservation practices in the area);
- There is a strong family presence and history in the area;
- There is a strong commitment to the land and the family farm;
- Farmers undertake a number of activities to reduce the impact on the natural environment;
- Partnerships, private companies and consultants are important role players that farmers most commonly interact with;
- Farmers struggle with the changing global economy and the export of their citrus internationally, especially with the introduction of export standards and fluctuations in the market price; and
- There is an emerging partnership with a conservation agent in the area (Baviaanskloof Megareserve).

The second phase of the data analysis applied a Community of Practice perspective as an analytical framework for explaining some of the relationships and learning (learning processes) that take place within (and between) a community. These results are discussed in more detail below.

Identifying the community of practice

A Community of Practice is formed by people who engage in a process of collective or collaborative learning. According to Wenger (1998) Communities of Practice are everywhere and we are members of many of them, at work, at school or in recreational settings. He notes examples such as: a tribe learning to survive, a band of artists, a group of engineers working on a similar problem or a network of surgeons exploring techniques. Communities of Practice are therefore organised around what matters to the members of that community. Wenger (1998) cautions, however, about calling every social configuration a COP as it would render the concept meaningless – but on the other hand, a definition that is too restrictive would also make it useless.

In this research it was important to note how the shared history and concern of the citrus farmers held the group together around the engagement of the risks and concerns, such as the

deregulation of the export market or changing legislation – including environmental trade agreements instituted by the European Union (EU) governing exports. This shared concern was thus key to the learning interactions and knowledge generation in the community. There are three elements that really define a COP; the domain, the community and the practice.

Applied to the Patensie citrus farmers, the shared domain or interest of this community was (and still is) the long-term production and export of citrus products. This is a practice-centred identity that brings the members of the community together and encourages them to interact with each other. Through formal and informal meetings, conversations and interactions, farmers in the area have built relationships with other farmers, which over time have come to be constituted as a community. There is an evident history of working together on the practice of producing and exporting citrus products (e.g. sharing innovations; establishing cooperatives) that has resulted in the formation of collaborative relationships and partnerships. Through their interactions and relationships, the citrus farmers have developed into a knowledge community, whereby the knowledge of farming lies with them as a resource (shared repertoire), which they are able to communicate and share with other people.

Learning in the Patensie orange farmer Community of Practice

Owing to their their history of engagement, their collective responses to change and uncertainty and their ability to share knowledge and work with one another in their practice, it was clear that the Patensie Orange Farmers were a COP. After establishing this, I then sought to understand in more depth how it is that farmers know what they know? And how do they learn? Through analysis of the data, I was able to identify four dynamics of the Patensie citrus farmers learning, each of which is discussed in more detail below:

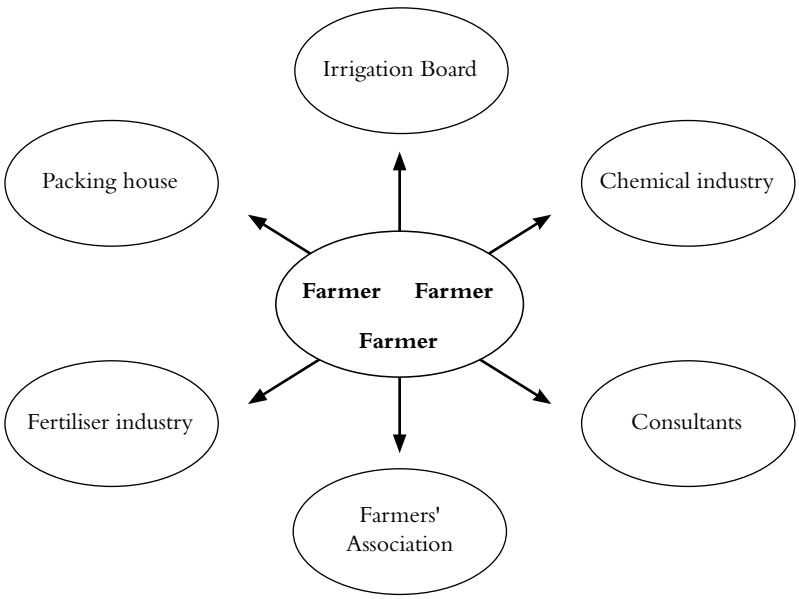
Farmers learn in the family through family ties and through inter-generational knowledge-sharing over time: The contextual profiling and historical research indicated that there is a definite history of farming in the area that dates back almost a hundred years, with farms that have been passed down through the generations. One farmer noted, for example, 'farming isn't just something you come into, it is quite a family orientated practice, you are generally born into a farming family and grow up with the ideas of becoming a farmer to take over the family farm.' Many of the farmers reflected that they had learned about farming from their fathers and grandfathers, as shown in this statement: 'My knowledge came from my dad and from working with the land since we were children.' This knowledge that circulates in the citrus farming community in Patensie could be considered as a form of local or inter-generational knowledge that is handed down through the generations. From a Community of Practice perspective, Wenger (1998) notes this knowledge could be seen as a shared repertoire or resource that has been generated within the community and is shared amongst or between members of the community. Legitimate Peripheral Participation (LPP) as described by Lave and Wenger (1991) proves useful in examining the process of sons participating in their fathers' practices to learn more about the practice.

Farmers learn through their interactions with other famers: The citrus farming community is a close-knit community in which most farmers know each other and interact on a fairly regular basis,

either through farmers' meetings or conversation in supermarket. From the data it was evident that farmers learn from each other through their interactions and relationships with each other, with these interactions centered on issues of common interest (such as exporting citrus, or dealing with new environmental regulations). Often when farmers are faced with problems and uncertainties they get together, informally or formally and collectively discuss these issues. The sharing of knowledge, experiences and ideas are key aspects within the Community of Practice. When farmers were asked how they dealt with problems and who they would ask for help many farmers responded that they would first ask a colleague, as shown in this statement 'We in the Gamtoos is [are] like a big family, the one helps the other one and you will never be given a cold shoulder when you go to somebody to ask them for help.' What was interesting to note in the data was that farmers tended to rely on each other for technical farming information, which indicates a confidence and familiarity with this information amongst the farming community of practice. In contrast, the majority of their conservation information in particular came from consultants, agricultural extension officers and from private companies such as fertiliser companies, indicating perhaps that this was a new area of knowledge for farmers in the Patensie area, which they are less familiar with.

Networks and partnerships create the space for learning to occur through purposeful and sustained interactions: Lave and Wenger suggest that learning happens through the interactions and relationships people form over time. Field (2003) notes that people make connections with people whom they share an interest, and by making and maintaining these connections over time, people are able to work together to achieve things. Figure 1 maps some of the main people/organisations the Patensie Citrus famers were interacting with at the time of the research.

Figure 1. Networked interactions of the Patensie citrus farmers



The data showed that farmers in the Patensie Valley have developed partnerships with a number of institutions and organisations over the years. The Farmers' Association, for example, was established close to one hundred years ago and so interactions with this association have an extensive history, whereas partnerships and interactions with private consultants have emerged in the past five years. One of the driving forces behind the recent use of consultants has been in response to the volatile export market, changing regulations and the introduction of international export standards to which all farmers are expected to comply. These are also factors that have led to a degree of uncertainty amongst many of the farmers. This brings another dimension to the Community of Practice, whilst farmers have the skills and knowledge to deal with some complexities, they have chosen to interact with specialists and consultants in areas of uncertainty, thus creating a process of learning from external individuals in new knowledge areas.

Change and uncertainty have been driving forces for learning to take place: Quite a unique finding in this study was that when farmers have been faced with challenges such as changes in marketing strategies and the implementation of new norms and standards (e.g. international environmental standards), they have come together as a community. It is therefore the process of change or uncertainty, or the threat of these, which has brought the farmers together to engage in collective, collaborative and purposeful discussions. Wals and Heymann (2004) note that often when people are faced with challenges, conflicts and uncertainty, they tend to get together in an attempt to respond to and adapt to these circumstances. There was evidence in the data that farmers started meeting around issues that concerned them over 100 years ago with the formation of the Farmers' Association. Since this time, farmers meetings have played a central role in being the provider of information and also a place where people come together to collectively discuss problems. It is from these early meetings that the COP emerged. In other words the COP resulted from the farmers' responses to changes and uncertainties in the area and industry. As external changes were taking place to the markets for example, so the community (of practice) were responding to and adapting to these changing situations. It was also noticeable that the Baviaanskloof Megareserve were using the Farmers' Association as their 'entry point' for discussing new conservation practices with farmers, indicating the usefulness of such structures for encounters with new knowledge.

Learning in other Communities of Practice

Whilst this study has revealed some insights into the ways in which the Patensie citrus farmers have come together, interacted and learned from one another through knowledge sharing, this is not a unique situation. In work undertaken with dairy farmers in Australia O'Kane, Paine and King (2008) noted very similar findings to those presented above. The authors also used a COP approach as a means to better understand the complexity of social processes and the relationships that exist between farmers and extension professionals. Some of their findings include:

- Farmers have developed good working relationships with a range of industry professionals such as seed companies, stock agents and agronomists.

- The members of the farmer group COP have shared expertise and passion for the enterprise of dairy farming and are engaged in expanding and refining that expertise. They are mutually engaged in the action of farming and maintain regular and intensive conversations with each other in their attempts to hone their expertise and produce the best results from the resources available to them.
- The core of the COP consists of farmers who bring the wealth of their locally contextualised knowledge to bear on discussions concerning the farm system.
- Farmers attending local meetings pay more attention to advice born of experience from successful farmers than they do to key scientists.
- The core members of the COP became the principle decision-makers while the peripheral members (industry) provided the group with boundary information by their connectivity with other groups (O'Kane, *et al.*, 2008).

In a study on environmental learning in Communities of Practice involving rural farmers in Zimababwe, Pesanayi (2008) also found that inter-generational knowledge sharing, farmer-to-farmer interactions were significant non-formal learning interactions. His study also found that risk and uncertainty (in his case risks associated with drought) was a key motivating factor for farmers to engage with each other and other boundary agents in order to learn how to respond. An interesting finding from the Pesanayi (2008) study, which was not as apparent in the Patensie case, was that boundary agents often created further uncertainty in communities of practice, as different boundary agents bring different messages, which lead to ambivalence. If considered in the light of the nature of the risks and uncertainties experienced by the Patensie farmers (trade-related and regulation-related), it is possible to see that different farming communities may experience different risks and uncertainties, which require different learning-centred interactions and responses.

Benefits of Working with a COP Framework

My study, together with the two other studies cited above, have all concluded that using a COP framework provides a good starting point for unpacking and understanding socially complex systems. In the case of the study with the Patensie farmers (Downsborough, 2007), a COP analytical framework allowed me to understand and make sense of some of the learning that was taking place firstly between farmers and then between farmers and the wider community. A COP framework also allows one to understand a context, in this research citrus farming, from the point of view of the people in it. In summary a COP framework is useful to social research as:

- it provides a context in which one can examine and understand learning;
- it is an effective way to describe and explain some of the social learning processes taking place in community; and
- it highlights the roles and relationships between individuals and individuals and the community.

There are also limitations to working with a COP framework. For example, the COP framework does not adequately theorise power relations, nor does it adequately theorise the role of language in learning. It can also lead to problems of conservativism, due to its reliance on contextual/situated learning analysis, which discounts wider knowledge and structural influences (Lotz-Sisitka, 2008). In this study I found that it was important to complement the COP analysis with a sound historical and wider contextual analysis, so that I could, for example, develop a better understanding of the power relations between conservation organizations and farmers, and the power relations that are invested in international trade regulations (Downsborough, 2007).

Conclusion

In this paper I have shown how a Community of Practice framework has been used as a means to engage with and analyse data generated through the research process with citrus farmers. The COP framework specifically highlighted key interactions and relationships within and between the community and provided insights into some of the sociological ways in which farmers learn. The paper has also shown that this theoretical framework is being used more widely in analyses of non-formal learning. The study has shown too, that while it is possible to identify key dynamics of learning drawing on COP, it does not easily provide a means to investigate historically induced power relations, or structural tensions and contradictions that exist in COPs, and such understandings need to be developed through complementing the COP analysis with in-depth historical and contextual profiling data.

Notes on the Contributor

This paper summarises and reflects on Linda Downsborough's research with citrus farmers undertaken as part of her Masters' degree at Rhodes University. In her current position, as a researcher in the Water Research Node at Monash South Africa, she continues to work on the ideas of networking, collaboration and social learning. E-mail: linda.downsborough@adm.monash.edu

Note

This paper is based on some of the findings in my Master's thesis (dissertation of limited scope) entitled 'Social Learning Processes in a Citrus Farming Community of Practice' (Downsborough, 2007). I would like to acknowledge the contributions of my supervisor, Professor Rob O'Donoghue, for his guidance in conducting the research.

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Exploring Learner Participation in Waste-Management Activities in a Rural Botswana Primary School

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Abstract

In Botswana, participation in environmental learning activities has been perceived as a central component of environmental education in formal education. Driven by the need to implement the objective of making the participatory approach part of the infusion of environmental education in the school curriculum as prescribed by the infusion policy, Botswana schools have come up with initiatives to involve learners in environmental education activities that seem to have 'a direct, perceived benefit to the learners' (NEESAP, 2007:9). Within this approach it is expected that learners should participate in these activities. However, Ketlhoilwe (2007) revealed that there has been a normalisation of environmental education into existing school culture through equating waste-management activities with environmental education. This generally entails cleaning activities by learners to maintain 'clean schools', which is directly associated with environmental education. Drawing from detailed case study data in one rural primary school with Standard 6 learners, I used Cultural Historical Activity Theory to investigate and explain how learners participate in these waste-management activities. Findings from this study revealed that attempts by teachers to meet the policy imperative through prescription of rules, and ascribing roles to learners in waste-management activities, create tensions. This gave rise to an elusive object of learner participation, as the purpose for their participation in these activities is not clear.

Introduction

In Botswana, participation in environmental learning activities has been perceived as a central component of environmental education in formal education (Botswana Government, 2007). Environmental education was introduced in schools as one of the main recommendations of the 1994 Revised National Policy on Education (RNPE) (Botswana Government, 1994). Through this policy, schools have been charged with the responsibility of producing environmentally responsible learners who will be able to handle the demands of an ever-increasing pressure of environmental challenges in their society (Cantrell & Nganunu, 1992). The National Environmental Education Strategy and Action Plan (NEESAP) ensured that environmental education was infused into the National Curriculum in 1997. In its 2007 review to assess the impact of its implementation and to accommodate new environmental needs and interests of its stakeholders, the NEESAP stated as one of the main guiding principles of environmental education that a '*participatory approach* shall be given special attention in planning and implementing environmental education activities and initiatives with a direct, perceived

benefit to the learners' (NEESAP, 2007:9, my emphasis). In part this action plan is responding to the Southern African Development Communities Regional Environmental Education Programme (SADC/REEP) initiatives to meet the Education for Sustainable Development (ESD) objectives of integrating sustainability practices into aspects of education and learning (Lotz-Sisitka, 2006). One of the themes of involving people in sustainable development actions within the SADC REEP framework is the 'need to encourage and further develop *participatory approaches* and methods in ways that are not superficial and token' (Lotz-Sisitka, 2006:20, emphasis original).

But Ketlhoilwe (2007), in his findings from a study on construction and interpretation of environmental education policy in Botswana, argues that there is a fundamental flaw with the policy of infusion of environmental education in the way it is currently being used in schools. His research reveals that there has been a normalisation of environmental education into existing school culture through cleaning activities by learners, based on instructions of teachers to keep the school environment clean. This has specifically been done through an association between 'clean schools' and environmental education (Ketlhoilwe, 2007:174). He specifically identified waste-management activities in schools – in particular the structured cleaning of schools in which learners participate – as one of the prominent normalising strategies equated with environmental education.

It is against this background that this study considered the need to rethink and explore learner participation by identifying existing tensions in the way learners are participating in waste-management activities in this primary school. The focus of the research was to determine how learners actually participate in these activities, because there seems to be a lack of genuine participation on the part of learners in these activities (Kethoilwe, 2007). The research probed the rhetorical and normalised emphases on participation, and sought further insight into how learners are engaged in participatory learning in these environmental processes. The study used Cultural Historical Activity Theory as a methodological tool to explore tensions relating to the normalisation of learner participation in waste-management activities in this particular school.

A conceptual analysis of learner participation

Hart (1997:5) views the meaning of participation to be a process of sharing decisions that affect children's lives in the community of which they are part. According to his and other researchers' work, it is unrealistic to expect children to suddenly become responsible adult citizens by simply engaging children in cleaning activities, litter campaigns, recycling practices, etc. without prior exposure to the appropriate skills and responsibilities that foster competence and agency to participate in the day-to-day management of their immediate environment, which includes school, family, neighborhood and community (Hart, 1997; Chawla & Cushing, 2007). These researchers see shared decision-making in issues that affect children's lives as an important dimension of meaningful participation. This was the main aspect that this research attempted to investigate.

Environmental education should contribute to the learners' ability to act and effect change as well as develop civic agency in them (Uzzell, 1999; Hart, 1997; Graham, *et al.*, 2006; Stevenson, 2007). It then follows that any associated knowledge and insight that they acquire

during their participation in these activities, should in essence bear some meaning to learners (Uzzell, 1999). Uzzell argues that the way learners are involved in these normalised strategies results in fragmented experiences in which learners are only engaged in contributing to immediate or short-term solutions to environmental problems in terms of a 'technological fix within a framework that is mechanistic and piecemeal' (402). According to him, these strategies impart knowledge that is not action-oriented with schools mainly focusing on transmitting knowledge to learners, 'who have thus not been afforded the possibility of *actively appropriating and internalizing that knowledge*' (*ibid*., my emphasis). Jensen (2000) suggests that in order for this to be achieved, there is a need to move from this rhetorical and normalised narrow view of participation to a broader approach that seeks to incorporate the socio-cultural and historical contextual factors that influence participation of learners in these waste-management activities.

Learner participation: A socio-cultural historical approach

Learner participation in waste-management activities in schools within a socio-cultural and historical context can be understood and/or analysed through Cultural Historical Activity Theory, which has laid greater emphasis on situated (Lave & Wenger, 1991) and socio-cultural approaches to learning (Edwards, 2005; Jensen, 2000). According to Edwards (2005), the cognitive roots of participation in the socio-cultural context can be traced back to Vygotskian cultural psychology, which viewed cognitive developments to be a result of a dialectical process, where the children learn by shared problem solving experiences through participation with someone else, such as an adult and peers within their surrounding culture (Daniels, 2001) because knowledge is distributed across the community (Edwards, 2005; Daniels, 2001) that the child is part of. According to Daniels (2001:70) the theory provides a view of developing cognition and its relationship between societal, cultural and historical factors from the notion of the prevailing context. Daniels goes on to recognise that:

> Cognition is distributed among individuals … knowledge is socially constructed through collaborative efforts to achieve shared objectives in cultural surroundings and that information is processed between individuals and tools and artifacts provided by the culture. (2001:70)

The central role for contextualising the activities is that when analysing learner participation in these waste-management activities, it is not only the activities that are going to be analysed:

> but also who is engaging in that activity, what their goals and intentions are, what objects or products result from the activity, the rules and norms that circumscribe that activity, and the larger community in which the activity occurs. (Jonassen & Rohrer-Murphy, 1999: 62)

It is therefore important to analyse waste-management activities within their context, as this provides a useful framework for understanding the totality of learner participation in context (Jensen, 2000; Jonassen & Rohrer-Murphy, 1999).

Within this notion, participation is mediated by cultural and historical tools which modify how the learners will achieve their object (Daniels, 2001) in the activity. Tools are created by subjects who are individuals and social groups of which the learner is part, in order to interact with their environment (*ibid*) and achieve their objects within an activity system focusing on the waste-management activities. In this particular study it was important to identify the material object, that is the actual waste-management activity object, that the school is working on, and the ideal object, that is the subject's motivation for participating (Hardman, 2005; Kaptelinin, 2005). Engeström (1999; 2000) proposed a much larger and expanded collective activity system than the cultural mediation system originally proposed by Vygotsky, that considers additional dimensions. This formed what is known as second-generation activity systems that include community, rules and division of labour (roles) (Engeström, 1999). The division of labour refers to both how the roles, tasks and duties between the members of the school community (learners, teachers, cleaners, etc.) are defined and also how power and status are divided (*ibid*).

Meaningful participation in the school's waste-management activities should show evidence in the learners themselves, by the nature of the objects that motivate their participation, the mediating tools they use, for example, what facilities and materials (conceptual and physical) they use to support them, the community of which they are part (their peers, teachers, and others) and how they interact within this community, the rules that pattern their participation (e.g. norms and rules in the school and community related to waste management), and the division of labour influencing their participation in waste-management activities (Engeström, 1999; Edwards, 2005). These structures form what Engeström calls nodes of an activity system (Engeström, 1999).

Each of these nodes is understood not as a constant entity but as undergoing continuous change, which in part is brought about in the system's response to tensions or contradictions (Engeström, 1999; 2000) that arise within and between these nodes.

Research Participants and Research Methods

This study was undertaken in a rural school in Kgatleng, a region in the southern part of Botswana. The research participants (sample) were seven Standard 6 learners, a teacher, the school cleaner and other relevant actors in the school. The unit of analysis was the group of learners who were made up of three boys and four girls of an average age of 11 years, all of whom were participating in waste-management activities in the school.

In this study participatory approaches were used to work with learners to investigate how learners were participating in the school waste-management activities and to identify existing tensions in the system.

The data generation methods for the case study drew on observations of waste-management practices, focus group interviews with learners, and show-and-tell explanations by learners. Observations were mainly used to see how learners participate in waste-management activities. This was accompanied by learners' narratives, which they used to show, tell and explain how they participated in these activities through informal conversations as they went going about their activities. Learners also took photographs capturing aspects of some waste issues that

concerned them. This was followed by focus group interviews with learners and interviews with teachers and any other subjects within the school community and other stakeholders who were directly involved with the waste-management activities to generate data to enrich the observation and conversation data. Focus group interviews with children were important. Levine and Zimmerman (1996) cited by Hennessy and Heary (2006:239) acknowledge the children participating:

> … as experts. Thus a child participating in a focus group should not feel that he or she is being questioned by an adult but rather that he or she is sharing experiences with a group of peers.

Interviews were very useful tools for unpacking both the learners' and teachers' motives in the activities (Hardman, 2005:102). The data generated was analysed to produce a wider picture of learner participation in the school's waste-management activity system as the unit of analysis with categories arising from both the empirical data and theoretical framework used to reveal existing contradictions and tensions in the activity system.

Findings of the Study

School community context

A key dimension of the analysis was to develop a deeper understanding of the social context and environment in which the school waste-management activity system is operating to provide adequate insights into the cultural historical context of the school and its practices. The school is in a typical Botswana rural area surrounded by fields and cattle posts, with most families being of very poor backgrounds as described by the school authorities. The community comprises the 146 learners, nine teachers and one General Duty Assistant or cleaner employed by Council, who all work together in acting on a shared object of waste management.

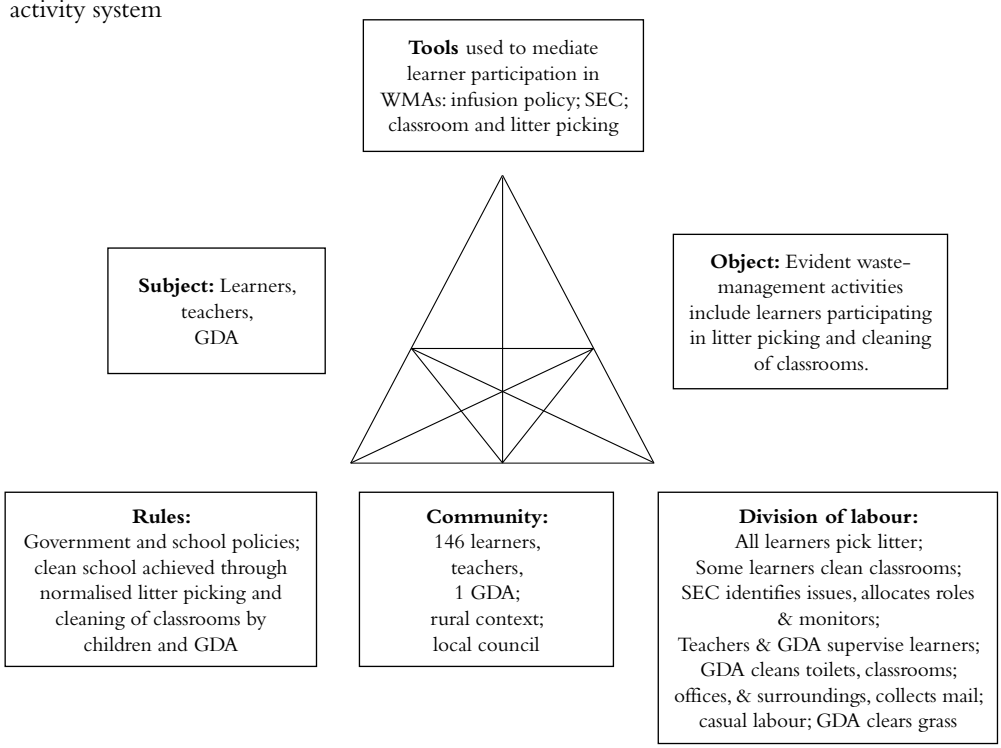
Through regular observations, I was able to establish that the school generally looks very clean in terms of litter with only a few papers clotting the school grounds sporadically. The District Council is responsible for the supply of material resources for waste management and the general technical maintenance of the school. There are two types of toilets, pit latrines, which were utilised by learners at the time of this research, and non-functional water-system toilets, which had been out of operation for years awaiting maintenance by the Local District Council. The toilets are not regularly cleaned. Most of the time boys utilise the bushes and grass around the toilets for their sanitary needs.

School waste-management activities

The school manages waste mainly through litter picking, classroom cleaning, weeding of the school grounds and toilet cleaning, which are all supposed to be the duties of the General Duty Assistant. However, Council sometimes once a year employs casual labor to clear the grass. The learners are actively involved in litter picking and classroom cleaning.

Litter picking and classroom cleaning form the main object of the school's waste-management activities to which learner participation is directed in order to embrace/incorporate the aspect of 'participation' as demanded by the infusion policy (NEESAP, 2007:9). The School Environmental Committee, made up of three teachers, identifies waste-management issues, makes rules on how waste should be managed and allocates roles in the various waste-management activities in the school. In part the School Environmental Committee is informed by a ministerial directive (Government of Botswana, 2006), which came from the Ministry of Local Government and Lands, under whose administration all primary schools fall. The directive barred learners from cleaning, particularly bush/grass clearing and toilet cleaning, both of which learners used to do previously. These duties are supposed to be done by the General Duty Assistant. Learners participate in classroom cleaning and litter picking under the supervision of their teachers and the General Duty Assistant. However at class level when learners are not supervised, they set their own rules and allocate themselves roles during classroom cleaning, though they sometimes face a challenge among themselves of some learners who refuse to cooperate. Figure 1 summarises the school's waste-management activity system at a general operational level.

Figure 1. School's waste-management activity system reflecting each component of the activity system



Acronyms: WMA: Waste-management Activities; GDA: General Duty Assistant; SEC: School Environmental Committee

Evidently the school culture is relatively authoritarian, in the sense that teachers make all decisions and clearly rules within this school community, responsibilities, tasks and power are largely not negotiated with learners. The activity system also seems to be influenced by the history of policy interpretation by teachers who have been deploying normalising strategies (Ketlhoilwe, 2007) of equating children's cleaning to environmental education. Partially embedded within these historically developed mediation strategies is the influence of culturally authoritarian Tswana traditions that seemingly continue to pervade pedagogical practices in Botswana schools (Tabulawa, 1997).

Discussion

Emerging contradictions

The discussion focuses on the emerging contradictions that are arising in the school waste-management activity system to establish what objects the learners and teachers are acting on in different contexts, the form of participation that learners are taking in these activities and how this participation is mediated to achieve the objects.

Infusion policy imperative and school's choice of mediating tools

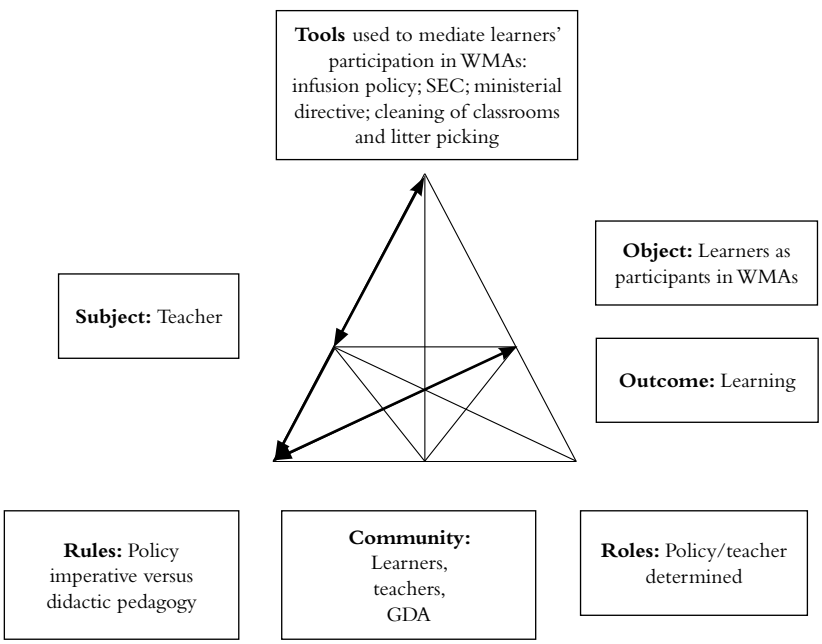
Driven by the need to implement the objective of making the participatory approach part of the infusion of environmental education in the school curriculum as prescribed by the infusion policy, the School Environmental Committee has come up with activities and initiatives of trying to involve learners in waste-management activities that seem to have 'a direct, perceived benefit to the learners' (NEESAP, 2007:9). Within this approach it is expected that learners should participate in environmental education processes. It becomes clearly evident the school has decided to use waste-management activities as the main mediating tool of incorporating the participation of learners in environmental education as evidenced by the focus on such activities, which seem to form the central component of environmental education processes in this school. These activities are litter picking, toilet and classroom cleaning and clearing of grass in the school premises. These are all seen as part of a comprehensive environmental education programme that addresses waste generation at source and is geared towards the reduction of waste in the school. Figure 2 illustrates the activity system that the teacher occupies in the school waste-management system and Extract 1, which follows thereafter, suggests a developing contradiction (represented by double-headed arrows) between the teachers' desire to meet the policy imperative of developing meaningful participation for the learner, and creating a clean school using learners as cleaners.

Extract 1: Interview with teacher (T) who is a member of the school environmental committee

> **T:** I believe these days what we do in class is driven by objectives, objectives in the syllabus. My assumption is that they do environmental education when these objectives are being addressed in class and they apply what they learn in class when they do all these things … making sure that they live in a clean environment, that is not littered … which is not dirty …

This contradiction becomes highlighted by the introduction of the ministerial directive. While there seems to be no obvious tension between the curriculum motive arising from the infusion policy and the directive, one begins to note a contradiction emerging between the infusion-policy imperative to have learners participate in environmental education and the directive, which according to teachers, limits learners' participation in waste-management activities. This has strongly impacted on learners' participation in waste-management activities in the school as far as the school's desire to meet the policy objective is concerned. This contradiction is clearly revealed and emphasised in Extract 2 from the school head's remarks.

Figure 2. School WMA activity system as determined by the teachers in response to policy



Extract 2: School head (H)'s dilemma in response to the ministerial directive

H: … we don't really feel good about it [directive] because that's [children's cleaning] part of learning. Besides keeping the school clean, which is important, as well the child has to be responsible because by so doing you are trying to build the child to be divergent, without them expecting things to be done for them all the time. The child has to know that if he goes out there and comes across a can he has to pick it, or if he doesn't clear grass, he can be bitten by a snake as you can see how tall that grass is. But now our hands are tied because if now they say we should not use children to do all these things how can they learn to be responsible …

This contradiction plays itself out as a tension between the schools' epistemological assumptions regarding the need to mediate learner participation through cleaning and the infusion policy's demand for a more learner-centered, meaningful and participatory approach in environmental education (NEESAP, 2007; Lotz-Sisitka, 2006).

School's culture and historical influence on school environmental committee's choice of tools

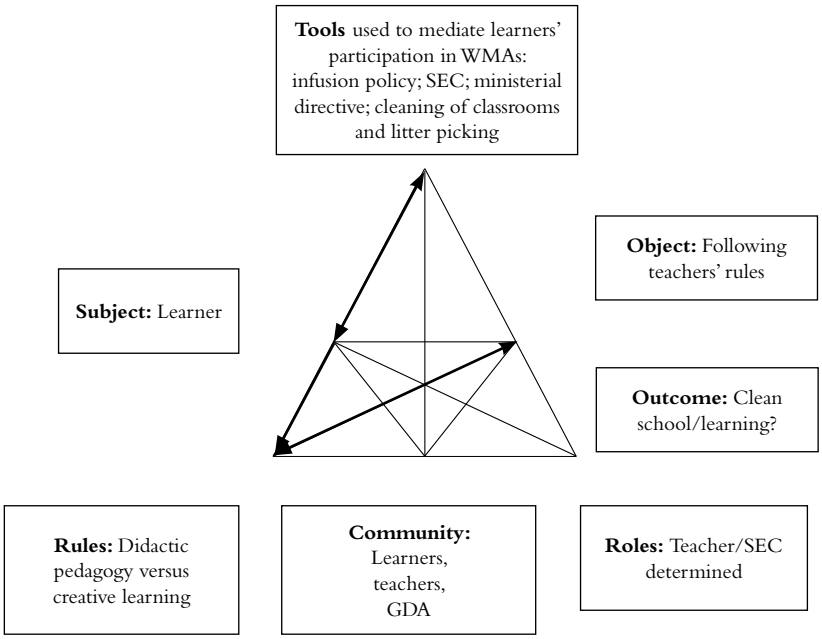
From the discussion above it is evident that the existence of the School Environmental Committee in the school is probably one of the greatest sources of contradictions that emerge. The School Environmental Committee is constituted of teachers only and is tasked with identifying waste-management issues and actions to be undertaken to address these issues. This is to respond to the policy objective discussed above, and to move from the transmission didactic pedagogy (Tabulawa, 1997; Ketlhoilwe, 2007) that is still prevalent in Botswana schools to a more participatory approach. The School Environmental Committee's decisions seem to be largely influenced by the school's culture and history where teachers, using their authority, have always used learners for cleaning activities as tools for managing waste. This is illustrated by the teacher's comment in Extract 3 below. This contradiction plays itself out in the manner in which the School Environmental Committee prescribes the rules that govern waste-management activities and roles that learners play in these activities without involving learners in the decision-making process and without due consideration of how this has limited learner participation.

Extract 3: Historical influence on the teacher's choice of tools for learner participation

> **T:** I mean the same kids who pick litter everyday as usual, but who can no longer do these other duties [referring to toilet cleaning and grass cutting?] as we are not allowed to use them to do that any more. They all pick litter normally … after school, all of them pick litter.

At a micro level in the day-to-day participation in waste-management activities the School Environmental Committee therefore creates their own rules on how children should participate in these activities, which creates constraints (Engeström, 1999). These rules create constraints in that they generally discourage children from exploring other creative ways in which they can positively participate in these activities if granted the opportunity without necessarily carrying out these cleaning activities, or even if they do, understanding their purpose for doing this in line with the policy imperative. It becomes quite clear that the division of labour within this school community, responsibilities, tasks and power are not negotiated with learners, as roles are clearly stipulated and determined largely by the School Environmental Committee and teachers. Primarily the role of learners, at the most basic level, is to act as instructed by the teachers and to respond as expected as illustrated in the following activity system in Figure 3.

Figure 3. Learners' response to teachers' rules activity system



This tension is clearly depicted in the learners' identification of toilets as the main waste issue requiring urgent attention. This is contrary to the teachers' choice of litter as the school's main waste issue as reflected in Extracts 1 and 2, in which the teacher and the school head identify litter picking. This contradiction is captured in the next extract 4, from the learner focus group interviews.

Extract 4: Focus group interview with learners (L) revealing learners' object in the WMAs

Q: What is it that you like about your school?
L1: Our school is always clean. There are not many litters in our school.
L2: Yes, because every Friday we pick up litters. Our teachers teach us to pick litters.

Q: Every Friday you pick up litter? What do you like about picking litter?
L1: Because the school I was at in the city, they were not picking up litters. It was dirty, schools in the city are dirty. They have many litters.

Q: What is it that you don't like about your school?
L3: The toilets are dirty …
L4: … She [cleaner] cleans them sometimes, but sometimes she doesn't clean them properly.

L3: There are other toilets, the 'English ones' (flushing toilets) but they are not being used because they are not working. So we wish they could be fixed and teachers would show and teach children how to use them because when the children finish using them they would not how to flush them.
L5: The other thing that I don't like in our school is that other children spoil the name of the school.
Q: How?
L5: They don't follow the rules from teachers. They don't pick up litters in morning in front of the school when they see papers lying around …

There is thus a contradiction between policy drive to develop creative, competent learners to accommodate new environmental needs and interests of learners (NEESAP, 2007) and the teachers' needs, which curtail creativity by ensuring that learners abide by the rules set by the School Environmental Committee. This indicates that the teachers work on a different object from that of learners. The teachers' desire is to create a clean school by prescribing rules and roles (which focus on litter picking) for learners in the waste-management activities. This impacts on the activity system, creating a contradiction between their object and the children's object of responding by acting as required. Learners are offered opportunities neither to specify their object in these activities nor the choice of means to work towards it, at times resulting in their lack of cooperation as revealed in extract 4 as they do not fully understand the purpose of their participation. This results in their lack of response as informed, full participants and contributing stakeholders in these activities (Simovska, 2008; Jensen, 1997; Jensen, 2000). More significantly perhaps, is the object that concerns the learners, i.e. dysfunctional and unsanitary toilets, is not addressed in the school activity systems or discourses. Enabling fuller participation by learners in identifying waste-management activities may have brought this to the surface in school discourses and waste-management practices.

Role of the local council and the change in the teachers' object on learner participation

It is evident that the local council is incapacitated in both the provision of services and supply of required materials resources to facilitate the waste-management activities in this school. Certain duties like cleaning of toilets and clearing of grass, which previously were done by children, have been taken over by Council, which has employed a General Duty Assistant and casual labor for clearing grass. But Council does not seem to be able to meet its obligation in fulfilling its mandate. The General Duty Assistant is unable to meet up to the job demand that she is tasked to do. The casual labour that is engaged once a year is unable to clear all the grass and bushes, which the children then utilise for their sanitary needs. This is captured in the extract below by the teacher.

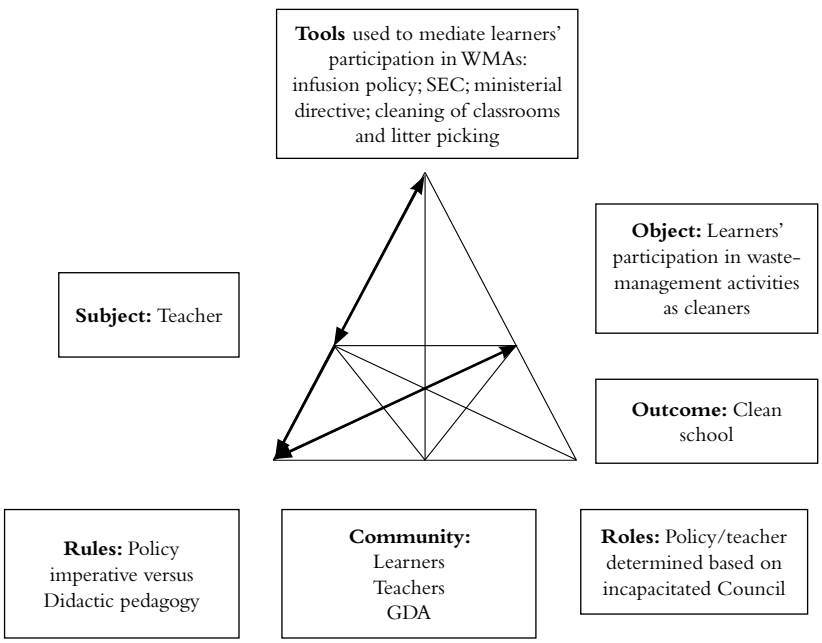
Extract 5: On council's lack of capacity to meet its obligation

T: Council is the one that is supposed to hire casual labor to clear that grass but last time they had said they will do it but they had no funds to employ people ... If the funds were there they would have cleared it already, but as you can see …

… The General Duty Assistant is the one who cleans toilets. She's supposed to clean them daily but she's not managing because she has other things to do, like the cleaning of classrooms. We also send her to go and collect mail from Manana. So she's unable to do all this work alone.

This develops into a contradiction in that learners are instructed to fill the gap created by the General Duty Assistant going against the directive, which is an external rule that bars learners from participating in certain activities. From the extract, it becomes clear that the teacher's object has shifted from the learners participating in waste-management activities for learning purposes to them being cleaners (see Figure 4). This depicts the elusive (Hardman, 2005) nature of the teacher's object under different contexts hence bringing into question the mediation of leaner participation in these activities for meaningful learning and becoming action competent learners (Simovska, 2008; Jensen, 2000, 1997).

Figure 4. School WMA activity system - Teachers seeing learners as cleaners



Forms of learner participation in the school WMAs

Drawing on Jensen's (2004) matrix developed to document participation in learning within an action competence discourse, (in Table 1) and how learners participate in the activity systems outlined above, evidence of existing forms of learner participation and how it is mediated is depicted. The rows represent different forms of learner participation in the waste-management activities and the columns illustrate how themes of participation are selected, where rules and roles emerge from, and who decides on the actions to be undertaken.

The shaded top part of the matrix clearly reveals the limited participation of learners, as they do not seem to influence any decisions and suggestions taken regarding the rules governing waste-management activities and their roles in them. In the process the learners' ideas, views and preferences as regards the roles that they can play in these decisions (Jensen, 1997, Simovska, 2008) are almost totally ignored. This disregard for learners' needs and views is revealed in the elusive nature of the teacher's object under different contexts as discussed earlier. This compromises the learners' commitment and drive in their participation as they lack the coherent knowledge of how decisions that affect them are reached, and the nature and scope of the waste management in the school as they are not afforded opportunities to either specify the object or come up with means to work towards it. Tensions are therefore created and as Jensen (1997:422) argues, this limited 'knowledge cannot be transformed into action if commitment and courage are not present' in the learners as they are not engaged as full competent partners in these activities, creating tensions as revealed in the activity systems.

It is, however, worth noting that the boundaries of participation depicted in the matrix are fluid (Jensen, 2004) and that even where there seems to be non-participation (*ibid*) some limited forms of participation, intended or unintended, still occur. This is illustrated in the matrix in the case where some learners would not follow the rules of cleaning unless supervised. This reflects evidence of the emerging tensions in the activity system, and also that these tensions are in fact evidence of participation, albeit in the form of resistance or conceptualization of alternative objects for participation.

But as tensions are suggestive for change (Hardman, 2005; Engeström, 1999), there is a need to explore available learning opportunities, in which learners can be allowed reposition themselves in relation to waste-management activities to see whether and how their participation and motives can be reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of their participation (Edwards, 2005; Engeström, 2000) than is reflected in this case study context. This can be achieved when learners question their participation and are critical and reflective in a democratic way by forming their own criteria for decision-making and choice of action (Simovska, 2008; Jensen, 1997; Jensen & Schnack, 1997). This should shift participation forms to the lower parts of the matrix. It can also be anticipated that active, meaningful participation of learners can indeed lead to shifts in pedagogical practice as relates to the use of waste-management activities as a tool to achieve the goals of environmental education in Botswana.

Table 1. Matrix of forms of participation and mediation (adapted from Jensen, 2004)

Mediation of WMAs **Forms of participation**	How the theme for participation in WMAs is selected (Object)	How the rules in the WMAs are set	Allocation of roles in the WMAs	Decisions on what actions are undertaken in WMAs
Teachers' decisions told clearly to learners	SEC identifies WMA issues that need attention	Teachers/ SEC set rules in response to Infusion Policy objectives	Teachers/ SEC based on ministerial directive	Teachers/SEC
Teachers inform, all learners accept		Learners follow teacher rules	Learners assume allocated roles	Not negotiated with learners
Teachers inform, some learners accept, some learners reject	Some learners do not pick up litter or clean unless supervised		At a micro level learners allocate themselves roles	
Teachers inform, all learners reject				
Teachers' suggestions, common decisions				
Learners' decisions, told clearly to teachers				
Learners inform, teachers accept				
Learners inform, teachers reject				
Learners' decisions, told clearly to other learners				
Learners inform, some learners reject				
Learners inform, some learners reject				
Learners inform, all learners accept				
Learners inform, all learners reject				
Learners' suggestions, common decisions				

Conclusion

It has emerged from this study that waste-management activities have been used in this school as an overall mediating tool for learner participation in environmental education. The assumption appears to be that this tool will transform pedagogy and consequently, change the pupils' into competent participants in environmental education. But these findings reveal that there are clear developing tensions and contradictions between participants, tools, rules and objects for developing competent learners through their participation in waste-management activities where, in response to the policy the teachers' object is elusive and hence they have used these activities as tools for lower level drill and enforced practice skills (Hardman, 2005). This is opposed to waste-management activities being used as a mediating tool for creative learner-centered learning where the object should be development of the learners' understanding of how their participation in these activities is structured and how it evolves and influences any immediate course of action (Simovska, 2008; Jensen, 2000, 1997) in the waste-management activities that the school undertakes. In this study the importance of learners being able to define the priority waste-management activities has also been revealed.

Future research needs to explore opportunities that can be offered to learners to come up with their new visions and alternatives (Jensen, 2000) which will develop the learners' capacities and capabilities (Lotz-Sisitka, 2006) through their participation in waste-management activities that also allow opportunities for social changes in the school, and meaningful learning, hence responding to the SADC REEP initiatives within the Education for Sustainable Development (ESD) framework (Lotz-Sisitka, 2006) that argue for meaningful participation in environment and sustainability education in southern Africa.

Notes on the Contributor

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Endnote

This research is part of a broader PhD study that seeks to explore expanded learning opportunities and space available for learners' suggested alternatives and visions for their participation in the school's waste-management activities to see what tools they can use, their impact and whether this can lead to a shift in learner participation to develop their competence and capabilities.

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Exploring the Relevance and Quality of the VaRemba Initiation School Curriculum and its Impact on Formal Schooling in a Rural District in Zimbabwe

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Abstract

The study explores the relevance and quality of the VaRemba initiation school curriculum and analyses its impact on formal education. A case study design was used to come up with a descriptive, interpretive as well as an evaluative account of the initiation curriculum and its impact on formal schooling in Chomusenda village in Mberengwa district of Zimbabwe. Interviews, questionnaires, observations and analysis of records were used to gather data from teachers, initiates and elderly community members. The study established that the VaRemba initiation curriculum perpetuates gender stereotypical roles and has some aspects which are unsustainable and in tension with formal schooling. Girls are channeled towards reproductive roles and the private sphere while boys are geared for productive roles and public sphere. High dropout from formal schooling is witnessed soon after initiation, as the initiation curriculum seems to tell initiates that they are 'ripe' for adult life. However, the curriculum has aspects that contribute to moral development of young people. The study recommends a paradigm shift, to embrace the ubuntu philosophy in the two education systems as a way to harmonise them.

Introduction

The question 'Education for what?' is increasingly coming to the forefront, focusing on quality and relevance of education, its content and pedagogical methods, notably in the perspectives of education for sustainable development (UNESCO, 2008:5). The quest for quality and relevant education has led to concerted efforts in some education systems to rethink what knowledge is worked with in education systems, and how different knowledge systems articulate attempts to improve educational quality and relevance. Thus we witness an unprecedented interest, especially in postcolonial nations, to include indigenous ways of knowing into formal education as a way of strengthening human knowledge and practices for a better life. It has emerged in many studies that there is need to draw on or integrate traditional knowledge and indigenous ways of knowing into formal curricula and pedagogies (Hogan, 2008; Lotz-Sisitka, *et al.*, 2006b; Miller, *et al.*, 2006; Shava, 2005; UNESCO, 2004). Several studies, especially in the southern African region, show a concern for how best indigenous ways of knowing can be put to use to enhance learning and/or practice in formal and non-formal institutions (Odora Hoppers, 2001; O'Donoghue, 2005; Shava, 2005). This current trend seems, however, to not adequately engage with the possible negative outcomes of some of the indigenous practices.

One such instance is the complex knowledge-practice environment surrounding initiation rites in indigenous cultures. Some researchers (Le Roux, 2004; Janssen, 2007) look at anthropological-political formulations of male initiation in terms of the cultural necessity surrounding the practice. Le Roux, *et al.*, (2007), however, take this research a step further and identify concerns about the link between initiation rituals, stress and the onset of schizophrenia in initiates. None of the reviewed research on initiation processes, however, considers the initiation process as a curriculum or a socialisation process that runs parallel to the formal school curriculum with the potential to disrupt or complement it.

In view of this gap, we saw it necessary to engage with various other socialisation forces that also play a significant role in shaping the cognitive and moral development of communities in discussions on educational quality and relevance. We therefore chose to interrogate the relevance and quality of an indigenous initiation curriculum of the VaRemba people of Mberengwa district in Zimbabwe as well as assess its impact on formal schooling.

When exploring issues of relevance and quality in the context of a university programme, Ketlhoilwe and Maila (2008) noted that the terms 'relevance' and 'quality' are perceived differently by different scholars and researchers. There are however, agreed upon indicators of quality and relevance in education. For instance, the director general of UNESCO, Kaichiro Matsuura, points out that quality must be seen in light of how societies define the purpose of education UNESCO (2004). He further adds that two principal objectives are at stake: the first is to ensure cognitive development of learners. The second emphasises the role of education in nurturing the creative and emotional growth of learners and in helping them to acquire values and attitudes for responsible citizenship. The director general also adds that quality must pass the test of equity. Shumba, *et al.* (2008) add that education of good quality and relevance empowers people, including the poor, to meaningfully act on the challenges posed by risk and vulnerability. Lotz-Sisitka (2008) interprets Shumba, *et al.*'s conception of quality and relevance as collective agency, which is a critical factor in enhancing educational quality.

Reading through the above conceptions of quality and relevance, we conclude that education would be considered to be relevant and of good quality if it develops learners' cognitive skills as well as their values and attitudes in a way that contributes to a wider re-orientation of society towards equity and sustainability. Andrews (2004) also sees education of good quality to be crucial, especially for rural people, in achieving both the Education for All (EFA) and Millennium Development Goals (MDG) goals of eradicating extreme poverty and hunger, promoting gender equity and ensuring environmental sustainability.

Background, Study Purpose and Research Objectives

For more than 10 years one of the researchers has been teaching at a school in Mberengwa rural district in the midlands province of Zimbabwe. She observed that the VaRemba people who reside in the community still practice initiation ceremonies with utter conviction. VaRemba, also known as Lemba, Balemba, VaSena, VaSoni, VaMwenye or VaLepa, are of the (Zhou) (elephant) totem. They claim to have come to Africa from Iraq, and they consider themselves to be Israelites who migrated to Africa after the Babylonian invasion of 586/7 B.C. (Le Roux,

2004). As Israelites, they then profess to be descendants of the biblical Abraham who was given instructions by God:

> Genesis (17:10-14): … God said to Abraham, 'this is my covenant with you and your descendants after you, the covenant you are to keep: Every male among you should be circumcised. … For the generations to come every male among you who is eight days old must be circumcised, including those born in your household or bought with money from a foreigner – those who are not your offspring. … any uncircumcised male, who has not been circumcised in the flesh, will be cut off from his people: he has broken my covenant.'

Of much interest to the educator, were behaviour changes apparent in students soon after graduating from the initiation school. The most prominent changes included poor participation in schoolwork, high school dropout rates, especially amongst girls, and stronger social associations along ethnic lines. It was against this background that the researchers found it compelling to investigate aspects of the VaRemba initiation curriculum, so as to probe its relevance and quality as well as assess its impact on formal education. In exploring the relevance and quality of the VaRemba initiation curriculum, the study was guided by the following objectives:

- to gather information on the VaRemba initiation school curriculum;
- to probe the relevance and quality of the VaRemba initiation curriculum;
- to analyse the impact of the VaRemba initiation curriculum on formal education; and
- to suggest possible recommendations that can harmonise the education systems.

The study was carried out in the full spirit of Education for Sustainable Development (ESD) as we are halfway through the United Nations Decade of Education for Sustainable Development (UNDESD) (UNESCO, 2005). We also took cognisance of the fact that ESD promotes indigenous, traditional and local knowledge, and values the importance of cultural issues in identity formation and in ensuring social cohesion and relevance (Lotz-Sisitka, *et al.*, 2006b; UNESCO 2005). However, we also embrace the idea that the ESD context offers the opportunity to be critical of cultural values and beliefs that 'work against' ESD principles (*ibid*). An ESD framework further required us to engage with complex and tension-laden cultural issues, as we were aware that our suggestions could be contrary to some expected norms.

We also consciously chose the gender dimension to interrogate the element of equity in establishing the relevance and quality of the initiation curriculum as well as its impact on formal schooling. For us this is the equity test for the curriculum as proposed by the director general of UNESCO (2004). On the other hand, the gender equity test would show the position of the initiation curriculum in the context of numerous calls by international initiatives; Millennium Development Goal 3 as well as the Education for All Goal 5, which both call for the elimination of gender disparities in primary and secondary education by 2005 and achieving gender equality at all levels by 2015 (UNESCO, 2005; Lotz-Sisitka, *et al.*, 2006c).

Methodology

A case study design was adopted to come up with a descriptive, interpretive and evaluative account of the initiation curriculum. The design made use of suitable instruments such as interviews, questionnaires, document analysis and observations to gather information for interrogating the relevance and quality of the VaRemba initiation school curriculum.

The design further used techniques such as comparison, contrasting, classification and evaluation to further explore the relevance and quality of the initiation curriculum as well as to make inferences on its impact on formal learning. Both quantitative and qualitative data was used, although quantitative data generated from questionnaires involving a small number of respondents in the case study context was used descriptively to complement qualitative data. The size of the sample was not adequate for making statistically significant conclusions, but in the context of the case study design, the use of various instruments allowed for a certain measure of methodological triangulation. Brannen (2008) supports using mixed methods, and states that mixed methods may be used within another research strategy, for example a case study design in which a number of different methods are embedded. Bryman (2008) also indicates that quantitative and qualitative research can be combined in the research process to increase the validity of the study.

The research was conducted in Chomusenda community of Mberengwa district in 2007. This rural community has a total of 28 villages, four primary schools and one secondary school. The study was undertaken mainly with secondary school teachers and students, the reason being that most of the initiates were in secondary school.

Ten out of 15 teachers (66.7%) who had been at the secondary school for a minimum period of five years were given questionnaires. The five-year period guaranteed that the teacher had an appreciable experience in dealing with initiates. The main purpose of the teacher questionnaire was to generate descriptive data that could inform insights into the impact of the initiation curriculum on formal schooling in the school concerned.

Questionnaires were also used to probe the initiation curriculum with new initiates. Out of 23 boy initiates, 15 (65.2%) answered the questionnaire and eight girl initiates out of 12 (66.7%) answered the questionnaire. We thought questionnaires would allow respondents to freely express their views, attitudes, perceptions and experiences concerning the initiation curriculum. Some questionnaire items were designed to gather information on the curriculum knowledge as well as the philosophy behind it.

We only managed to deal with one group of initiates. Administrative as well as financial constraints prohibited us to follow-up with other initiates who had gone through the initiation school in previous years. This was a major limitation of the study. However, as researchers we believed that triangulating data gathered from initiates with that gathered from other sources using other tools would help to develop trustworthiness within this case study context. Given that the data sample was small, and the case context was limited to one school, we can only draw tentative conclusions from the study. Its value is more in opening up the issues for further probing, than for making definitive conclusions.

Interviews were also used to gather data. Some of the information that emerged from the questionnaire was used to develop further perspective on the interview data. The interviews were targeted at elderly men and women in the community. We used interviews to gather more in-depth data about their experiences and feelings, and to examine their attitudes, interests, concerns as well as their interpretation (Gay & Airasian, 2000) of the initiation curriculum and its relationship to formal schooling. Through interviews, we sought to jointly construct meaning with interviewees (*ibid*) concerning the initiation curriculum.

A total of 12 interviewees, seven women and five men, participated in the research. The interviews were semi-structured in the sense that the interviewer was free to formulate other questions as judged appropriate in order to facilitate specific and detailed response for the purposes of observing the reaction, and discerning perceptions and attitudes of different people with regards to initiation ceremonies.

The study also used observation as a data-gathering technique where initiates were observed in naturally occurring interactions, especially at school. This was done over a three-month period. As observers, we could not get access to the actual physical initiation school because of the sacredness and secrecy surrounding these institutions. Our observation was therefore concentrated on pre- and post-initiation behaviours and responses of initiates.

The study further relied on record analysis. We specifically looked at absenteeism and dropouts using school attendance registers and we used progress records to make inferences on school performance. Analysis of records enabled us to gather numerical data that enabled us to explore the relationship between the initiation curriculum and the formal learning context, through comparison, contrasting, classification and evaluation. The use of various sources of data allowed for data triangulation in the case study. The assumption underlying this was that no single source would provide sufficient data to furnish all the research objectives.

The study was not without challenges. One big challenge was that most people in the community were not willing to openly discuss the facets of their cultural practice. Some potential respondents would ask for payment as big as an ox; others would not take part for fear of victimisation by senior members of their community; some simply did not want to 'sell out', since to divulge the VaRemba initiation curriculum to a *mushenji* (non-VaRemba) would be violation of VaRemba secrecy protocols. At one of the schools, an initiated teacher tried to prevent the completion of questionnaires by both teachers and students, threatening the researchers with whipping and reporting the matter to the chief. These potential respondents chose not to participate in the research.

These challenges were overcome through various research ethical considerations. We upheld the principles of informed consent, right to confidentiality, and access and acceptance. For access and acceptance, we sought permission to carry out the study in the village. Permission was granted by the school head and the local village headman. We did this at the beginning of the study and this offered us the opportunity to present our credentials as researchers as well as establish and identify with cultural ethics of the community (Cohen, *et al*., 2002).

To guarantee informed consent, we were guided by four elements: competence, voluntarism, full information and comprehension (*ibid*). All the participants were made aware of the nature of the research and we made sure that all participants were mature individuals and capable of making decisions. We also took advantage of the fact that one of the researchers was a teacher at

one of the schools in the community. This helped to reduce the degree of suspicion, and willing respondents talked at liberty.

Findings

Data analysis is presented in two categories. The first category reports on the aspects of the initiation curriculum. The second category assesses the impact of the initiation curriculum on formal education in the school concerned. Data on the curriculum aspects of the initiation school was gathered from pupils who had just graduated from the initiation school, as well as from community elders, as discussed above. Teachers, observations and record analysis provided data used to assess the impact of the initiation school on formal education.

Aspects of the initiation curriculum

To gather and analyse information so as to answer the question 'education for what' we used Cornbleth's (1990) two major themes of curriculum. The first is that curriculum is conceived as what actually occurs in learning situations, that is, an ongoing social process comprised of the interactions of students, teachers, knowledge, and milieu. Of particular concern here, is curriculum knowledge, which is selection, organisation, treatment and distribution of knowledge to students. The researchers looked at what is taught and how it is taught during initiation.

The second theme is that curriculum is contextually shaped. The relevant context is both structural and socio-cultural. By structure, Cornbleth (1990:6) means 'established roles and relationships and operating procedures, shared beliefs and norms'. The socio-cultural context looks at social, political and economic conditions, traditions, ideologies and events that actually or potentially influence curriculum. With this theme in mind, we looked at the underlying philosophy of what is taught to initiates. In other words, we were concerned about why it is taught.

The initiation school curriculum for both boys and girls

In the initiation school curriculum is divided on gender lines, that is, females follow a curriculum that is different from that of males, although there are some common aspects for both (see Table 1). Some general features of the initiation curriculum are:

- Initiates call this initiation kutamba which literally means playing, or ngoma, which means drum.
- They leave their homes for a period of one to three months when undergoing training.
- They are taught to respect elders.
- They are taught discipline.
- They are severely punished, especially by whipping for minor mistakes.
- Initiates acquire new names on completion.
- Their heads are clean-shaven on their return.
- Celebrations are held on their return from the initiation school.
- Singing, dancing and poetry are taught and are the most preferred methods of teaching.

Table 1. Distinctions in the initiation curriculum aspects for males and females

Curriculum aspects for males vs curriculum aspects for females	
• Boys go for initiation at the age of around 10 to adulthood with the majority going for initiation at the age of 12 to 16 or at puberty.	• Girls go for initiation at their first menstruation period or in the next winter if the girl's first menstrual flow was not in winter.
• The initiation school, led by a *nyamukanga*, is established on the mystical basis. A *nyamukanga* is a specially trained traditional surgeon.	• The school is led by an elderly woman who takes charge of the girls during the period.
• Initiates confess wrongdoings if any, such as adultery, murder, or witchcraft. If young, then their parents confess on their behalf.	• The girls are not permitted to meet their parents during the initiation period.
• The school is established near a mountain or river in a forest away from settlements.	• The school is established in the home of an elderly woman.
• Initiation is a bridging course between boyhood and manhood.	• The course is an initiation from girlhood to womanhood.
• The removal of the foreskin of the male organ is the most important activity.	• Virginity is checked.
• Initiates are taught to fend for their families by hunting, hence they are taught to be good runners.	• They are taught gender domestic chores, that is, the duties of a woman in the home. They are also taught to take care of their future husbands.
• They are taught to be heads of their families and to play a superior role over women. In a family where the father has died, the eldest initiated son, even though a teenager, makes decisions. His mother cannot make any decision without his consent.	• They are taught not to argue with initiated men and senior women, but to take instructions as given. Girls should kneel and bow, or lie on the ground in the presence of males and senior women, especially soon after initiation.
• Initiates and their instructors (*vadhabhi*) carry whips on leaving the initiation school. The new initiates spend two to three weeks carrying the whips wherever they are until they are instructed to throw them away by their seniors. On return whips are crackled and this continues sporadically up to the time when they are thrown away.	• The girls are trained to endure hardships and to persevere in marriage through deliberate harsh treatment during initiation. They are beaten, pinched and forced into icy water on a winter morning. They should not cry or complain or protest when treated badly but persevere so that even if their future husbands ill-treat them, they will endure.
• Initiates leave the initiation school in white shorts and sometimes with white T- shirts.	• Girls do not have any gender-specific dress code.
• A cow is normally slaughtered for a male initiate.	• A goat is normally slaughtered for a daughter initiate.

The song below is a typical song sung by female initiates at the initiation school.

Call: *Kuwerere Kuwee Kuwerere-e* x 2
Vana vaye vakura
Varume mochifara
Mofarira vakadzi.
Response: *Haye-e kuwerere-e, kuwerere kuwe kuwerere.*

The English translation goes:
Call: The children have grown up
Men should be happy and
Be pleased to take these mature girls for wives.

Impact of initiation curriculum on formal schooling
The impact of the initiation curriculum on formal schooling was assessed using indicators such as observable behaviour changes of pupils, participation in class and dropout from school.

Behavior change after initiation: Teachers were asked to rate observable behaviour changes in recent graduates from the initiation school on a scale ranging from poor to excellent. The scale used observable behaviour indicators such as class participation and pupil–pupil interactions as well as teacher–pupil interactions. Teachers were also asked to infer on less obvious and fluid attributes like attitude of initiation school graduates towards peers, teachers and school in general. Tables 2 and 3 show the number of teachers with a particular opinion per observable behaviour change indicator in boys and girls, respectively.

Table 2. Behaviour changes noticed in boys after initiation. n=10

Indicators	Poor	Average	Good	Excellent
Class participation	2	7	1	-
Interaction with VaRemba classmates	-	1	-	9
Interaction with VaShenji classmates	7	2	1	-
Attitude towards initiated male teachers	-	-	2	8
Attitude towards uninitiated male teachers	5	3	1	1
Attitude towards initiated female teachers	-	1	4	5
Attitude towards uninitiated female teachers	7	-	3	-
Attitude to co-curricular activities, e.g. sport	-	-	3	7

Teachers used the following terms to describe new male initiates: rowdy, aggressive, arrogant, violent, boastful, bully, stubborn, pompous, rude, cheeky and proud. They reported that new initiates' participation in class becomes very low. They interact with other VaRembas well but are unwilling to associate with non-VaRembas. They look down upon the uninitiated, including their male and female teachers. However, they become active in sport.

Table 3. Behaviour changes noticed in girls after initiation. n=10

Indicators	Poor	Average	Good	Excellent
Participation in class	4	5	1	-
Interaction with initiated classmates	-	-	3	7
Interaction with uninitiated classmates	4	5	1	-
Attitudes to male teachers (initiated or not)	-	-	2	8
Attitude to female teachers (initiated or not)	2	8	-	-
Attitude to school activities, e.g. sport	1	3	6	-

Teachers described girl initiates as patient, respectful, passive, shy, reserved, morally loose and withdrawn. The girls' participation in class becomes low. They develop a very positive attitude towards men, including their male teachers, and a negative attitude towards female teachers. One teacher described them as 'morally loose'. His comment on girls' attitudes towards male teachers was:

> … you want to make us lose our jobs if we tell you the truth. These newly initiated girls behave in an inviting way that one is tempted to propose love to them. The temptation to 'taste' those who have been initiated is also great on our part.

A significant number of students drop out of school after initiation due to pregnancies and early marriages on the part of girls and negative attitude on the part of boys. Statistics of dropouts between January 2006 and February 2007 obtained from one of the schools in the area revealed the dropout rate with associated reasons as shown in Tables 4 and 5. Researchers used surnames and confirmations from teachers to establish whether the victims of school dropout are from the VaRemba or from non-VaRemba families.

Table 4. Dropout rate for boys (January 2006 and February 2007) (Total 16)

Reason for dropping out	Number of dropouts	
Lack of fees	2 (VaShenji)	3 (VaRemba)
Negative attitude towards school	1 (VaShenji)	10 (VaRemba)

Table 5. Dropout rate for girls (January 2007 and February 2007) (Total 25)

Reason for dropping out	Number of dropouts	
Lack of fees	4 (VaShenji)	3 (VaRemba)
Marriage and pregnancy	4 (VaShenji)	14 (VaRemba)
Percentage dropout due to marriage and pregnancy	VaShenji 16%	VaRemba 56%

The school had a total enrolment of 351 students (195 males and 156 females). Of the 195 males 142 were VaRemba and out of the 156 females, 99 were VaRemba. A total of 41students (25 girls and 16 boys) (11.7%) dropped out of school during this period. The dropout rate for girls at 7.1% was much higher than that of boys, which stood at 4.6%. The total dropout for the VaRemba children 30 (8.5%) was also much higher than that of their VaShenji counterparts, which stood at 11 (3.1%). As shown in Table 4, 18 of the 25 dropouts were due to pregnancy and marriage, 14 (56%) being VaRemba. Teachers and elders interviewed also concurred that dropout from school among the VaRemba children was more pronounced amongst those who have gone through the initiation school.

Absenteeism from school was also very pronounced amongst VaRemba children especially when the initiation school took place during the school term. Teachers expressed that initiates lose out on their school time and they seem to come back disinterested in their schoolwork. However, all the interviewed elders expressed the desire to have the initiation school restricted within the school holidays.

Discussion

To explore questions relating to the relevance and quality of the initiation curriculum we used a statement by the UNESCO director general who, in the opening statement on an Education for All Global Monitoring Report noted that the principal objectives of quality education are cognitive and emotional growth of learners, values and attitudes for responsible citizenship as well as equity (UNESCO, 2004). Shumba, *et al.*'s (2008) suggestion that education should be empowering coupled with Amartya Sen's theory of human capabilities, which argues for people's abilities to make choices that they have reason to value (Sen, 1990), also shaped our vantage point on the relevance and quality of the initiation curriculum and its relationship to formal education. As highlighted in preceding sections, we also drew on recent discussions in Education for Sustainable Development to help highlight some of the social issues emphasised in the UNDESD, particularly gender-related issues.

The study established that the initiation curriculum seemed narrow and specific in terms of what is taught. Curriculum content seems not to have evolved enough to prepare young people for today's complex world, characterised by poverty, food insecurity, disease and challenges associated with globalisation. For example, it is difficult to conceptualise why initiates are taught to fend for their families by hunting in an area that is now semi-desert in outlook with no more wild animals at all. This brings little immediate relief to communities and appears to do little

to address issues of relevance in the context of increased poverty, climate change that is visible through successive droughts, environmental degradation, economic hardships and diseases.

Teaching methods used show that the delivery of the initiation curriculum follows what Freire called banking education (Freire, 1970), in which school elders know and learners are to be filled by knowledge. Such learning situations regard reality as static, changeless and predictable (*ibid*). This is in sharp contrast with the principles of ESD, in which both learners and educators are expected to actively engage in the learning process so as to raise personal and communal awareness, creativity, participation, responsiveness and understanding of sustainable practices (Shumba, *et al*., 2008; Lotz-Sisitka, *et al*., 2006b).

As shown in Table 1, the curriculum content is designed along gender lines. It sets one form of knowledge to be suitable for women and not for men and vice versa. Even the ceremony practices after graduating from the initiation school show discrimination on gender basis. The slaughtering of an ox for male initiates and goats for females shows that males are regarded as superior to their female counterparts. Gifts for graduates also put initiates into stereotypic gender roles. Males get garden and other farming tools, while females get kitchen utensils. All these practices contribute to the perpetuation of particular gender stereotypes.

The initiation curriculum therefore greatly reduces women's space and their capabilities. In terms of 'space', Weston in Jickling (2005) speaks about the social, psychological and phenomenological preconditions as well as the conceptual, experiential and physical freedom to move and think. Socially, physically and psychologically the initiation curriculum does not teach women to think or move out of the private sphere, which is the home. In other words it does very little to empower women as Shumba, *et al*. (2008) suggest. Chikunda, Marambire and Makoni (2006) observed similar gender traits with the Shangaans of southeastern Zimbabwe.

The initiation curriculum also poses some tensions with formal schooling. The aim of formal education, though it is also riddled with subtle gender stereotypes, is to expose both girls and boys to equal curriculum opportunities so as to foster the maximum potential of individuals and widen their career choices in life, or as Sen's language says, broaden their capabilities. The girl from the VaRemba is put in a predicament. On one hand are the international bodies such as the Jomtein Conference, the Dakar Framework for Action and the Beijing Declaration that believe in the emancipation of women and subsequently closing the gender gaps between females and males through formal education. On the other hand, initiation school undermines the efforts and directs women to remain in subordination to men.

Formal schooling thrives on active participation, competition and critical analysis of situations. The same girl who is taught under initiation to be humble, voiceless and submissive to males is required to be critical and compete against males in order to be successful in formal school. The cognitive dissonance availed to her by the two situations is likely to affect her performance in one of the education systems. Interviews with teachers revealed that girls seem to care less about their schoolwork and generally they perform lower than boys after initiation. Some parents, especially the very poor, are not even very keen to send girls to formal school. This is in contrast to the intentions of international bodies such as UNESCO, the Millennium Development Goals, and the Education for All agenda.

The initiation curriculum has the potential to impact on the mental schemes of women in particular and the society in general. It can create and perpetuate the perception of masculinity and femininity as hierarchical contrasts where the categories associated with masculinity are perceived superior and dominant and the categories associated with femininity viewed as inferior and subordinate. Such a curriculum teaches women to internalise their own subordinate status and view themselves as being of lesser value; their sense of their own rights could therefore become diminished (Ankerbo & Hoyda, 2003). In this way, women could be led into a situation where they contribute to their own subordination and reproduce unequal gender relations. In the initiation curriculum elderly women are the ones who play the major role of educating young women into subordination. Bourdieu in Ankerbo and Hoyda (2003:17) call this form of male dominance symbolic violence. This is not power based on physical force or coercion, but is an invisible form of power where the dominated women are socialised into *doxa* (18), which means taking things for granted. Under the VaRemba culture, women take their subordination as natural and hence (paradoxically) perpetuate it through the initiation curriculum and do not see any need to critique the status quo. This makes it more difficult for women to become empowered to meaningfully act on the challenges posed by vulnerability and risk and their sources (UNESCO, 2006).

The initiation school restricts women's space both in terms of their condition and position in society. Condition refers to women's material state that is their immediate sphere of experience (Ankerbo & Hoyda, 2003). As discussed above, the curriculum tends to restrict women's experiences to the reproductive sphere. Reproductive work involves care and maintenance of the household and its members (SARDC-WIDSAA, 2000). This includes bearing and rearing of children, water and fuel collection, food preparation and family health care (*ibid*). Women are not prepared by the initiation curriculum to participate in productive work, such as fishing, farming and formal employment, which remains the domain of men.

Position refers to women's social and economic standing relative to men (Ankerbo & Hoyda, 2003). Position is measured by male-female disparities in income and employment opportunities, participation in political bodies, access and control of resources and benefits, vulnerability to poverty, violence, and so forth (SARDC-WIDSAA, 2000). It is evident that the VaRemba initiation curriculum, which perpetuates female subordination, cannot aim to improve the position of women. Femininity attributes such as passivity, humility, obedience and rigid stereotypical thinking taught to young women in the initiation school can not lead to empowerment as suggested by Shumba, *et al.* (2008). That is, the curriculum cannot breed women who are eager to participate in political bodies and who would seek to improve their access to and control of resources and benefits. Instead, the product of the initiation curriculum is a woman who is vulnerable to poverty and violence. As reflected in the data, young women are taught to persevere in hardships caused by male violence and poverty. The initiation school does not teach them to be critical and question their condition and position in society but to internalise and naturalise their own subordinate status and exclude themselves from spheres or activities that society deems masculine or public. This is all against the principle of social sustainability that calls for fairness in the access to and benefits from earth's resources (Lotz-Sisitka, *et al.*, 2006b).

The VaRemba initiation school also compromises the retention of girls in school and this compromises the efforts of Education for All initiatives, the Millennium Development Goals, and all other directives that work towards gender equality in education. It seems the curriculum tells girl initiates that they are 'ripe' for marriage. Songs sung by girls in the initiation school, such as the one described above, are evidence of this. This song is used as part of the initiation training. The words of the song advertise the girls for marriage; hence the girls feel very mature and ready to begin their own families. They dash into marriages and some of them are impregnated at a tender age since they go for initiation at their first menstruation period or a few months later. Researchers noted that men also seem to take advantage of the girls' docility to propose to them and marry them soon after they graduate from initiation (Chikunda, *et al.*, 2006).

Nevertheless, the initiation curriculum has some positive aspects that deserve mentioning. For instance, there are key values in the VaRemba initiation curriculum that are quite commendable. The practice of confession and wearing white clothes in the case of males; and being given new names on the closure of the initiation school is symbolic of a new start by people who have been cleansed and have gone through a process of reflection, after which they emerge 'pure'. If they do not confess it is alleged that serious illness or death may befall them since the school is established on the basis of magic and insists on purity. All this, barring the embedded issues linked to gender relations outlined above, is likely to instill the sense of *ubuntu*/humanness in initiates and he or she is expected to live a life guided by this philosophy.

Virginity is also checked in girls during initiation. Although the practice is controversial and degrades women, in some circles where the threat of HIV/AIDS is difficult to assimilate, it is said to be a 'good practice' because girls would not indulge in sex before initiation for fear of humiliation. It should be noted here, however, that virginity testing has been critiqued by feminists and human rights activists who show concern for women's privacy. What is significant here, however, is that there is no follow-up after initiation to see if these girls continue to abstain from sex before marriage, and the initiation curriculum ironically does not teach girls how to manage sexual relations in a context of HIV/AIDS risk.

Preparation for adult life is also very visible in the VaRemba initiation school. Boys are taught to be breadwinners and fend for their families. On the other hand girls are taught to be custodians of provisions as well as major players in the primary socialisation of children. Although this gender division of roles is not quite palatable to many feminist theorists (Gaidzanwa, 1992; Stromquist, 1997; Unterhalter & McCowan, 2005), it is however seen as functional to the proper running of the family by some functionalists such as Talcott Parsons and cultural feminists who argued that women are naturally suited to the 'expressive' role of childcare, whereas men are more suited to 'instrumental' role of competing in the labour market (Haralambos & Holborn, 2004:168).

As shown by the discussion above, the issues are extremely complex. Supported by the principles of Education for Sustainable Development, we strongly believe that gender roles should not disadvantage one gender over the other. While the sample of our study was small, and the site limited, we argue through this case study analysis that opportunities do exist to improve the quality and relevance of the initiation curriculum by reorienting its goals towards

achieving both the EFA and MDG goals of enabling students to complete schooling, by focusing on the capabilities necessary for eradicating extreme poverty and hunger, promoting gender equity and ensuring environmental sustainability.

Conclusion and Recommendations

It has been observed in this paper that initiation is part of the VaRemba epistemology. It is an integral part of VaRemba culture and *ubuntu* ('humanness'). In spite of the weaknesses visible in the initiation curriculum, there are positive elements as well. There is need therefore to blend the positive aspects with the current formal school curriculum to produce a person who is educated for modern challenges and risks such as HIV/AIDS and environmental risks, and who is able to assimilate the values of *ubuntu* in their broadest sense. For instance, the VaRemba initiation school can be credited for equipping youngsters with some real family life education and skills that are useful later on in life. As observed by Kenyatta (1953), knowledge imparted to initiates results in them being able to confidently face the challenges of adolescence as they are taught about how their bodies work, relationships, responsible sexual behaviour, sexual health and conception. We thought Kenyatta's argument would be stronger if this knowledge dissemination were not just a one-off event and if it could continue well beyond initiation ceremony and in formal school as well, particularly with the current challenges of HIV/AIDS that face youth today.

True *ubuntuism* is flexible. The starting point should be that of appreciating the uniqueness of a particular group of people. Preconceived ideas that 'African cultures are primitive and as such belong to the past and can only be looked upon as antiquarian relics fit only for the museums' (Kenyatta, 1953:124) should be done away with. There is something that can be learnt from such practices like the VaRemba initiation. It should be borne in mind that this initiation ceremony does not concern only sex. A number of things are taught. Kenyatta (1953:109) succinctly puts it thus: 'the youth is taught with equal vividness and dramatic power the great lesson of respect for elders, manners to superiors of different grades, and how to help his/her country'. Any education system that lacks such tenets would definitely produce what Makuvaza (1996:56) termed the 'educated, uneducated professionals' *vanhu vasina hunhu*/people without 'humanness'. Character building cannot be left to chance and it makes sense to take such positive elements from our heritage like VaRemba initiation curriculum to build a genuine education system. However, as discussed in this paper, cultural practices may also need to be critically evaluated, and not just taken for granted.

It is the argument of this paper that initiation, like any other traditional practice, should be reformed so that it helps to create a gender-responsive environment. Negative elements that continue to disadvantage the girl child's education should be dispensed with tactfully through persuasion and incentives. An important aspect of *ubuntu* is that it encourages cooperation and against this background the VaRemba people can be persuaded to cooperate with central government, non-governmental organisations and other stakeholders to eliminate those elements that militate against the education of the girl child. There is also a need to broaden the scope of the initiation curriculum and blend it with formal schooling so as to prepare

young ones for the complex world we are living in today – to take on more contemporary issues and to assist young people to learn to address these, while also teaching them to value the completion of formal schooling. The potential of integrating more up-to-date environmental knowledge into the initiation curriculum may also be an area worth exploring in future research in more depth.

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Professional Development of Teachers in the Tshwane District for Effective Environmental Education

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Abstract

Many teachers in South Africa may have had little exposure to environmental education, yet the revised National Curriculum Statement emphasises the infusion of environmental education into all learning areas. The question arises whether professional development of teachers in environmental education is required for effective teaching in this field. The main aim of this study was to ascertain whether teachers have acquired the knowledge and skills necessary to infuse environmental education in all learning areas. Besides a literature review of sources, a questionnaire was developed as a research tool and 163 teachers in the Tshwane North District Office were involved in the survey. The results suggest that environmental education will have to be addressed in the professional development of teachers to ensure effective implementation of the National Curriculum Statement.

Introduction

As professionals are those who are qualified in a particular profession, teachers should accordingly be judged as professionals. The teaching profession is one that requires lengthy and continuous training, involves theory as background to practice, has its own code of behaviour, and has a high degree of autonomy (Dean, 1991:5). For the most part, tertiary education prepares a young person for a specific profession, yet concern for his or her welfare abruptly ceases once he or she is placed in their first year of teaching (Holy & McLoughlin, 1989: 34). Under these circumstances, the teacher's pre-service training may become inadequate or outdated, as requirements change. Although the signs of inadequacy are evident in the first years of teaching, teachers in service are also affected by changes in education with regard to the curriculum, outcomes, methodology, content, assessment and approaches (Lotz, *et al.*, 1998:4–5).

In the South African context, both pre-service and in-service teachers are challenged by changes in the curriculum, such as the replacement of content-based education by outcomes-based education, Curriculum 2005 and the Revised National Curriculum Statements (RNCS). The implementation of Curriculum 2005 took place in an environment characterised by enormous infrastructural backlogs, resource limitations, inadequate supply of quality learning materials and the absence of common national standards of learning and assessment, and was further accompanied by frustration with its design and implementation (Choma, 2003:15). In addition, the teacher development framework was not yet in place, and the policy guiding the

professional development and conduct of teachers was under revision (Janse van Rensburg & Lotz-Sisitka, 2000:3).

The Curriculum 2005 review committee confirmed the limitations of Curriculum 2005. The RNCS changed and reduced some features of Curriculum 2005 to critical and developmental outcomes, learning outcomes and assessment standards (Department of Education, 2001:3). The committee also recommended that Curriculum 2005 be streamlined and strengthened to emphasise environmental education (Lotz-Sisitka & Raven, 2001:9) and that environmental education should receive 'special attention' in the revised curriculum (*ibid.*, 2001:67). In light of this, a need arose for the development of teachers (both pre-service and in-service) for effective implementation of environmental education in schools. As an infused 'theme', professional development of teachers in environmental education needs to address the critical thinking and reflection of practitioners so that they can identify the means to better achieve the goals of environmental education (Heck, 1994:46) such as those stipulated by the Tbilisi conference (UNESCO, 1980) namely to '… provide every person with opportunities to acquire knowledge, values, attitudes, commitment and skills needed to protect and improve the environment'.

In order to eventually contribute to the protection of the global environment, teachers, as agents of change have to be environmentally educated to be able to help their learners acquire the necessary knowledge, skills, values and attitudes to improve and maintain their environment. Effective environmentally educated teachers should at least have basic competencies in professional education, environmental education content and environmental action skills (Oulton & Scott, 1995:229–231).

Problem Statement

Based on the preceding discussion, the following questions have to be answered regarding environmental education and professional development of teachers in this field:

1. Should the professional development of teachers address environmental education in particular for the effective infusion of the environment in all learning areas?
2. If there is a need for professional development of in-service teachers for effective environmental education, what kind of professional development is required and which strategies should be followed?

Research Method and Data-collection Techniques

A survey was conducted using a closed questionnaire that was based on a thorough study of the literature on professional development of teachers for effective environmental education. The questionnaire consisted of 71 statements with a five point Likert scale. A pilot study was carried out in the Brits Area Project Office with teachers in this region. Six categories of items were covered in the questionnaire.

The content of the items in the questionnaire represents the construct to be measured, namely the professional development of teachers for effective environmental education. Content

validity was determined by two specialists in the field of environmental education prior to the implementation of the research instrument. During the pilot study, the questionnaire was given to teachers who teach learners in the intermediate phase. These respondents were identified from a population similar to the target population. Parts of the questionnaire were designed with reference to topics taught in the intermediate phase learning areas. The questionnaire also determined the teachers' pre-service and in-service training with regard to effective teaching and learning of environmental education, such as conceptualisation of the term 'environmental education', environmental literacy, teaching methods appropriate to the teaching and learning of environmental education, outdoor activities, school environmental education policy and environmental issues.

The Cronbach-Alpha type of internal consistency was used in this study because it is generally appropriate to ascertain the reliability of survey research and other questionnaires in which there is a range of possible answers for each item (McMillan & Schumacher, 2001:242).

The necessary official permission was obtained from the office of the senior manager Strategic, Policy, Research and Development of the Gauteng Provincial Department of Education. The purpose of the questionnaire was explained to the teachers and confidentiality assured. The selected sample consisted of 216 intermediate phase teachers in the Tshwane North District. Of these, 163 returned the questionnaires giving a 75.5% response return.

Discussion of the Results

To ensure the effective implementation of environmental education in all learning areas, teachers need to be skilled in the approaches, methodologies, concepts, content, theory, and classroom practice of environmental education that will help them and their learners acquire the necessary environmental competences and skills. The findings reflected in Table 1 indicate that teachers participating in the survey were mostly female (75.5%), between the ages of 31 and 50 (81.6%) and teaching in a school in an urban or peri-urban area (76.1%). The majority of the respondents (92%) had more than five years of teaching experience. Most of the respondents (79.1%) were on Post Level (PL) 1 and held different academic qualifications, though most gained their professional qualifications by means of a teacher's diploma. The findings also indicate that the majority of teachers have no pre-service training in environmental education probably because no offerings were available during their initial teacher training. Only 45.4% of the teachers participating in the survey had received some form of pre-service training in environmental education and a mere 17.8% of teachers are qualified to teach environmental education. An overwhelming majority (82.2%) of teachers do not have any qualification in environmental education. This should be a concern for the Department of Education which, according to many of the respondents (42.9%) should take responsibility for the training of teachers in environmental education (Table 2). As most of the teachers do not have any qualifications in environmental education, they are probably not able to facilitate environmental education even though they may know what environmental education entails. Consequently, many of these in-service teachers may not tackle interdisciplinary themes and issues, and may consequently be reluctant or incapable of addressing environmental issues in their schools.

Table 1. Biographical data of respondents

	Category	Number (n=163)	Percentage (%)
Gender	Male	40	24.5
	Female	123	75.5
Age group in years	20–30	11	6.7
	31–40	77	47.2
	41–50	56	34.4
	50 +	19	11.7
School location	Informal settlement	39	23.9
	Rural area	0	0
	Peri-urban area	44	27
	Urban area	80	49.1
	Farm	0	0
Years of teaching experience	Less than 5 years	13	8.0
	5–10 years	36	22.1
	11–20 years	75	46
	More than 20 years	39	23.9
Current post-level	Educator PL1	129	79.1
	Head of Dept PL2	22	13.5
	Deputy/Principal PL3	8	4.9
	Principal PL4	2	1.2
	Other	2	1.2
Professional training	PTC	6	3.7
	PTD/STD	64	39.3
	UED	17	10.4
	SED/HED	62	38.0
	Other	14	8.6
Academic qualifications	Matric/Std10	51	31.3
	3-year degree	70	42.9
	Honours	26	16.0
	Masters	1	0.6
	Other	15	9.2
Pre-service training in environmental education	Yes	74	45.4
	No	89	54.6
Qualification in environmental education	Yes	29	17.8
	No	134	82.2

The results in Table 2 further show that the majority of the teachers (85.3%) have not attended any courses or training in environmental education so most of the courses or workshops that have been attended (74.8%) addressed other educational issues and not environmental education *per se.* By changing the focus of these in-service opportunities to environmental education, more teachers could be introduced to appropriate teaching and learning resources and to new approaches to teaching in which environmental education is infused into every learning area of the National Curriculum Statement.

Table 2. Training in environmental education

Statement	(n =163)	%
Have you attended any courses or training in environmental education?		
• Yes	24	14.7
• No	139	85.3
How does your school assist you most in your professional development? As a teacher?		
• Send you to courses or workshops	122	74.8
• Motivate you to read and study further	19	11.7
• Informal and individual discussions with teachers	14	8.6
• Work sessions during meetings	8	4.9
Which institution/sector, in your opinion, should take the responsibility for the training of teachers in environmental education?		
• In-service centres/teacher centres	36	22.1
• Private sector/NGOs	11	6.7
• Universities/Colleges	46	28.2
• Department of Education	70	42.9
Doing a course that prepares a teacher to be professionally competent in environmental education should be regarded as:		
• Knowledge expansion	69	42.3
• Continuing education	39	23.9
• Becoming a better teacher/further study	52	31.9
• Unnecessary	3	1.8
In your opinion, how important is environmental education in the school curriculum?		
• Very important	117	71.8
• Important	42	25.8
• Not important	4	2.4
Do you think that there is a need for training in environmental education?		
• Yes	130	79.8
• No	33	20.2
If you were given a chance to attend a professional development course or training in environmental education, what would be your area of need?		
• Knowledge about relevant content	18	11
• Skills needed for teaching environmental education	16	9.8
• Both of the above	114	69.9
• I have no need for further development	15	9.2

The teachers who participated in the survey regard environmental education as very important to the curriculum (71.8%), and suggested that becoming a competent environmental education teacher entails knowledge expansion (42.3%) more than continuing education (23.9%) or becoming a better teacher through further study (31.9%), even though 46.6% consider environmental education most relevant to the natural sciences and technology. If given the opportunity to attend a professional development course in environmental education, almost 70% indicated that the programme should include knowledge about the relevant content, as well as the necessary skills to infuse environmental education into their teaching. The respondents also indicated that there is a call for training in this field (79.8%). This suggests that efforts should be made to offer teachers some form of professional development in environmental education.

When questioned about environmental education in the school curriculum (Table 3) the majority of the respondents indicated that they implement environmental education in their classes (62%) and that they consider the outcomes in the revised National Curriculum Statement relevant to environmental education (72.4%). More than half of the teachers (54%) are of the opinion that environmental education should be a learning area on its own. This may be due to the possibility that teachers have a problem with infusing environmental education into all learning areas and would prefer it to be a separate learning area.

Table 3. Environmental education in the school curriculum (n = 163)

Statement	Yes (n)	(%)	No (n)	(%)	Unsure (n)	(%)
Does your school have an environmental education policy?	54	33.1	41	25.1	68	41.7
Do you think that environmental education deserves to be a learning area on its own?	88	54	64	39.3	11	6.7
Do you implement environmental education in your school and class?	101	62	55	33.7	7	4.3
Do you think that outcomes in the Revised National Curriculum Statement are relevant to environmental education?	118	72.4	10	6.1	35	21.5

Respondents were requested to indicate whether their schools had an environmental education policy. An environmental education policy is a plan that enables better teaching and learning, contributing to a healthy, enriching and more sustainable environment, by ensuring that the environment is integral to each learning area (Deenanath, 2004:4). In order for environmental education to be functional and effective, guidelines for implementing mechanisms such as environmental audits, programmes, action plans, policy statements, evaluations and reviews, must be given (Deenanath, 2004:5). Environmental education is implemented in the school via the environmental education policy. Such a policy is an agreed expression of principles and values to guide action plans for improving school-based environmental activities (Deenanath,

2004:6). What is disconcerting is the fact that almost half of the respondents (41.7%) were unsure of whether or not their school had an environmental education policy. This implies that even if such a policy exists, it may not be implemented in the schools' programme. A further 25.1% indicated that their schools did not have an environmental education policy, suggesting that most schools are not addressing this issue.

Environmental literacy is the disposition of teachers towards the environment and environmental education that determines to a large extent whether learners are educated to become adults who take responsibility to maintain the environment and improve the quality of life (Swanepoel, *et al.*, 2002:282). Although the survey suggests that teachers understand basic environmental concepts and show positive environmental behaviour (Table 4), the crucial issue of their ability to facilitate effective environmental education in the classroom needs to be addressed. The fact that some 20.3% of the teachers responded 'undecided' and 'disagree/ no' to whether they are willing to get involved in a project to develop a school garden, suggests a limitation in the eagerness of some teachers to participate in environmental matters. The development of a school garden could lead to the achievement of the Natural Science Learning Outcome 1: Scientific Investigation (Concepts of Life and Living) (Deenanath, 2004:88).

Table 4. Knowledge and understanding of basic environmental education concepts and attitudes toward random environmental issues (n = 163)

Statement	Agree/ Yes (n)	%	Undecided/ Unsure (n)	%	Disagree No (n)	%
Do you know what the World Summit on Sustainable Development entails?	117	71.8	4	2.4	42	25.8
All living things depend on air, water, food and soil to survive	153	93.9	1	0.6	9	5.5
Plants, minerals, soil, water and animals need to be conserved	154	94.5	3	1.8	6	3.7
Burning of coal releases gases into the atmosphere, which affect the survival of living things and cause air pollution	154	94.5	5	3.1	4	2.4
People should live in harmony with nature in order to survive	151	92.6	8	4.9	4	2.5
I am willing to be involved in a project to develop a school garden	130	79.7	20	12.3	13	8.0
Tree-planting days will increase public awareness of the necessity of trees	151	92.6	7	4.3	5	3.1

Table 4. Continued

Statement	Agree/ Yes (n)	%	Undecided/ Unsure (n)	%	Disagree No (n)	%
Family planning is important to avoid overpopulation	141	86.5	11	6.7	11	6.7
Conservation is a responsibility to be shared by individuals, industries, social groups, all levels of government and education	146	89.6	13	8.0	4	2.4
It is important to repair leaking taps	154	94.5	6	3.7	3	1.8
When shopping, I avoid buying products known to be harmful to the environment	129	79.1	20	12.3	14	8.6
I normally leave the water running when I brush my teeth	39	23.9	4	2.4	120	73.6
I take a shower instead of a bath to save water	62	38.0	12	7.4	9	54.6
Only science teachers should know how the environment works	10	6.1	4	2.5	149	91.4
Use of unleaded petrol reduces air pollution	99	60.7	34	20.9	30	18.4
I don't think it is my responsibility to teach environmental issues in the normal classroom situation	15	9.2	12	7.4	136	83.4
I encourage people to start using electricity for cooking, so that smoke pollution from homes can be reduced	123	75.5	17	10,4	23	14,1
I always switch off lights when I don't need them	147	90.2	2	1.2	14	8.6
I encourage my learners to write on both sides of the paper	145	89	4	2.4	14	8.6
I encourage my learners to pick up tins, bottles and papers at school	151	92.6	1	0.6	11	6.7

Recommendations

Based on the results it is apparent that many teachers require some form of development to enable them to successfully infuse environmental education into their teaching. The principle of infused environmental education learning is integral to the outcomes-based approach and the revised National Curriculum Statement. This infusion would ensure that learners experience learning areas as linked and interrelated. As environmental education is a functional field of study, it is advisable to integrate it as often as possible within all learning areas, through holistically planned approaches to lessons.

It is important that institutions that offer pre-service teacher training programmes focus on the infusion of environmental education into their programmes so that the interdisciplinary nature of environmental education is apparent to all prospective teachers. Some institutions in South Africa, such as Rhodes University, have a professional development programme aiming to strengthen environmental learning in schools through supporting teachers to get to know the RNCS, and to plan and implement lessons that are based on it, and that are situated in school-community contexts (Lotz-Sisitka & Schudel, 2007:252). By doing this, the professional development programme aims to foster applied competence amongst teachers, and teachers participate in cluster-based activities. This is an ideal strategy to address professional development in environmental education. Tertiary training institutions should critically assess their programmes to ascertain whether they do provide teachers with the opportunity to develop the necessary skills, knowledge and attitudes needed to successfully integrate environmental education in all their teaching.

It is also highly recommended that in-service programmes and workshops are established for in-service teachers to provide them with the necessary competences and skills to become active participants in promoting effective teaching and learning of environmental education. This should be done under auspices of the Department of Education.

In addition, teachers should engage in institutional and non-institutional professional and academic programmes aimed at improving skills to implement the curriculum and to ensure professional growth on an on-going basis. Based on the findings of this study, there is little doubt that teachers should be offered the opportunity to gain the necessary environmental education competences to ensure that all outcomes in the RNCS are met.

Conclusion

It is necessary to plant the seed of environmental education teaching and learning approaches during pre-service teacher training, and to nurture the seedling continuously during in-service training to strengthen effective environmental learning in schools. Through environmental education learners will become environmentally knowledgeable, skilled and dedicated citizens, who are willing to work individually and collectively to improve or maintain the quality of the environment (Fien, 1993:13). Learners will then become responsible adults who are willing to maintain a healthy environment (Republic of South Africa, 1996:11). Educating learners in

environmental education will result in educating the community, nation and future generations, contributing to sustainable development.

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Viewpoint

Neglected Interiors: A Critique of Political Ecology, with Reference to the Work of Ken Wilber

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Abstract

Both Political Ecology and Environmental Education correctly assert the importance of ideology critique and the reappropriation of knowledge/knowledge production in working for socio-ecological change (see Hattingh, et al., 2002:3–4; Lotz-Sisitka, 2002:117). Similarly, both disciplines confront the need to rethink our understanding of how social change comes about, and the limitations of current reflexive practises in enabling such change (Lotz-Sisitka, 2002:117). This viewpoint paper flags the importance – and partiality – of the post-structural sciences of complexity, political activism and discourse analysis in Political Ecology, and demonstrates both an irreducible interiority to our ecological problems, as well as how this interior domain may be approached and argued for. In this sense, Wilber's critique of Political Ecology may be instructive to Environmental Education practitioners who wish to foster and embody greater awareness of these concerns in their own field. Wilber's Integral Theory has been applied in the education field, in which Integral Pedagogy has been explored by Esbjörn-Hargens (2006) and Murray (2009), among others.

Introduction

> In the whole interactive and indivisible web – ecological, social and personal – there is need and suffering which must claim our attention. (Ken Jones, 1993:3)

> In the history of the collective as in the history of the individual, everything depends on the development of consciousness. (Carl Jung in Walsh & Vaughan, 1993:13)

> Gaia's main problems are not industrialisation, ozone depletion, over-population, or resource depletion. Gaia's main problem is the lack of mutual understanding and mutual agreement … about how to proceed with those problems. We cannot reign in industry if we cannot reach mutual understanding and mutual agreement based on a worldcentric moral perspective concerning the global commons. And we reach that worldcentric moral perspective through a difficult and laborious process of interior growth and transcendence. (Wilber, 2000b:285)

Political Ecology[1] is a discipline exploring the relation between political, economic and social dynamics, and the environment. Political Ecology correctly discerns that such dynamics are not neutral, but, rather, are shaped by state and corporate interests. Thus, Political Ecology has emerged out of a growing realisation that consensus views underlying environmental policies, narratives and scientific practices often serve these interests at the expense of both people and the environment i.e. these discourses are primarily discourses about political power (Berglund & Anderson, 2003:4).

As awareness grows that social justice and the protection of nature are closely related (see Brechin, *et al.*, 2003), and as access to natural resources becomes ever more contested, environmentalism has become increasingly politically vocal, and the field of Political Ecology more strongly defined. Mainstream Political Ecology emphasises progressive social and economic reform, noting that global conservation programmes increasingly reflect neoliberal political and economic agendas. As the norms of this globalising conservation become currency in international relations (Stott & Sullivan, 2000), Political Ecology has challenged its ideology, and sought a 'political framing of environmental issues' (*ibid.*). Following from this, Political Ecology has come to view the protection of nature as more a process of ideology critique, politics and human organisation, than of formal, empirical ecological science; and the sociopolitical realm is seen as foremost in enhancing or diminishing conservation efforts.

In recent texts, Political Ecology has highlighted the manner in which powerful interests and formal ecological science construct narratives that 'unevenly distribute privilege' and 'support the strong against the weak' (Stott & Sullivan, 2000). According to Stott (1998), our slowness to unravel the power relations of many formal ecological narratives may be attributed to their 'semiotics and language', and the kind of science supporting them. For these reasons some political ecologists stress not only a 'post-structuralist sensibility to discourse' (Berglund & Anderson, 2003:15), but also question the scientific methods and practices that generate ecological knowledge (Stott & Sullivan, 2000:5–6; Sullivan, 2000:15–17). Increasingly, orthodox views of ecosystem behaviour have been countered by Systems, Chaos and Complexity theories, which emphasise the ecological dynamics of openness, non-equilibrium and non-linear interactions. These new paradigms have yielded novel insights into social and ecological dynamics, and have profound implications in political and policy arenas (see Sullivan, 1996; Sullivan & Rohde, 2002; Behnke, *et al.*, 1993).

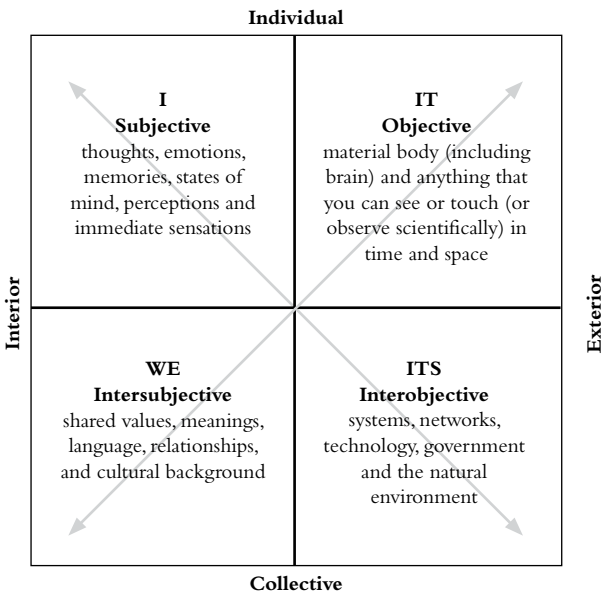
In summary, Political Ecology asserts the primacy of the sociopolitical/economic realm, and ideological/discourse analysis in addressing environmental problems, while promoting the sciences of complexity. Collectively, these approaches now represent a leading edge of environmental theory and analysis in a rapidly growing field.

Although such analysis is indispensable (Wilber, 1998b:23), it is also 'the disease for which it claims to be the cure' (Wilber, 2000a:71, 138, 147). From the perspective of Integral Theory, Political Ecology's focus on the above concerns is problematic (Wilber, 1998b:22; 2000a:72).

While it is beyond the scope of this review to discuss Integral Theory, or Integral Ecology in detail[1] a central idea is the identification of four irreducible, mutually determining domains or perspectives that must be consulted in order to understand a given phenomenon. These

perspectives are represented as four quadrants denoting the interiors and exteriors of both individual and collective realities (Figure 1).

Figure 1. The four quadrants of Integral Theory



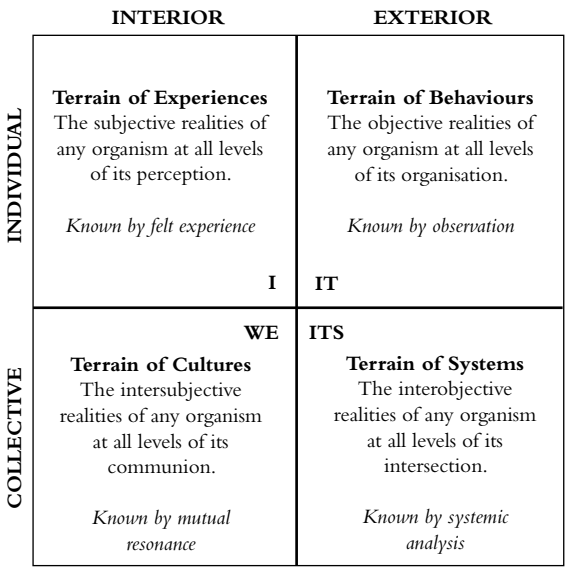
(Source: http://www.kenwilber.com/blog/show/505, accessed 8 September 2009)

Political Ecology's bias toward the exterior domains neglects interior dimensions (introspection, contemplative awareness, meaning, value, purpose, intentionality, self-awareness), reducing them to objective, exterior, empirical processes (Wilber, 2000a:71–72, 1998:56), and obscuring a foundational ontological dimension of environmental problems.

Historically, this interior dimension has been most clearly addressed by spiritual/contemplative traditions, which explain suffering in both epistemological and ontological terms. Epistemologically, suffering is generated through ignorance and misperception, while ontologically it is seen to reflect a 'disconnection from our essential being' (Wellwood, 2002:221). Eastern philosophies equate suffering with ignorance of higher modes of awareness (i.e. other ontological levels) that increasingly reveal consciousness as the 'primary constituent of reality' (Walsh & Vaughan, 1993). Both Transpersonal Psychology, and Buddhist and Vedantic traditions (among many others), emphasise the plasticity of consciousness, the broad range of its potential states, and the sub-optimal nature of our usual state. Growing evidence suggests that this ignorance underlies much of the individual, social, global and environmental pathology that surrounds and threatens us (Walsh & Vaughan, 1993:8).

Furthermore, neglect of the subjective domain supports only empirical and rational categories of knowing (Wilber, 1998:38) and leaves Political Ecology open to category errors – a mistake described by Jürgen Habermas as the 'colonialisation of the value spheres by science' (Wilber, 1998:76, 1998b:27). Wilber's four-quadrant map describes a methodological pluralism allowing empirical knowledge (science), rational knowledge (logic, philosophy) and spiritual knowledge (*gnosis*) to each disclose irreducible realities with their own ontological validity. Category errors occur through a confusion of these epistemologies, especially when monological science attempts to understand domains disclosed by dialogical philosophy or translogical spirituality (see Wilber, 1998:18, 141–142). Ironically, while ecological science is one of modernity's triumphs, it entrenches this methodological narrowness – and in Political Ecology, too, is to be found 'the disqualified universe' (Mumford); 'the dawn of the wasteland' (Eliot in Wilber, 1998:76). In contrast, Integral Theory applied to ecology offers four domains of inquiry, each with its own techniques, injunctions, and methods to acquire knowledge claims about its respective dimension of concern (Figure 2).

Figure 2. Integral Ecology's four terrains



Note: this simple depiction is given its fullest treatment from an ecological perspective in Esbjörn-Hargens and Zimmerman (2009).

(Source: http://www.integralecology.org/source, accessed 8 September 2009)[2]

While the 'post-structural sciences of complexity' (Stott & Sullivan, 2000:6) represent a suite of genuinely new and needed paradigms (Wilber, 1998:38–39, 1998b:27) they do not address the problems described above. None of them go beyond their monological/empirical grounding (Wilber, 1998:39), and thus, these approaches deliver not a genuine, but merely an exterior/objectivistic holism (Wilber, 2000a:72, 1998b:22). As a result, they have little effect

on psychological maturity because they introduce no new ontological depth i.e. they do not adequately address interior stages of consciousness development (Wilber, 2000a:137–8).[3]

While Political Ecology has witnessed a 'growth in interdisciplinarity and transdisciplinarity' (Stott & Sullivan, 2000:5), it has demonstrated little authentic epistemological pluralism (but see Jones, 1993; Mattingly, 1997; & Allendorf, 1997). This is evidenced by its neglect of Wilber's Subjective quadrant (Figures 1 and 3), and accounts for the widespread inability of political ecologists to adopt approaches that 'go to the heart of the human condition' (Jones, 1993:167).

Finally, ecological wisdom is not needed to protect the biosphere – it is needed to bring humans into agreement on how this can be done (Wilber, 2000b:292, 2000:148), a project in which the human condition itself is an impediment to progress (Jones, 1993:40–44; Wilber, 2000a:137–138, 2000b:285). Increasingly, transnational crises reveal the inadequacy of national responses, and place a premium on our ability to cooperatively transcend self-interest. These crises relate primarily to the following:

(1) The necessity to protect the global commons, the common biosphere/climate which belongs to all.
(2) The necessity to regulate the world financial system, which no longer responds to national borders.
(3) The necessity to maintain a modicum of international peace and security (Wilber, 2000:204–205).

Wilber (2000:205) notes that while solutions to these crises demand efforts on ecological-economic-financial fronts, that they also require a corresponding shift in world-views that will allow citizens and their governments to 'perceive the greater advantage in the lesser death' (the surrendering of some sovereignty for the greater good) (Wilber, 2000:205).

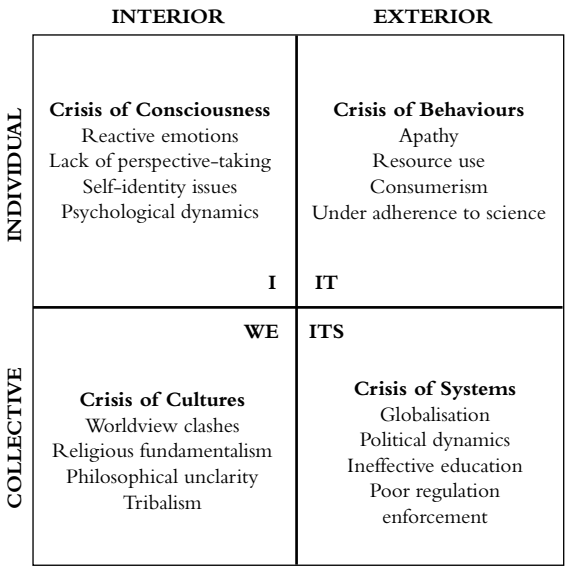
Wilber's contention above (Wilber, 2000:205, 148, 2000b:292) explains Hattingh's (2002:5) observation that while 'sustainable development' is almost universally supported as a moral imperative, that there is little consensus about its content, interpretation and implementation. This state of affairs suggests that 'Ontology precedes ethics' (Zimmerman in Fox, 1990: 227; Evernden, 1993:69; Jones, 1993:172; Macy, 1991:215–217; Wilber, 2000b:285) because the lack of 'consensus' noted by Hattingh cannot be addressed without recourse to 'the interior dimensions where mutual accord and intersubjective wisdom can actually be found' (Wilber, 2000:148, 2000b:253).

Similarly, no reworking of 'semiotics and language' (Stott, 1998), or application of the 'sciences of complexity' (Stott & Sullivan, 2000:6) will alone suffice – again, because the worldcentric moral perspectives required are achieved not through intellectual or ideological assent, but through interior growth and transformation (Walsh & Vaughan, 1993:223; Wilber, 2000:148). As an example of this emerging awareness, consultants to UNICEF recently attributed this organisation's failures to a lack of understanding of 'the need for interior/subjective development in individuals and societies in order to make the process of change and especially transformation sustainable' (Wilber, 2001:102).

Once a global, consensual perception of the nature and degree of environmental problems emerges, many approaches will be needed. Wilber's formulation demands the integration of its

four domains, and champions activism across them. But it also reveals an irreducible interiority to our environmental problems (Figure 3), casting them as a 'race between consciousness and catastrophe' (Walsh & Vaughan, 1993: 231) in which a primary, underlying task is to encourage sufficient human maturity to embrace a solution.

Figure 3. The four terrains of an eco-crisis according to Integral Theory



(Source: http://www.integralecology.org/source, accessed 8 September 2009)[4]

Techniques for catalysing the required interior development have been refined over thousands of years in hundreds of cultures, and constitute the core of the world's contemplative traditions (Walsh & Vaughan, 1993:47). These traditions, most notably those of the East, emphasise that ordinary consciousness is a narrow, restricted version of higher modes of awareness, and that specific injunctions are necessary to cultivate these higher potentials (Wilber, 1998b:272; Wilber, 2000:283–284). Similarly, Western developmental/transpersonal psychology asserts that consciousness is not a single entity, but a developmentally unfolding process with significantly different architecture at each of its stages of growth. That consciousness contains the potential for higher stages of development and wellbeing, including refinements in cognitive, affective, moral and spiritual development is widely acknowledged (see Wilber, 2000a:197–217).

These claims are not based on mere narratives or theories, but, primarily, a set of experiments, exemplars or injunctions in the strictly scientific sense of that term (Wilber, 1993: 11; 2000:281–284), and in the context of the three essential aspects of scientific inquiry:

- injunction – i.e. actual practices, exemplars, paradigms, experiments;
- direct apprehension – immediate experience of the domain brought forth by the injunction, i.e. data; and

- communal confirmation (or rejection), i.e. falsifiability. Validation of evidence with those who have adequately completed injunctive and apprehensive stages (adapted from Wilber, 1998:155–6; Harman & Clark, 1994:380).

Such claims thus withstand the most rigorous of scientific scrutiny, and are corroborated by an enduring accumulation of 'empirical, phenomenological, interpretive, contemplative and cross-cultural evidence' (Wilber, 2000b: 138; Huxley,1946). Contemporary developmental psychology confirms a 'remarkably consistent story of the evolution of consciousness' (Wilber, 2001:5). Humankind's perennial search for meaning and self-knowledge reveals a human interior capable of significant refinements in compassion, ecological sensitivity and adaptive intelligence. However, the referents of such interior growth are 'not simply given empirically', but are disclosed by cognitive transformations in the context of injunctions (Wilber, 2000:282). Not even the most avant-garde of the post-structural sciences of complexity can offer this (Wilber, 1998:38–39, 2000a:136–138), and nor can it be found in a 'post-structuralist sensibility to discourse' (Berglund & Anderson, 2003:15) or a progressive/green politics.

For environmentalists to dismiss approaches that are injunctive, evidential, and falsifiable is to weaken environmentalism – indeed, it is profoundly unscientific to ignore fallibilist claims (Wilber, 1998b:18; 2000:284) for which an experimental proof is possible (Wilber, 1993:11; Fox, 1990:251–252). Political Ecology's task is to acknowledge its partial approach, for while the advocacy of the discipline retains its current narrowness, problems facing the environment seldom come clearly into focus.

Practised well, ecology (both formal and political) reveals its truths – but this does not guarantee that we will use these truths wisely (Shrader-Frechette & McCoy, 1993:197, 278; Wilber, 1998:x). For environmentalists, the pressing concern is not what our subject ought to become – but, rather, what we must become in order to practice it. It is thus that we can engage the dilemmas 'of finite beings in finite circumstances attempting to honour an infinite Care' (Wilber, 2000:765).

Educational Implications of this Discussion

Environmental Education invites the maturation of both our environmental sensibilities, and our capacity to meet environmental challenges. In striving to accomplish this, Environmental Education grapples critically with multiple perspectives on the environment (see for example Hattingh, *et al.*, 2002); and ascribed to Environmental Education processes are questions concerning the 'epistemological and political reflexivity' (Lotz-Sisitka, 2002:119) required to engage the complexity of environmental risk, and the challenge to 'think and act tranformationally with regard to the self and self-realisation' (Hattingh, 2002:12). Integral Theory, with its honouring of both interior development and epistemological pluralism, and its sophisticated inhabiting of multiple perspectives within an inclusive framework, is well suited to the pursuit of these aspirations, both theoretically, practically (see Wilber, 2001, 2007) and at the level of the personal (Wilber, *et al.*, 2008). Integral Theory points not so much to a new set of methods, but to ways of coordinating, integrating, practicing and embodying already

existing approaches within progressive pedagogies. The integral approach can inform both the organisational structure of teaching facilities and curricula in an all quadrant (see Figure 1) manner (Wilber, 2001:96[5]), and indicates new ways of being in the classroom and making meaning of the educational process (Murray, 2009:127). At the same time, Integral Theory remains provisional and open-ended, lending itself to genuine inquiry and ongoing refinement – 'It is not a fixed or final theory, simply one that has served its purpose if it helps you get to a better one …' (Wilber, 2001:xiii).

Conclusion

If Political Ecology is to enhance conservation efforts then it requires greater self-scrutiny. Political Ecology avoids discussion of the internal human condition, which remains unacknowledged as a driver of exclusion, injustice and environmental degradation (Jones, 1993:167, 40–44). Failure to correct this oversight leaves unattended a foundational ontological dimension to the ecological problems we face. The Integral Theory of American philosopher Ken Wilber acknowledges neglected interior dimensions and offers a framework for ordering and honouring the many perspectives with which ecology must engage.

Notes on the Contributor

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Notes

The following websites provide downloadable materials on Ken Wilber's work, Integral Theory and Integral Ecology: http://www.integralecology.org/source, http://integralinstitute.org, http://multiplex.integralinstitute.org/Public/cs/files/default.aspx.

Endnotes

1 While Political Ecology is flagged in this paper, it should be noted that Wilber's critique applies equally to the many social science disciplines which have fruitfully studied the interface between socio-political/economic arenas and the environment, and linked environmental justice with the social and political.

2 This website contains excellent free downloads of overviews of both Integral Theory and Integral Ecology, bibliographies, audio and video material and case studies, amongst other resources.

3 For comparison/presentation of the many stage-based models of human development and their associated authors see Wilber (2000a:197–217).

4 This depiction is given its fullest treatment in Esbjörn-Hargens and Zimmerman (2009).

5 For EE practitioners, the following resources provide an introduction to Integral Theory's application

to education: (1) Ken Wilber and the Education Literature - Abridged Annotated Bibliography by R. Michael Fisher. http://www.pathsoflearning.org/resources_writings_Ken_Wilber.pdf – accessed 8 September 2009; (2) Esbjörn-Hargens, S. (2006). How integral theory informs teaching, learning, and curriculum in a graduate program. ReVision: *A Journal of Consciousness and Transformation*, 28(3), 21–29.; (3) Murray, T. 2009. What is the Integral in Integral Education? From Progressive to Integral Pedagogy. *Integral Review* 5(1): 96–134.

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Viewpoint

Students as Agents of Social Change: Student Initiatives at Rhodes University, South Africa

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Abstract

Rhodes University has a diversity of sustainable development initiatives meant for students and in a range of cases activities are initiated by students themselves with the support of the university. Results of a sustainability assessment revealed the involvement of students in environmental societies, environmental awareness campaigns, campus sustainability initiatives and community sustainability projects. Though most of the projects are still in their infancy and some challenges are yet to be overcome, the sustainability initiatives are gaining momentum and have contributed to improving the overall picture of sustainability at the university. Based on the results of the Rhodes University case study, the underpinning viewpoint in this paper is that university students are not merely recipients of Education for Sustainable Development but have the capacity to become agents for social change.

Introduction

This paper is positioned within the discourse around Education for Sustainable Development (ESD) but focuses on students as they have been found to have a crucial role in sustainable development. ESD aims to develop an understanding of the interdependence of life on earth for effective use of resources – to achieve a balance between ecology, economy and society's needs. It helps develop people's awareness, values and attitudes and enables them to be effectively involved in sustainable development (Palmer, 1998). According to UNEP (2006) education is about working with people to take charge of their own lives in a shared world, through preparing them to plan for, cope with and find solutions to sustainability challenges. The meaning of ESD is however complicated by controversy over the concept of sustainable development; the actual role of education, and the broad and inclusive social issues it seeks to address (Landorf, *et al*., 2008).

While ESD is argued to be a prerequisite for achieving sustainable development (Nicolaides, 2000), the education system was critiqued by Woollcombe (cited in Gutiérrez & Pozo, 2005) for socialising students into highly unsustainable aspirations (e.g. many cars, power boats, skiing holidays); making its role in sustainable development questionable. Education institutions directly contribute to sustainability problems (e.g. pollution, resource consumption) that affect the same communities they are supposed to serve (Creighton, 1998; Dunkin, 2000). The question is whether universities are managing to develop responsible citizens who can take charge of their lives and ensure a high quality of life in future in a shared world. This paper

does not address this question but reveals evidence that students have the agency to consciously initiate projects that contribute to sustainable development.

There are various opinions on the role of students in sustainable development. In most cases, they are identified as beneficiaries of ESD. Nicolaides (2006:418) for example, argues that the intention of ESD is 'to educate students as the future custodians of the planet, to act ethically and responsibly and to demand less resources and customer goods and the associated manufacturing of pollutants'. Students are also regarded as future decision-makers, developers and managers of society's institutions. As such, universities are expected to give them intellectual and professional guidance to develop the capacity required for a sustainable future (ULSF, 1990). Universities are also expected to develop students who can play a role in advancing knowledge and ensure a high quality of life in future (Clugston, 2000). They are tasked with helping students to 'understand the roots of environmental degradation and motivate them to seek environmentally sustainable practices ...' (Clugston & Calder, 2000:34). Some of the priority roles of universities defined from emerging themes in sustainability declarations in higher education (see Wright, 2002: 2004) are also meant for students, for example, developing ecological literacy among students to prepare them to deal with environmental problems and developing interdisciplinary curricula for an environmentally sustainable future.

While students are generally defined as recipients or beneficiaries of ESD, this paper is based on the premise that they also have capacity to spearhead ESD initiatives. Some of the priority roles of universities in ESD (Wright, 2002: 2004) have room for student participation, for example, where universities are encouraged to develop an understanding of sustainability in the community, to have sustainable physical operations, and to carry out research that contributes to sustainability.

This paper is an outcome of a PhD study which investigated a systems approach mainstreaming sustainability in university functions and operations through developing an in-depth case study of Rhodes University (RU) (Togo, 2009). The study explored functional operations of a university including teaching, research, community engagement, operations and management. It also considered the way students participate in sustainability issues. The paper draws on the RU case study to share some of the ways through which students are spearheading sustainable development initiatives.

Research Design

The theoretical framework of the study drew from a critical realist ontology (Bhaskar, 1978) and systems thinking epistemology (Banathy, 1992). Systems thinking is based on the concept that wholes are greater than their component parts (holism). This means 'the properties of each part are dependent upon the context of the part within the whole in which they operate' (Gilbert & Sarkar, 2000:1). Systems of various orders therefore cannot be understood by investigating their parts in isolation (Bertalanffy, 1968). Based on a holistic approach, the study included students' initiatives in addition to other operational functions of universities. Systems thinking emphasises interdependencies of phenomena and provides the methodology and tools for a systems view

of relationships between education and the environment in which it is embedded. This enabled studying the sustainability activities by RU in the community.

According to critical realism, reality is beyond empirical evidence and knowledge is fallible. Reality is stratified into levels, that is, the empirical level of our experiences; the actual level of flows and consequences; and the real level of objects, their structures and powers (Bhaskar, 1978). Critical realism therefore seeks explanation beyond empirical evidence using abductive and retroductive modes of inference to develop explanations of causal mechanisms that shape human experience (Danermark, *et al.*, 2002). It regards society as consisting of two theoretically distinct elements of structure and agency, that is, social institutions and the creative individual respectively (Archer, 1995). Agency is the capability of doing things or of actively changing the course of events by causal intervention (Giddens as cited in Weik, 2006). The choice of agents is however limited by structure (Carter & New, 2004). Critical realism was employed as an underlabourer to systems thinking to provide for dimensions absent in systems thinking, including a depth ontology that facilitates isolating causal factors influencing events (Sayer, 2000). This paper mainly draws on the empirical level of critical realism. The viewpoint of the paper was however informed by the real level of objects where the PhD study identified agency as the main causal factor enabling sustainable development initiatives by students at RU.

Data was collected through a sustainability assessment, interviews, content analyses and observations. The sustainability assessment was performed using the Unit-based Sustainability Assessment Tool (USAT) (see Togo & Lotz-Sisitka, 2009) developed as part of the main study to identify sustainability initiatives at the university. Only projects and activities initiated by students were selected for reporting in this paper. The paper also draws from two interviews carried out with members of the Student Representative Council (SRC); the SRC president and the Environmental Officer. Content analysis of documents was performed to complement data from the assessment and interviews. Besides the university's Community Engagement Reviews, most documents analysed were downloaded from the RU website, that is, documents with information on student community engagement, student environmental news, and SRC involvement in sustainability activities among others (see reference list). Two of the lectures organised by students during the RU Environmental Week were observed to triangulate information collected through interviews on environmental awareness creation at RU. Deductions from the main study also revealed some sustainability initiatives which are a result of student agency.

Results

RU students initiated a number of sustainable development projects, either on campus or in the community as part of the university's student volunteer community service programme. Initiatives varied from those aimed at creating environmental awareness; those contributing to the operational management of the university; to those aimed at educational quality in the community. There were however different levels of engagement of students in sustainability activities. Students involved in these initiatives have not necessarily been exposed to ESD. The following is an outline of student initiated sustainability activities at RU.

Environmental societies and sustainability related student groups

RU students in collaboration with the SRC Environmental Officer formed an environmental society in 2007 called Green Revolutions and Social Solutions (GRASS) (P1, pers. comm., 16 November 2007). At the time of the study, the society had over four hundred members and was said to be 'an indication that Rhodes students are willing to take part and recognise the depth for environmental issues at Rhodes' (P2, pers. comm., 8 April 2008). Activities by the society are both on and off campus and are generally around issues of conservation, awareness and sustainability.

> We are very much based on campus-wide as well as in community projects with regards to environmental awareness, sustainable living, a bit of conservation comes in, but I think awareness is one of the major goals they are working with as well as conservation and sustainability. (P2, pers. comm., 8 April 2008)

Students are also involved in the Rhodes Organisation for Animal Rights (ROAR) which is aimed at fostering an understanding of the impacts of lifestyles; especially eating habits; which contribute to the suffering of animals and environmental degradation (see http://www.ru.ac.za/3315). Other societies include the Masincedane Society, Student HIV/AIDS Resistance Campaign (SHARC), and faculty/departmental based societies like the RU Pharmacy Students Association (RUPSA), and the Zoology Society. Students are also involved in sustainability initiatives through the Oppidans,[1] their halls of residences and other clubs.

SRC involvement in sustainability issues

The RU SRC is increasingly getting involved in environmental and sustainable development issues. It has a Community Engagement Councillor and one of its objectives is to 'Increase participation of students in Community Engagement and make this an integral part of a Rhodes University education in a practical and relevant manner both for students and the community of eRhini'[2] (http://www.ru.ac.za/studentrepresentativecouncil/). As will be discussed later, community engagement is one way through which RU students are contributing to sustainability. The council recently (2007) established an Environmental Portfolio and elected an Environmental Officer responsible for environmental and sustainability issues. Creation of the portfolio was supported by the Department of Environmental Science, which is also playing a role in making sure that it works. The SRC Environmental Office receives funding for environmental initiatives through the SRC and the university's Environmental Committee.

Celebration of environmental days

Students celebrate environmental days through environmental and sustainability related societies and the SRC. This is done to create environmental awareness or to implement sustainability related projects in the community. At the time of the study, there were plans by the SRC to launch a Rhodes Water Week in recognition of the International Water Week. Arbor Day celebrations for students for 2008 were also planned. World Environment Day is

celebrated as part of the Environmental Week which, in 2008, was held from 12–16 May and was characterised by a number of environmental activities (see the following section).

Awareness programmes

At the time of the interview, a single awareness campaign had been facilitated by the SRC in 2008 around issues of electricity load shedding.

> We have had an electricity awareness thing where ... we were trying to put forward how electricity and load shedding will be affecting the students, but more important to put a background to it, how our electricity is generated, and a bit of a look on how wasteful and so on, touching on global warming. (P2, pers. comm., 8 April 2008)

This was not as successful as was intended because it was held closer to the orientation week and there was not much time on the part of the Environmental Officer to organise it.

The SRC in collaboration with GRASS and ROAR organised various activities to promote environmental awareness during the RU Environmental Week. These included lectures, movies and a picnic among others.

> … we will be addressing issues of sustainability, global warming and other environmental issues. … that will be a large environmental campaign that will be run for a week long period; lectures, movies; something happening every day. There will be a picnic in the Botanical Gardens, to get some students out there … to get more close, in touch with nature ... . (P2, pers. comm., 8 April 2008) (The interview was carried out *before* the environmental week.)

Observed lectures were entitled 'Vegetarians do not Eat Children' and 'Corporate Social Responsibility'. These were centred on raising environmental awareness, and explored issues of sustainability at the same time. However they were not well attended and both sessions had less than 30 people at a university where there are more than 6 000 students. Some of the lectures addressed the relationship between people and the environment and that between people and animals, etc. (*RU Student News*, 2008a).

In the past, student environmental awareness campaigns were instrumental in the operational management of the university. The 'where-is-a-way' awareness campaign, a student initiative in collaboration with the Estates Division, held to celebrate the World Environment Day in 2006, was centred on issues of waste categorisation and recycling. Waste was collected from all over campus and students separated it into different categories. The Estates Division manager then did an assessment of what is waste to be thrown away, and where to throw it away, as a way of creating awareness.

Car sharing

Students at RU took initiative to establish a car sharing initiative, Greenwheels, aimed at making travelling in and out of Grahamstown cheaper and environmentally friendly (http://

www.ru.ac.za/environment/resources/local/greenwheels). They also established a website (http://zebra.rucus.net/) to provide space for interested individuals to organise car sharing and to create environmental awareness. The website has a number of articles to this effect.

Research on sustainability issues

The PhD study (Togo, 2009) shows that the agency of students was also evident in some environment and sustainability research initiatives at the university. In a wide range of these initiatives, the main determinant factors appeared to be availability of funding, resources (e.g. equipment relevant in sustainability research), departmental research programmes and supervision expertise among others. However, students to an extent had the freedom of choosing research areas of their interest. The study established that in some departments (e.g. Biochemistry, Education, History and Anthropology), students were choosing to do research in environmental or sustainable development issues due to the desire to do relevant and applicable research that can make a difference in the real world. Students were also voluntarily involved in applied sustainability research initiatives. Some of such research endeavours were part of departmental community engagement initiatives. This was taking place in Environmental Science and Geography Departments, and the Environmental Biotechnology Research Unit.

Community involvement

Student community initiatives at RU are supported by the Centre for Social Development (CSD), a non-governmental organisation commissioned by the university to lead community engagement. The CSD is co-funded by RU. Some of the projects students were working on show a high level of community involvement in the area of sustainability. An example is the Adopt a Tree Project where students get young succulent indigenous plants to look after for six months before planting them in bare areas in the community. The plants were said to be good for stopping erosion and for carbon sequestration and eventually grow into large plants. (P2, pers. comm., 8 April 2008)

Student activities for the Rhodes Water Week were planned to take place in the community. According to the interview, this was going to be in collaboration with the Working for Water Programme[3] and possibly the CSD's Galela Amanzi Project.[4]

> … the Galela Amanzi CSD project … is aiming to buy water tanks for the community, specifically for a number of schools which have started projects of gardens in the past. ... these gardens are not sustainable because there is no running water or taps nearby the schools. We are working on getting them some water taps, or tanks or both, so they can have clean water there to use … this is at high school and primary school level. (P2, pers. comm., 8 April 2008)

A tree planting campaign in the community was planned by students as part of Arbor Day celebrations for 2008. The aim was to plant about 50 robust indigenous trees, larger than the succulent plants in barren and treeless areas in iGini. This was going to be done in partnership with the CSD (P2, pers. comm., 8 April 2008).

RU students are challenged to make use of their skills in the community through the Student Volunteer Programme coordinated by the CSD. The centre facilitates over three hundred students volunteering at 30 community-based placements on a weekly basis (RU, 2007). The programme co-ordinator identifies the needs of Community Based Organisations and Non-Governmental Organisations, translates these into volunteer skills requirements and then matches students to the community projects. Volunteers receive specialised training before they are placed (RU, 2005).

A number of projects, some related to educational quality, are running at the university as part of the student volunteer programme. These include:

- tutorship of students from disadvantaged schools;
- English literacy orientated projects;
- sponsoring school children;
- hosting community fun days;
- Peer Education Training (SHARC),;
- AIDS awareness workshops (RUPSA);
- teaching and providing grade 12 biology revision support to learners from disadvantaged high schools (science disciplines students , the Young Royals and Zoology societies); and
- establishing and maintaining a vegetable garden; and running of a soup kitchen for vulnerable families (the Masincedane Society).

There are other community involvements by students through the Halls of Residence, the Oppidans and other societies and clubs which are sustainability oriented. The nature of involvement varies from educational projects for the disadvantaged through various departments to involvement in fundraising efforts for child and family welfare in collaboration with the CSD in which they collect and distribute food and clothing donations (RU, 2007).

Challenges

GRASS was relatively current and the SRC Environmental portfolio a new and unique initiative making it difficult to assess performance with time. In the case of the SRC Environmental Portfolio, it was difficult for students to do performance assessment without similar initiatives to compare it to.

More student support was needed for the success of these initiatives, for example, the Environmental Portfolio as indicated below:

> ... I do need more student support which is in the way of GRASS, students societies, … environmentally aware and active students who I can draw upon, to help me, because ultimately this is not a one man's show, it's a university's so the more students get involved the better. (P2, pers. comm., 8 April 2008)

Student initiatives at the university tend to be short-lived as they die down when the group that initiates them moves away. Initiators generally have a following of people around them. Before GRASS there was GAIA, which just died away.

Some student initiatives are restricted by the operational processes of the university. Other university commitments come first and some initiatives are interrupted by holidays. In the Adopt a Tree Project for example, students couldn't use bigger trees as many live in residences and have no place to properly care for the trees.

Implications of the Results

While students were identified as recipients of ESD, this paper has shown that they can be agents in spearheading ESD initiatives. Given institutional support, students have the capacity to play a role in sustainable development endeavours which reach out to their local communities. There is however need to address structural factors and other challenges which might limit their agency.

The RU study is just one case in point. Worldwide students have revealed their agency in ESD in different ways, focusing on a diversity of sustainability challenges at various scales. Without going into much detail, some of these initiatives[5] address issues like climate change, on-campus education and action on environmental issues, international development projects and local outreach (including political structures, gender equality, microfinance, international trade, human rights); and conservation to mention a few.

Sustainable development issues cut across disciplines and affect everybody. All students should therefore be beneficiaries of ESD. If all the students involved in spearheading sustainability issues at RU were exposed to ESD, initiatives would have been of a much broader and profound nature. ESD could also be structured in such a way that it equips and empowers students, not only to take charge of their lives and participate effectively in sustainability initiatives, but to be the bearers of knowledge on sustainable development who can participate in educating society about such issues.

Conclusion

Student initiatives augment the way RU is responding to sustainable development challenges. In a number of initiatives, there is collaborative work between students and university management that has resulted in strong and comprehensive responses. This is especially the case in community involvement where the student volunteer programme has enhanced the university's responses to the community in sustainable development-related issues. This paper however only shared the student initiatives without investigating how adequate or relevant these initiatives are. It did not go deeper into investigating challenges that students face in instigating the identified initiatives but only highlighted a few challenges that were reported during data collection. Future related studies at the university can target assessing student initiatives so as to develop ways of addressing challenges and improving the initiatives. The paper was also restricted to initiatives in which the agency of students was evident in the activities. There

are other sustainability initiatives at the university that involve students but which were not reported as they were not a result of student agency (see Togo, 2009).

Notes on the Contributor

Muchateyi Togo is a post-doctoral fellow in the Rhodes University Environment and Sustainability Education Unit. She completed her PhD in 2009 on Education for Sustainable Development in African Universities, in which she focussed on a case study of a systems approach to mainstreaming environment and sustainability in one university (Rhodes University). E-mail: muchatogo@yahoo.com

Endnotes

1 Oppidans is a union of the community of students who stay off-campus. It has a committee which is responsible for coordinating donations (see http://www.ru.ac.za/oppidan/).

2 Grahamstown.

3 The Working for Water (WfW) programme is administered through the Department of Water Affairs and Forestry. It was launched to spearhead the fight against invasive alien plants and works in partnership with local communities, to whom it provides jobs, and private companies, government and other oganisations (Department of Water Affairs and Forestry, 2008).

4 Galela Amanzi promotes responsible use of water, as well as make water available to community centres and schools that do not have consistent safe running water (Rhodes University Student News, 2008b).

5 More information on a few examples of such student initiatives can be obtained from the following websites: http://www.montana.edu/cpa/news/nwview.php?article=6573; http://wscsd.org/; http://groups.tigweb.org/NSCC-SD; http://www.unbf.ca/clubs/ENVS; and http://www.ssdactivist.20m.com.

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Viewpoint

Developing Modules on the Topic of Education for Sustainable Development: A Cross-cultural Approach for Engaging in International Collaboration and *Furikaeri*

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Abstract

The aim of the project reported on in this viewpoint paper is to develop a package of curriculum materials for use in the teaching of the topic of Education for Sustainable Development (ESD) at the primary school level. The project is an international collaboration between teachers in primary schools in Cape Town (South Africa) and Toyko (Japan), supported by researchers at two Universities – The International Christian University (ICU) in Toyko and The University of Cape Town (UCT). The curriculum materials are being developed jointly by teachers in the two countries, through a collaborative process that involves a number of reciprocal visits to each others' classrooms and participation in video conferences together. Once completed, the materials will be trialed in the respective contexts. A further feature of the project is the use of the Japanese system of Furikaeri *(or 'lesson study'). This is a form of reflective practice which has been shown to be a most useful tool in support of teacher professional development.*

Introduction

At the World Summit on Sustainable Development in Johannesburg, South Africa (2–4 September, 2002), the Japanese delegation made a suggestion to establish a Decade of Education for Sustainable Development (DESD) in order to highlight the need to promote changes in approaches to education so as to integrate the principles, values and practices of sustainable development. In December 2002, the United Nations General Assembly adopted Resolution 57/254 to initiate a United Nations Decade of Education for Sustainable Development (DESD), to run from 2005 to 2014. Governments, international organisations, NGOs, educational institutions and schools are now variously engaged in campaigns and programmes to promote ESD on a global scale.[1]

This paper reports on a two-year collaborative project in progress involving teachers and researchers in two countires – South Africa and Japan. The project seeks to develop a learning module for use in the teaching of Education for Sustainable Development (ESD). The module strives to be well grounded in the respective local socio-economic and cultural environments, whilst at the same time projecting a globally shared perspective on the topic. And most importantly of all, it is intended for joint use in Grades 4-6 classrooms in the two countries.

An important secondary aim of the project is to elaborate a longer term plan for developing ESD modules for use at both the primary and secondary education levels, to be implemented against the time frame of the United Nations Decade of Education for Sustainable Development

(2005–2014). As such, the project has the potential of making a unique and significant contribution in the emerging field of ESD. It is hoped that the project will also provide a vehicle for harnessing Asian and African indigenous wisdom and knowledge in support of sustainable development, whilst at the same time demonstrating the value of international educational cooperation.

A Cross-cultural Approach to ESD

One of the principal characteristics of the Cape Town-Mitaka joint ESD module development project is its international or cross-cultural approach to ESD. The intention behind this approach is not to replace the national curriculum for ESD with an international curriculum but rather to enrich the national curriculum with an international or cross-cultural perspective.

Working in the same 'twinned' schools in the two countries, the development of the module will take place over a number of years across a number of grades. There is an expectation that producing, trialing and refining instructional material in this way will result in a product that has a high level of internal coherence whilst at the same time ensuring that it is closely aligned with the respective national curricula. In the case of the South African schools, environmental education forms part of the science curriculum. In Japan, environmental education forms part of general studies.

An added benefit of this sequential approach to materials production is that its development will track a cohort of children over a number of years of primary schooling. The primary schools participating in the project have all been actively engaged in environmental education with an emphasis on the development of the learners' understanding of their immediate environment. Both the Cape Town Schools are registered eco-schools. The Cape Town-Mitaka joint ESD module development project seeks then to expose learners in the participating schools to a different or foreign perspective on sustainable development issues. From the first round of exchange visits between the two teams of teachers involved in the project, some common approaches to introducing environmental issues and concerns into the classroom are starting to emerge. However, these visits have also revealed the extent to which the respective curricula and environmental contexts differ – thus highlighting the challenges facing international collaborations which are fully committed to the development of shared curriculum materials.

Generally speaking, there can be two approaches for introducing an international perspective into a national curriculum framework. One frequently used one is an 'additive' approach. Here a teacher would, for example, engage his/her learners around the state of the river found near the school and consider its impact on the quality of soil and water in the surrounding area, and would then introduce the learners to a corresponding situation in another country, and then draw comparisons between the two. So the learner is being asked to consider the local context not only in terms of its socio-economic and environmental parameters but also in relation to the foreign situation. Information is accessed via appropriate literature, including texts, photos and/or video-recorded material. These days such information is readily accessible via the internet. However, the process of introducing the foreign situation can be enriched considerably by having a 'foreign' teacher present providing the 'additive' instruction.

The other approach, which may be termed 'integrative', would take the learner one step beyond the above-mentioned local environmental concern and ask them to consider a 'global' state of environment, using multiple factual situations drawn from different countries. This is the approach adopted here, where a local river system from Mitchells Plain in Cape Town and Mitaka in Toyko are studied by both groups of learners. Once a broader reference frame has been established, the learners in both contexts are more likely to grasp the significance of global sustainability issues.

To enhance these learning opportunities, the project is examining the possibility of holding a number of joint classes in which the South African and Japanese teachers engage in team-teaching over the internet using video-conferencing.

Research Focus

The project is underpinned by a collaborative research initiative held by researchers at the two universities that are supporting the teachers in the ESD module development – the International Christian University (ICU) in Yoyko and the University of Cape Town (UCT). One interesting research focus is to measure the impact of the implementation of the Japanese system of *Furikaeri* or lesson study as a tool for reflective practice (Fernandez, 2002). *Furikaeri*, which literally means 'reflection' in Japanese, is a practice that has received some attention in the West. It also constitutes a primary instrument in educational cooperation activities supported by Japan's International Cooperation Agency (JICA).

Here in South Africa, in collaboration with the University of Pretoria, JICA supplied technical support for an extensive retraining programme of secondary mathematics and science teachers in Mpumalanga. The Lesson Study method was successfully used here to help institute a school-based in-service training system.[2] Lesson Study practice is usually organised as a series of lesson-improving activities by a group of teachers (e.g. all the teachers of a primary school, maths teachers from neighbouring lower secondary schools) either with or without the direct support of the local board of education.[3] Typically it follows a number of sequential steps:

1. A group of teachers agree to conduct a lesson study session on a given topic in a given grade (e.g. the function of a river in a local eco-system in Grade 5).
2. One teacher is assigned the task of developing a draft lesson plan.
3. The draft lesson plan is then circulated to the other teachers in the group, who offer their suggestions/comments for improvements. These are then incorporated into the lesson plan to be delivered in class.
4. The assigned teacher conducts a class using the prepared lesson plan, with all the teachers observing (and taking notes) in the classroom.
5. All the teachers get together for a post-lesson conference. The conference opens with some initial reflection comments by the teacher who delivered the lesson, and in the ensuing discussion the other teachers offer their observations. Particular attention is given to identifying concrete ways to improve the lesson plan.
6. The organiser of the group wraps up the meeting.

7. The assigned teacher prepares a report on the exercise, which is then shared by all the teachers.

Over the longer term the Lesson Study may be an effective strategy for the professional development of practitioners and potentially, be a mechanism for change oriented and expansive learning (Engeström, 1999, 2001; Lotz-Sisitka, 2008). Each of the four school contexts (two in South Africa and two in Japan) will be handled as separate case studies to seek out commonalities and possible contradictions or trends based on interviews with the educators and lesson study critiques using the theoretical lens described.

Using the Lesson Study approach has a number of merits. Firstly, it facilitates the establishment of a practical framework for the joint module development activities. This would make it easier to account for cross-cultural differences in the teaching and learning practice between the two countries. Secondly, as the two teams become more experienced and skilled in the use of this method, the ESD module to be developed would improve in quality and practice. Finally, the joint experience by the South African and Japanese teams in using this method may shed a useful light on how international collaboration work may be organised for ESD.

Conclusion

In summary this short Viewpoint paper describes an initiative between schools in two countries to jointly develop ESD modules that are relevant in a cross-cultural context. The nature of the process embraces an international approach to professional development and reflective practice. The outcome that is envisaged is a protracted study that has an impact on the development of practitioners and ultimately, impacts postively on learners' ideas and actions. As outlined above, further research will document how this process will emerge.

Notes on the Contributors

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Viewpoint

A Viewpoint on COP 15: Dispatches from Copenhagen

Million Belay, MELCA, Ethiopia

Editor's Note

These dispatches from Copenhagen were received from Million Belay, director of an environmental non-governmental organisation (NGO) in Ethiopia called MELCA. Million is a well-known environmental activist and educator in Africa, with long-standing contributions to conservation in Africa. He is currently completing a PhD on biocultural diversity, community learning and agency. Since this edition of the SAJEE takes its theme as 'Environmental Education in the Year of COP 15', I thought it would be of interest to EEASA members if we published some of the 'coalface' experiences of a respected environmental education researcher and activist who attended KlimaForum09 (the main civil society gathering at COP 15).

The dispatches cover 10 days' participation at COP 15 and are collected here as Copenhagen 1–10. They give insight into the range and complexity of the issues being discussed, the socio-politics of the time and how participation happens in such events. For education, it is perhaps salient to develop a deeper understanding of the social processes that shape how and what we educate about (e.g. climate change issues, REDD) and Million leaves us with some profound questions to ponder.

Copenhagen 1 (6 December 2009)

Hi folks,

Arrived at Copenhagen after a long and sleepless flight. I hate flying. It drains my energy for the second day. I can't do also any work in the plane. I am wondering how people who fly a lot also write copiously, as Vandana Shiva does.

The KlimaForum members waited for me at the airport. I was expecting a lot of girls with smiling faces to be at the airport waiting for participants as it is done in other countries. They were there but the person was waiting for me was an older guy with a lovely smile and kind words. He gave me a map and showed me where to go. The map shows that a river cuts through the city and the airport is at the other side of the river. People go the extra mile to be nice to delegates. One middle-aged man took me right into the train at the next station. The whole population must have decided to create a good impression on the participants. I saw a lot of couples with children on my way to the flat that African Biodiversity Network (ABN) has rented. Having heard that population growth in Europe is very low, that was a surprise. Teresa and Anne met me at the house on arrival. A family had left a three-bedroom flat for us.

Teresa showed me the note that the owner of the house left for us. It read 'We hope you will enjoy your stay here and hopefully you and the rest of the COP 15 participants will make great difference for the climate and the future of the world.' For a moment I thought, 'Wow! How nice!' Then I thought, 'How complex.' Saving the future of the world (he he he).

We went for the registration late afternoon and had to queue up for ages to do so. So many people. *The saviours of the world*. I don't remember queuing up for such a long time. The first part was outside and it was so cold. Anyway we saw some old faces. I hated to see some of them. I find them at every meeting I go to and it seems that they live for it. Some are really devoted and make us see the holes in the negotiations but most, at least for me, are just hordes of people who just go to be there. Sorry! Where do I belong???

We also learned that the Danish government has prepared prisons and some cells, about 350 of them, for people who may disrupt the meeting for one reason or another. Well if you are found on the wrong side of the street today, you might end up in one of the cubicles.

Well I will leave you with a statement from Martin Khor about the negotiation. 'Despite last week's announcements by the US and Chinese Presidents, the prospects are not so bright that Copenhagen will "seal the final deal". Hopefully the Conference can agree to a framework and basis of an eventual deal in 2010 that is both fair and effective.'

Talk to you tomorrow!
Million

Copenhagen 2: 7 December 2009

Hi hi,

It was still dark when we got up in the morning. It was the day of the opening and I was expecting flying tomatoes and rotten eggs at the conference centre, as there was a talk of violent demonstrations, but it was a bit noisy but peaceful. Somebody slammed a paper on my chest and I grabbed it in astonishment. He did not even look at me. I read the paper later and it basically says that climate change is a hoax and it is a scandalous conspiracy by the industry to siphon off money from Northern People to the fund industry to their benefit through mechanisms like carbon trading while millions of people are jobless. They cite the story about the East Anglia University as evidence that the whole thing is a conspiracy between the scientists and the corporations. Well what do you say to that? I think probably in response to this a lot of scientists are coming out with new data to back the climate change story.

I went later to the KlimaForum. This is a people's forum as they say. This is how the whole set up goes. At a place called the Bella Centre politicians sit for negotiations and NGOs join them for lobbying. That is, the politicians and the high-flying business world sit for negotiations. Somewhere in the centre of Copenhagen is a music festival every evening. This is near the City Hall. I was there last night and the setting and the music is really great. Some 300 metres to the right is the KlimaForum. This is where most of the radical NGOs, indigenous peoples and local communities gather together to network, learn and voice their concerns. The idea behind all

this is that the Bella Centre process will not address the issues of the majority of people. This is also where, I was told, new and sustainable values and principles are shared. I asked one of the coordinators how the two processes, the Klima and the Bella, are connected. He said through declarations and focused lobbying through some NGOs, which have a good rapport with the government officials at the Bella.

The Bella Centre – good heavens! It is so huge. A sea of faces of all colours and kinds. This is the first day and a lot of people will be arriving in the coming two to three days and will add to the confusion. I met an Ethiopian whose name is Mulugeta and he said 'Hey! This is like a wedding. A lot of commotion, I do not know what to do! Welcome to negotiations. You really have to be strategic and, if it is your first time, you need to give at least three days to get your bearings'. He also told me that there is a European plan (he called it a 'conspiracy') to give 'fast start' finance to developing countries. Well you might say, what is wrong with that. As an ECO publication put it, 'We got excited by such eagerness from the industrialised countries to move down the track. But on closer look we saw that the track drops of a cliff after a few metres.' The argument is that there is no funding now without funding later. I think the developed countries wanted to repackage aid and give it as climate funding to developing countries. This should not be a substitute for predictable, additional and adequate finance over both the short and long term.

I was wondering whether or not we can join the negotiation but it was even closed to the media. Only those selected can go. I heard 20 from the press and 20 from the TV were selected. That is out of about 5 000. The total number of people who are registered to participate is more than 30 000. I am being conservative here and I will update you later but it can be much more. Not surprised with all the media attention.

Yesterday the US Environmental Protection Agency announced that it has passed a regulation that labels greenhouse gasses as a dangerous pollutant. This was greeted with enthusiasm from many. Well, we will see if this commitment pushes the other nations to do more to make the agreement a possibility.

Teresa came late to our house as she was lobbying on technology issues. Apparently technology transfer, out of the four main issues in the negotiations (finance, adaptation, mitigation, technology), is the least controversial. But Teresa is lobbying for a proper assessment of technology to be done before it is transferred. I also joined a meeting about carbon financing and agriculture. The agreement, so powerfully expressed with all around the table including Teresa, is that there should not be carbon offsets in agricultural negotiation texts as this will open the way for industry to usurp the process and come with their Genetically Modified (GM) solutions.

Till tomorrow!
Million

Copenhagen 3: 8 December 2009

Hi all

The day was volcanic. You might have heard about the Danish proposal. I will come to it later.

'Lost and found! You have lost some carbon here on your way to Copenhagen. Please take it and put it away in trees.' That was a shout from few demonstrators at the Bella Conference centre. I was greeted with some Chinese who may have not been Chinese, since they look similar to other people in the East, saying that vegetarianism is the best for climate. 'Don't eat meat.' They were shouting. 'I love meat. Meat is delicious!' I said to them and they laughed. There were also some youths painted in all green and saying 'Be like me. Be green.' Teresa was on the point of tears remembering these boys and girls while we were having dinner. She said 'They have no idea about the seriousness of the matter. They think they have done their job by jumping and shouting "Seal the deal! Say no to climate change!"' You could have seen her face when she was saying this.

I went to the KlimaForum/The Peoples Forum around noon. There was a presentation by Anna Filipina about Reduced Emission from avoided Deforestation and Forest Degradation (REDD) and climate justice. The gist of her presentation is that deforestation contributes only 10% of green house gas emissions while using fossil fuel contributes the remaining 80-90%. So by funding and supporting REDD, companies are trying to get our attention away from fossil fuels. The two main carbon sources are from underground, so you cannot plant the entire biosphere, enter in to a REDD agreement and reduce greenhouse gases (GHG). She said REDD will increase poverty, cause conflict, privilege carbon rights over human rights, privatise forests, repeat the mistake of the Clean Development Mechanism, etc. There was a similar meeting on REDD at the end of the day and there was a presentation from Nepal, Uganda and Panama basically saying the same thing that, with the current arrangement and mechanism, REDD will be used by companies to avoid their responsibilities of mitigating greenhouse gases and will provide an incentive to governments to abuse local communities and indigenous peoples. There was also a report that areas with high biodiversity were converted to monoculture tree plantation under a REDD mechanism. There was one government official from Ethiopia who proudly supports REDD and I was looking at him sideways to see his reaction. I thought I detected a smile on his face.

There was also a presentation on climate justice. The presenter said climate is a justice issue because climate is a space/a resource and we all have a right to share this space. The principle of common but differentiated responsibility says basically 'reduce domestically and give financial support to those who were not the original polluters'. Countries are entering into carbon trading because they do not want to reduce domestically and want to pay to other countries to offset it for them. So they look for places and mechanisms for cheapest reduction. That is why they like REDD. They pay countries to keep their forest or plant new one (can be genetically modified), and calculate the amount of carbon dioxide (CO_2) that these forests have absorbed and pay for that.

I met Professor Wangari Maathai and she said *'Heeeeeeeyyyyyy Million. Liz told me about you. You are doing great things.'* Oh what did Liz say now? You know she puts a value 10 times of what you are and gets you into trouble as people expect a Martin Luther King kind of wisdom from you. My fear was confirmed as Wangari asked 'Million tell me, have you been following issues on agriculture? What did they say? Did they put REDD as a mechanism there?' There you go. I replied, 'Yes they want to put carbon offsetting as a mechanism there and that is dangerous because first there is no assurance that they will talk about small-scale or sustainable agriculture, second there is no guarantee that the farmers will get the money and third carbon offsetting as a principle is bad as it gives polluters a right to pollute.' I was thanking Teresa for shoving some documents on my lap and for discussing this with me.

We did not continue our conversation as we heard angry shouting a little further on from us. As we approached we could see that it was Africans and there were a lot of cameras flashing and recording what was happening. I did not understand it. Later we learned that the lead negotiator of the G77 and China, Mr Lumumba from Sudan, had a meeting with African civil society. He told them, in tears, that the Danish government has produced a document and it was bad for Africa. He said that in the negotiations some developed countries are proposing only 10 billion dollars per year as financial transfer to Africa. This is bad for Africa and this is not fair. So that was the commotion. I was impressed and happy that at least Africans are doing something. I remember during the World Summit for Sustainable Development (WSSD), I was a member of the African Civil Society Network for WSSD representing Eastern Africa, when ministers, the EU president, delegates and media were clambering to meet us and hear our views and positions. I advised some of them today to invite the Danish delegates to come and explain their position.

Well folks, the political machine in the delegates meeting room is churning as I write so I will get back to you with more musings.

Cheers!
Million

Copenhagen 4: 9 December 2009

Hi there,

You will not believe this. We arrived so early this morning. Still dark and we found the 'no meat' people distributing their 'no eat meat' document. That was fine but for one thing. This time it was all in a bag. The bag was heavy and I dived into it and came up with a book. It is a hardcover book with glossy paper. It has the picture of a Chinese lady, the Supreme Master Cheing Hei, and the title is *The Dogs in my Life*. Inside there is a picture of her dog sitting on snow and a line that says 'Doggy your bottom is cold.' There is another one and the dog is looking straight 'Ah doggy! Are you looking at the camera?' Pages and pages of this kind of nonsense. Can you imagine somebody printing this rubbish on a glossy paper and distributing it to every delegate

to the climate change convention? All this paper. About 20 people distributing this day and night. It is amazing the level that some rich people can go to satisfy their egos.

I liked an idea that I saw yesterday. They have put a big sculpture of a bear made of ice in the middle of the city. People go to touch it. Their touches will obviously melt the ice as their bodies are warm. The structure that was supporting the sculpture is becoming visible now. This is to show the effect of humans on the earth. We are basically stripping of the earth of its cover with our human touch and that is the story.

Well, there is a funny thing is going on here at the Bella Centre. By the way, it is really a challenge to go from the Bella Centre to the KlimaForum. Well a lot of silly things are happening here and you know silly things have their own attractions. One funny thing is that everybody seems to hunt for one secret document or another. A day before yesterday the hunt was for the Danish document. Yesterday it was for the adaptation document. I bumped into my friend Karamajong from Uganda, and he told me with lowered voice that 'You know I got a secret document from the Europeans. It is about their deal not to give enough adaptation funds to Africa and Least Developed Countries. Can you try to get the secret document from the Africans? The Africans have started looking at the Danish document and they have produced an alternative and I am looking for it. Can you help?' I laughed inside and left him.

We had a briefing yesterday from the brilliant Salim, he is from the International Institute for Environment and Development (IIED) and originally from Bangladesh. He follows issues related to adaptation but he is conversant with the politics of climate change. He said 'If anyone tells you that he knows what is going on right now, he is lying. Dr Tewolde confirmed this with me. I met him in the middle of one of the biggest rooms and asked him "What is going on?" He stretched his hand sideways and said "I don't know!" There you go.

Well basically, as Salim has put it, the negotiators have only till Friday to bring out an agreed text. Then the ministers will come in over the weekend and work on the document and prepare it for the heads of state. I think there is a high chance that the negotiators will not finalise a document or will not agree on a single document and the ministers will be asked to produce one. There is also a big chance that the ministers will not agree either and the heads of state will have to sit and negotiate. This is history in the making. The heads of state come for heads of state things, not to go over every paragraph and fight for an is and a was. This is also an opportunity. This may give the head of state a chance to agree on a new deal negotiated among themselves. I remembered our Shumacher talk (when I visited Shumacher College earlier this year) of living on the edge of chaos. It will be interesting to take them out of their comfort zones and let them face the issues. It might be an opportunity for them to learn about climate change, understand things and appreciate the pain of their negotiating delegates and the people who are and will suffer from the impacts of climate change.

The Danish Minster's story was interesting. I think he had an idea. He went to the Asian Pacific leaders meeting and told them. They nodded their heads. He then went to the Commonwealth meeting and told them. They also nodded their heads. He thought he got their agreement and talked with US and UK, they nodded their heads. Then the Chinese got word of it and invited the Indians, the Brazilians and the South Africans to Beijing in 48 hours and have discussed the issue and called themselves the BASIC (Brazil, South Africa, India and

China) group and came up with a 'non-negotiable principle.' The G77 reacted strongly when he presented his idea to them. Then my good friend John Vidal of the Guardian (we spent one week together in the wilderness of South Africa) got the paper and posted it over the web. That has created hell and an embarrassment to the Danish government.

This morning Anne, Teresa and I talked about agriculture and carbon offsetting. Anne talked about GMOs, Teresa about agrofuels and land grabbing in Africa and me about ecological agriculture. I had to brush my memory of the Institute for Sustainable Development project in Tigray and talk about it. We talked about ABN's solution for climate based on facilitating community resilience, ecosystem resilience and working for ecological governance. I think it went well. There was also an excellent presentation on Biochar from Biofuel Watch.

This is a mad city in terms of cost of things. You cannot think of food less than 50 Danish kroner. That is close to 200 biir (US$9.60) and with that money the whole staff of MELCA can have a lovely lunch. I think it is the second most expensive country in the world, next to Norway. Very friendly people though. We met an Ethiopian student here yesterday and he said 'Well they are nice but it is very difficult to get close to them. They are into themselves.' This contradicts with what one old man told one of us yesterday when we were getting out of a lovely old bar 'Well don't dress up like this. The Danish ladies here are very friendly.'

The recent publication of ECO, the magazine that goes out every day and is widely read points its finger today at the EU. It said the EU today in Brussels must get their act together and suggest a higher target and give the negotiations a much-needed boost.

The Danish people are now calling their city *Hope*nahagen. Let's hope for the best. I am rushing to a closed NGO meeting called CAN (Climate Action Network) and I hope they will not close their doors on me. Will report tomorrow.

Cheers!
Million

Copenhagen 5: 10 December 2009

Hi hi hi,

What a bad morning. I am mad this morning. I could not let it out in the meeting so I am boiling inside.

I just arrived at DR Byen, a university rented by the International Institute for Environment and Development (IIED) for a four-day conference on climate change adaptation and development. There was an impressive list of speakers and I wanted to get hooked in to it. As I arrived a taxi stopped and huge cardboard boxes and stacks of bags were offloaded. Salim of the IIED, the climate guru that I told you about, came out and said 'Million, can you help?' What timing. So I did some real exercise in the morning. But all is not lost. I got the chance to ask Salim about what is happening and he said 'There is a bit of development. The Asians have produced a document for political commitment'. This is a breakthrough, according to Salim, because it is a legally binding document. He asked me to lobby the African governments to

support it. I asked him whether or not he saw the document and he said he did not. He might even have been an architect in drafting the document, who knows??

Then the meeting began. Four speakers were expected but only three came. Professor Wangari Maathai was there. The Danish Minister gave a politician's talk and added that the Danish government is allocating US$240-million *additional* funding for adaptation. A business CEO for a sustainable energy company said the right words. We have to start sustainable energy companies in Africa. Wangari spoke beautifully about the relationship of components of ecosystems. She talked about how deforestation exposes the watershed and how soil erosion will affect agriculture and how the soil run off will fill hydro-electric dams and because of this power cuts will result, leading to job loss. She also talked about the drying of rivers because of exotic tree plantations and how governance is critical to all of this.

The next speech was by a professor talking about GM Crops. He said 'Adaptation is needed for Africa because it is extremely destitute and here are the solutions: GM crops.' He said Romantic environmentalists from Europe forced the European governments to refuse GM and they shot themselves in the foot. Africans copied Europeans and they shot their own heart. Because African seeds are tired and useless they need to boost the seed with GM technology. He said Public Science is not the norm in the US, and Europe should do public research and save Africa, as there is no research in Africa. What do you say to that? I was flailing my hand but I could not get the chance to speak. I would have told him that Africa has close to a billion scientists, as every farmer is a scientist. Who gave to the GM companies the seed and the germplasm in the first place? Who gave the medicinal plants to the drug companies? I would have called him a reductionist, as there is no improvement in agriculture without an ecosystem approach. What about the resilience of communities? What about them deciding on their fate, governing themselves? Who asked them? Our treatment has been what somebody called a veterinary approach. You do not ask animals about where and what they feel. You just do one or two tests and prescribe a medicine. That is what is he is promoting. Well you could see how he worked me up. I think we share also part of the blame. We do not write. We do not publish. We do not stand up and say what we believe in. We do always go to Europe with a begging bowl. We trust only 20% of what our scientists say and if a European comes and tell us, we believe at least 90% of what he says. Every time we do presentations, we say only the negative things about our own countries.

What a day yesterday was. It finally got to me. I was extremely confused and mad about the whole thing. I really felt angry. Why are we all here? Somebody told me that the normal number of participants at negotiations or conventions is between 5 000 and 10 000. We are over 30 000 now. You really feel the number when you are at the Bella Centre. I tried to see for myself how people are tuned in with the issues and, believe me, it seemed as if over 90% of the people have no idea of what is happening. I mean at the political level. So why all the CO_2 that we have released on the way to here? Publications? Hundreds of books, brochures, calendars, flyers, bags, you name it! A lot of it! You can even hear the trees crying through these papers. DHL is giving a free service for the mailing of 2kg per day to the delegates. So you can ship your load using airfreight without worry.

I participated at the Climate Action Network (CAN) meeting yesterday. You need to get a CAN sticker to attend. I had my friend from Zaire and he gave me one and I got into the meeting. There were about 150 die-hard activists. Long hair, bleary and sharp eyes from fatigue, anger on their faces and agitated. People had divided themselves into issues so they were reporting to the audience. There is somebody that types as they write. Gosh her speed must be 200 words per minute. So fast. Well, the gist of it is that there is little progress on many fronts.

We met the Kenyan Prime Minister yesterday. His speech focussed on the usual 'Africans must unite and we can do it and we have to speak with one voice and we have a lot of resources but we are poor …' Some people even clapped for him. But I respected him for taking the pain to come to talk to African Civil Society. You could not imagine that happening in our case. That is really sad. The relationship between the Kenyan civil society and government is really great. Maybe most of the parliament also worked at NGOs some time ago. Maybe it is a reflection of the relative freedom that Kenyan media and Kenyans enjoy back home.

Copenhagen 6: 11 December 2009

Dear friends,

This morning I was bouncing and whistling happily as I was going to the train station. The two ladies in the house are so kind. This morning Anne cooked a delicious Kenyan bean sauce and served rice with it, while Teresa asked if I had any washing that needed doing.

I was thinking what Teresa told me this morning about somebody called Depak. He started the Biofuel Watch. Judging from the flow of information, I thought it to be a big organisation with a number of highly paid staff. Apparently he sold his house to live in a flat and to volunteer five days per week to monitor and write about biofuel-related issues. Most of the people working for him are volunteers. What dedication!

I went to KlimaForum to talk on GMO and agriculture with Vandana. I popped in before the talk at the KlimaForum feeding tents to see what they were serving. The usual lentil and chickpea soup with bread. The soup is hot and it tastes good but, having it everyday, well that is another story. You see a lot of volunteers cooking, cutting bread, washing and trying to help you if you need help. A fantastic sense of wanting the Convention to succeed.

I talked about the right solution to climate change in the session about GMOs and climate change. Vandana was one of the panellists. She is great, as you know. It is daunting and also a privilege to speak alongside her. I spoke about the Institute for Sustainable Development Tigray project and ABN's community resilience, ecological governance and ecosystem resilience approach as one of the best mechanisms for adapting to climate change. It is a pity that the Institute of Sustainable Development (ISD) is not visible here. Sue must buy me lunch for one week for promoting her work in every meeting that I spoke at. I think we all need to emulate and sell ISD's and Navdanya's approach for revitalising rural livelihood.[1]

I had dinner with Pamela and Maria of the SwedeBio and Yoke Ling of Third World Network (TWN) and Silvia and Diana from Environment, Technology and Corporations (ETC). Five highly dedicated and knowledgeable women! As this is a climate change convention, Yoke Ling

took the centre stage. The TWN people are absolutely brilliant in the way that they follow issues. Very analytical! Yoke Ling said basically that 'both the Conference of the Parties (COP) and the Meeting of the Parties (MOP) are suspended. It means the climate negotiation in Copenhagen is stalled. Apparently the small island states led by Tuvalu, the first island to sink because of climate change, brought a text to serve as a basis of negotiation and asked for a committee to be set up to do it. All other small island states and some African countries (Senegal and Burkina Faso?) supported them. China did not like this, along with some other countries. The Tuvalu proposal asks not for at a 2°C cap but for a 1,5°C cap and has some strict measures. I think G77 and China has also agreed to this 1,5°C cap. Well apparently the NGOs thought that Tuvalu is leading the show and felt that the others are resisting and undermining Tuvalu. So there were demonstrations in the Bella Centre, Tuvalu Tuvalu *viva viva*! Apparently this is all a game of repositioning and there was no basic disagreement between the G77 and China and Tuvalu. By reacting like that the NGOs did not get the story right and are doing much harm. So that Tuvalu Tuvalu (you can have a picture in your mind of hundreds of young people shouting this) is a misled move.

The other story is that Patrice Lumumba, the Sudanese leader of the G77 and China, gave a briefing to the NGOs. Everybody came out of that meeting mesmerised and full of high-flying appreciations. What he said was that a deal that cannot save humanity is not a deal. A 2°C cap will heat Africa by 3,5°C and will destroy the small island states. So the emission reduction should be 52% by 2012, 65% by 2020, 85% by 2030 and 100% by 2050. That is tough, isn't it? He also said that the Kyoto Protocol should not be changed.

By the way, they are going to chuck some of us out of the Bella Centre. They said there is absolutely no place for the number of people that we have now and when the heads of state come, it will be packed so we need to reduce some people. So I might be reporting from outside.

By the way the KlimaForum is also getting full. I visited the display there and the contrast with the Bella Centre is interesting. Most of the bags and other materials are for sale while people beg you to take them at the Bella centre. You also see a lot of dishevelled and longhaired guys and girls lying on the floor sleeping or chatting with their friends.

I am copying the TWN daily briefing text here, just to show you the level of confusion here!

Copenhagen, 11 December 2009 (Meena Raman) – There was an important turn of events at the Copenhagen Climate Conference on Friday when the Chairs of the two main working groups issued draft texts early in the morning which they proposed for negotiations among the Parties. This caught most delegates by surprise because there had been no prior announcement or notice that there would be 'Chair's texts' and certainly not so early in the process.

The two texts were distributed by Michael Zammit Cutajar of Malta, the Chair of the Ad-hoc Working Group on Long-term Cooperative Action (AWG-LCA) and John Ashe of Antigua and Barbuda, Chair of the Ad-hoc Working Group on the Kyoto Protocol (AWG-KP).

At around 11.30 am this morning, the Chairs of the two Working Groups convened a session with Parties at an informal session, to discuss the draft texts. Several countries were said to have given their

preliminary views. On the LCA text, diplomatic sources said that some countries indicated it could be the basis for further discussion on condition that the Chair's text on Kyoto Protocol also moves forward. A few countries had serious reservations, including Bolivia which questioned the mandate and process, while the US said it had not had time yet to study the text but had found problems with some of the content. The EU and Russia apparently accepted the text for further discussion but had reservations that it assumed there would be a separate decision on the Kyoto Protocol when they wanted a single agreement, according to the sources.

The 7-page draft text of the Chair of the AWG-LCA states that 'In the draft text, the outcome of the work of the AWG-LCA is envisaged as a package consisting of a core decision and thematic decisions further elaborating enhanced action for the full, effective and sustained implementation of the Convention. The Chair states that this draft of a possible core decision is presented with the intent of facilitating progress in the AWG-LCA under the Convention negotiations toward a comprehensive and balanced outcome. The draft is not intended to prejudge the results of these negotiations or the form and legal nature of the agreed outcome to be adopted by the Conference of Parties in accordance with the Bali Action Plan. In its references to the Kyoto Protocol, this draft text assumes the adoption of a second commitment period under the Protocol.'

The Chair's draft text for the AWG-KP states that they are 'intended to facilitate progress in the negotiations of the AWG-KP. They have been prepared under the responsibility of the Chair and should not prejudge the form of the results of the work of the AWG-KP session.' The Chair also noted that 'nothing is agreed until everything is agreed.'

Meanwhile, it is learnt that several developing countries and their groupings have also prepared draft texts of a final outcome in Copenhagen. These proposed texts include one from China, with the support of India, South Africa and Brazil; another document by the LDCs; and a text by the Africa Group in the form of a Decision of the Conference of parties; as well as a document in the form of a draft protocol by the Alliance of the Organisation of Small Island States. Some of these texts were circulated at the meeting of the G77 and China and it is learnt that there may be an effort to coordinate among these countries on how to proceed. It has also been learnt that the Danish Minister for Climate and Energy, Connie Hedegaard, who is the President of COP 15, is convening a meeting to which Environment Ministers of 50 countries have been invited.

Cheers!
Million

Copenhagen 7: 12 December 2009

Good morning friends,

Well I went to the march half an hour before it started. I alighted at one of the stations and had to walk for half an hour to the Copenhagen Centre where the march was started. Posters including *'We do not have planet B', 'Change the politics not the climate' 'Our climate – Not your businesses'* and so on, were there. You should have seen them on the TV. There were free placards to be distributed. I took the *'Change the politics and not the climate'* one and walked with it. There were all sorts of people. People were also marching with their families. Red-faced children were marching with their parents in that cold. Many Ethiopian mothers would have fainted if they found their children in that cold.

While I was marching I was thinking of three things. How is it that it is so easy to march/demonstrate here? Marching can be dangerous back home. I also did not see a heavy military presence all the way except when we got near to the Bella Centre. The police looked nervous and the atmosphere looked tense when we got near there. By now you will have heard that over 900 people were arrested – well, I survived to write this e-mail. I met Ed of GAIA now and he told me that there was a kind of an anarchist in the bus that brought him here from London and the main reason for him coming was to provoke violence.

I was also thinking how this climate change scenario has brought the world together. There were more than 100 000 people in the march and there were also marches around the world. As the industry collaborates to take over the world, the people are also making their move. This morning I attended the 'Information and adaptation' (title totally mine as I have forgotten the right one) meeting and I was bored as I could not find anything new. I bumped in to Nigel Crawhall on my way out and we had had a lovely meeting. He is great. We talked about the recently formed Alliance for Food Sovereignty in Africa (AFSA) and he said he liked the name and I reminded him that the Intergovernmental Panel on Climate Change (IPCC) has taken on the responsibility of coordinating the Alliance. He knows the issues and politics around the Convention for Biological Diversity, Indigenous Peoples movement, protected areas, you name it. He said he could see now that there are lots of networks out there working on the same issue that AFSA is working on and he finds it easier to see the need for a bigger alliance among different continents. So part of his mission is to do that. That is the first example how linkage can happen in the world.

The second interesting initiative, this is the story: I also went to KlimaForum late this morning and, as I was looking for an internet connection, a woman came to me and said 'I am interested in you.' She took the breath out of me and I said 'Sorry! What?' 'Yes I am interested in you. You are beautiful and I am sure you have interesting ideas.' I was fumbling for words and she gave me a card and went. The card has the picture of the globe in the middle with '2020, I'm in' written on it. Under it it says 'Which piece of the puzzle do you hold?' At the back of it it says, 'Come join us at the Climate Solutions Meshwork Space.' Apparently there are nine sites in the Mesh and you see where your idea belongs and sit there and talk about your solutions and that will be shared among the multitudes that are interested in that subject. So all that she

was interested in was my ideas! The card says 'Find the people you need. Access the growing body of best practices and solutions relevant to you.' Brilliant idea and approach, isn't it? I am planning to get to this place and see what these nine session tables are.

We had a lovely time last night at the Indigenous Peoples evening organised by the Christensen Foundation. I met Liz there. She was doing the Liz thing the whole night – hunting for funding and connecting me with people. Christensen has a lovely exhibition at the KlimaForum and their exhibits are really great. Under each of the photos there is a detailed and clear explanation about each of the pictures. So educational! I was thinking of improving the cultural biodiversity exhibitions that we have all over Africa.

The Bella Centre is closed today. Don't know why – maybe to sort out how to strengthen the security from now on. Talk to you tomorrow.

Cheers!
Million

Copenhagen 8: 13 December 2009

Hello there,

What a flood! The conference centre at Bella was literally flooded today with people. I thought for a moment on arrival that it might not be possible to enter today. Apparently the screening and the chucking out of us NGOs will start tomorrow. Each of the institutions that have accredited us decides who will have access to the Bella Centre. My Ethiopian friends told me yesterday that the majority of them would not enter tomorrow.

Speaking of the Ethiopian night, we had a lovely evening yesterday. We were about 22. There were many who did not come. This climate change issue is galvanizing the civil society. The Ethiopian civil society was preparing for Copenhagen. They helped in educating the public back home. There was a series of talks till the two young ladies from the group almost ran away. There was a Danish woman among us. Apparently she played a key role in coordinating the civil society for climate change and everybody was grateful. I was thinking on the way to where I am staying, 'How many Europeans, of European origin, played a key role in strengthening civil societies in Africa. Some even with a huge mark in rural Africa. I can count a handful for Ethiopia.' Most of the time we blame Europe for one thing or another. Some of this blame is really justified. But sometimes we should also be thankful to the European public who donates the money and to some of them who really work hard to bring an initiative to fruition.

On your way from Bella Centre to the city centre, just a few hundred metres from the station, there is a statue of three men: one wearing a blue cloth, the second an orange and the third a red. I was watching them this morning. It gets dark earlier here so in darkness they look like three village elders. In daytime their gaunt face and sunken eyes stare at you. The wind blows their cloth. They watch the conference delegates to the Bella Centre when they go in and on their way back. I was musing 'What would they make of these throngs of people as they go in and out?' In a day or so they will also be watching the heads of state coming in out. 'What

if they represent the eye of the world? What do we all say to them? We are all responsible in our own way? What will we answer if they ask us, what have you been doing? What are you going to take back home? How will your participation change the situation back home in some way? Hard questions, eh?

I went to meet Liz and other three people at the Imperial Hotel. It was not guarded yesterday but today there were three cops. They are huge these cops. They remind me of the movie *Robocop*. They look like two people in one cloth. Security is getting pretty tight now. We were explaining the work of ABN and the new initiative of connecting Asia, Africa and Latin America to the people around the table. We talked about the mapping that we did in Venda, South Africa, and how that has mobilised the local community, how we are planning to roll this out in Africa and how protecting places of energy on the landscape is critical for the survival of the ecosystem, how connecting elders with young is essential for the continuity of biocultural knowledge and practices, etc. Their question was, 'Yes we know, you know, but how do we package this? How do you brand this? This is not poverty reduction, or improving livelihoods or giving opportunity for children for education …' Well I think if they think about it is all that. But new ideas are always a challenge to many. The German philosopher Arthur Schopenhauer said that 'All ideas/ truths go through three steps. First it is ridiculed. Second it is violently opposed and third it is accepted as self-evident.' I hope ideas of working with sacred sites are accepted sooner before we lose our ecosystems.

I will leave you today with a highly readable and informative piece from Martin Kohr. This is the situation right now as I write:

Deadlock at Copenhagen Climate Summit
By Martin Khor

More than halfway through the UN Copenhagen Climate Conference, the fate of the meeting lies in the balance between partial success and outright failure. The conference has just completed its first week. The more difficult and tense part will come this second week, when a hundred Presidents and Prime Ministers are expected to attend on 17 and 18 December. The hope is that they will be presented with a draft of an 'agreed outcome' or Declaration that the officials and Ministers have prepared. But the way the talks have gone so far, it is more likely the political leaders may have to make some of the key decisions themselves. *There are just too many key issues still unresolved. The biggest contentious issue that has emerged in the last few days is the* shape and structure of the future global climate regime. *The developed countries, especially Japan and Europe, are insisting that a* new agreement *be established that replaces the present Kyoto Protocol. Almost all members of the UN Framework Convention on Climate Change are members of this protocol, with the United States as a notable exception. Since the* US does not want to join, *the other developed countries don't want to continue being in it, and instead want to set up another treaty that includes the US but that also places new obligations on the developing countries to act on their emissions. This is unacceptable to the developing countries, since the new treaties will most likely* not place *strict and legally binding commitments on the developed countries to cut their emissions, unlike the Kyoto Protocol. Moreover the developing countries under the present rules are not obliged to take on*

legally binding emission-cutting commitments, and they don't want to be pushed at this late stage into taking on new obligations that is not mandated in the Bali Action Plan and that they fear will adversely affect their economic development, particularly since the promise of finance and technology transfer has not been fulfilled.

When new drafts of the decisions were issued last Thursday at the conference by the Chairs of the two main working groups (on further commitments to reduce emissions by Annex I developed countries under the Kyoto Protocol; and on long term cooperative action under the Convention), Europe and Japan led an attack on them as they were based on the premise that the Kyoto Protocol would remain. *For more than a day they even refused to engage in the talks on the Kyoto Protocol, and instead wanted consultations with the Chairs to see if their texts could be modified. At a plenary meeting last Friday, Europe and Japan again voiced their opposition to the texts. The extension of the Kyoto Protocol won't solve the need to reduce emissions, they said. A 'single agreement' that also includes the US and the developing countries is needed instead. At the same meeting, the developing countries insisted that the Kyoto Protocol continues and that the developed countries agree to cut their emissions of Greenhouse Gases by at least 40% by 2020, compared to 1990 levels. And that separately, through Decisions of the Conference of Parties (COP) of the Convention, the US should commit to a similar effort in a COP Decision, while the developing countries would take voluntary mitigation actions, supported by finance and technology transfers. In the past weeks, some developing countries have been announcing national targets. For example, China stated it would decrease the emissions intensity of its* GNP by 40–45% by 2020 compared to the 2005 level. *For each unit of output, it would emit 40–45% less Greenhouse Gases. This is quite an ambitious target, which is more than the developed countries themselves have achieved in recent years, according to a Chinese scientist at a forum on 'Carbon Equity' held at the conference centre last week. But the Europeans were not impressed, saying that the Chinese target is not enough. And at the Copenhagen conference, they and other developed countries kept stressing that the developing countries have to commit to do more, such as to deviate from their 'business as usual' emissions level by 15-30% by 2020. There is no agreed definition or even common understanding of what is 'business as usual'. Such an obligation is not what was agreed to at the Bali COP conference in December 2007, and has been rejected by most developing countries, which are ready to make national targets voluntarily but do not want to bind these targets in a treaty. [The Convention and Kyoto Protocol are based on the principle of common but differentiated responsibilities, recognizing the historical responsibility of developed countries in causing global warming and their far greater ability to take emissions reduction actions.] Developing countries argued strongly for a 'two track' outcome in Copenhagen. Track 1 is an agreement for a second period of deep emissions cuts by developed countries (except the US) under the Kyoto Protocol (starting 2013). Track 2 is a set of COP Decisions under the Convention in which the US will make an emission reduction commitment similar to the other developed countries, while developing countries agree to take mitigation actions backed by finance and technology (and these are subject to being measured, reported on and verified). 'The lack of progress in the negotiations and lack of will by developed countries to engage is unacceptable, and we are opposed to their intent to kill the Kyoto Protocol, the only legally binding instrument we now have,' said the chairman of the Group of 77 and China, which is currently Sudan. Developing countries spoke up one after the*

other to support this, and reiterating that there must be a 2-track process at the Friday meetings of the Convention Parties and the Kyoto Protocol Parties. These included Grenada (on behalf of the Alliance of Small Island States), Gambia (on behalf of the African group), South Africa, Nigeria, Brazil, India, China, Malaysia, Saudi Arabia, Pakistan, Oman, Egypt, Papua New Guinea, Tuvalu, Afghanistan, Palestine, Kuwait, Micronesia and Bolivia. 'The sanctity of the two tracks must be maintained and we must avoid any side-stepping from our main work to conclude the second period of the Kyoto Protocol' said India. China also stressed that the twin track system was what was agreed by all the Parties to the Convention (including the US) in Bali, and now the world was watching again as the conference has only a few days left, while developed countries have not shown the political will to act. Bolivia chided the developed countries, which is responsible for 75% of the historical emissions in the atmosphere, for wanting to kill the Kyoto Protocol in order to deny repaying the climate debt they owe to developing countries and to Mother Earth. 'Now they say they want to wait for others to pledge before they make their response. That's not a responsible attitude.' As the wrangling went on in the conference halls, over 100,000 people marched through the streets of Copenhagen, demanding action as well as 'climate justice' from the world's leaders. The deadlock in the talks, especially on whether the Kyoto Protocol will survive and whether there will be an outcome in two tracks, or a new single agreement, *is threatening a successful conclusion to the conference. Only days remain before the Presidents and Prime Ministers turn up on 17–18 December, hoping to sign a historic climate deal. Whether there is a partial deal, which must at least include the architecture of the climate regime, or only an agreement to keep on talking, remains to be seen.* (Martin Khor is Executive Director of South Centre.)

Copenhagen 9: 14 December 2009

Hi folks,

I felt a pang of sadness today for not be able to report to you from Copenhagen starting tomorrow. Tomorrow will be my last day. I asked for a plane and they said I should pay close to 1400 Euro! Can you believe this? Well anybody that thinks my reporting is worth more than 1400 Euro, please get back to me quick (he he he). I was hoping to participate in our Prime Ministers (PMs) talk and report.

You know every day I forget one thing or another for reporting. I think I should have a little notebook for the future to remind me. I forgot, for example, to report about Anne, Teresa and my presentations yesterday. How can I forget that! The two ladies were absolutely marvellous. The halls at the KlimaForum are huge and the LCD screen covers a big chunk of the wall. So we had to stand to talk. So I think this gave them the chance to dance and charm the audiences while talking. Anne called her generation 'a fish and chips' generation. She lamented that we are forgetting the foods of our parents and are killing ourselves with junk food. We are contributing to the loss of seed and other biodiversity by stigmatising and marginalising our food, she added. This, she said, has opened the door for seed companies and researchers to appropriate our vegetables and seeds and sell them back to us. She also talked about how the Alliance for Green

Revolution in Africa (AGRA) is wearing the cloak of small farmers and is strengthening seed companies and intellectual property rights (IPR) systems in the name of a green revolution in Africa. Teresa gave the examples of expansion and subsequent failure of Agrofuel in Africa. She talked how this is exacerbating climate change, as the areas given are forest or agricultural lands. This is happening, they say, in marginal lands. 'Well,' Teresa said, 'these "marginal lands" are grazing lands for pastoral and agro pastoral communities and areas of biodiversity.' She also talked about the land grabbing that has gripped Africa as a fever.

Well there is nothing new in what I said but this time I focused on the image that people have about Africa and how that is shaping Northern policy and research and subsequent prescription of one solution or another. Well this image is sought by Northern NGOs because they will not get money if they show the beauty of Africa. I remember a story from one of the highly respected NGO leaders in Ethiopia. She went to Germany for fund raising. There were industry and government people for the occasion. She wanted to look like an Ethiopian and had her cultural outfit. She dubbed her eyelashes with some things and put on her lipstick and looked gorgeous. She went out of her dressing room smiling. The lady who was leading the program came running to her and said 'What are you doing? Why are you wearing this? You should immediately take this cloth off and wear something dirty. We are portraying you here as poor and here you come wearing this cloth.' She did not even wait to listen but went to the stage bouncing. She said she cried, cried and cried. For a long time. Too shocking to be true, isn't it?

I came to the Bella Centre today. Much quieter than yesterday. As expected most of them are government people. They have taken over the place from NGOs. A lot of people with dark suits and exquisite overcoats! I asked one of the Ethiopian delegates about the day and he said 'Nothing is happening. No change. We still are stuck in our positions. They (developed countries) have probably got five strategies. We only have one. I think they want to exhaust us with a lot of documents and in the end they will make us agree on what they want pretending that it is our issue which has prevailed.' I wondered at the level of mistrust that the negotiators have of each other after listening to him.

I heard today that the Ethiopian Prime Minister comes tomorrow and he will give a speech on adaptation. Africa led the developing countries yesterday and insisted that the conference place top priority on the developed countries' emission reduction commitments, and on the continuation of the Kyoto protocol (KP), which is the legally binding treaty under which the commitments are to be made.

Martin Khor writes 'For a whole morning, the work in several "contact groups" stopped while the developing countries' leaders met with the Danish climate change minister Connie Hildegard, who apparently agreed that the KP track of the Copenhagen talks would be given due attention. She also tried to allay fears that the Danes would throw in their own new draft for the heads of governments to consider and adopt on 18 December. Fears and suspicions abound in the conference, and the stakes are high. Many contentious issues are still far from resolved and no one knows how much the gaps can be closed in the next days.'

Let me leave you with an extract from my favourite writer, George Monbiot:

This is the moment at which we turn and face ourselves. Here, in the plastic corridors and crowded stalls, among impenetrable texts and withering procedures, humankind decides what it is and what it will become. It chooses whether to continue living as it has done, until it must make a wasteland of its home, or to stop and redefine itself. This is about much more than climate change. This is about us.

The meeting at Copenhagen confronts us with our primal tragedy. We are the universal ape, equipped with the ingenuity and aggression to bring down prey much larger than itself, break into new lands, and roar its defiance of natural constraints. Now we find ourselves hedged in by the consequences of our nature, living meekly on this crowded planet for fear of provoking or damaging others. We have the hearts of lions and live the lives of clerks.

This is a meeting about chemicals: the greenhouse gases insulating the atmosphere. But it is also a battle between two worldviews. Today the battle lines are drawn between expanders and restrainers; those who believe that there should be no impediments and those who believe that we must live within limits. The vicious battles we have seen so far between greens and climate change deniers, road safety campaigners and speed freaks, real grassroots groups and corporate-sponsored astroturfers are just the beginning. This war will become much uglier as people kick against the limits that decency demands.

While economies grow, social justice is unnecessary, as lives can be improved without redistribution. While economies grow, people need not confront their elites. While economies grow, we can keep buying our way out of trouble. But, like the bankers, we stave off trouble today only by multiplying it tomorrow. Through economic growth we are borrowing time at punitive rates of interest. It ensures that any cuts agreed at Copenhagen will eventually be outstripped. Even if we manage to prevent climate breakdown, growth means that it's only a matter of time before we hit a new constraint, which demands a new global response: oil, water, phosphate, and soil. We will lurch from crisis to existential crisis unless we address the underlying cause: perpetual growth cannot be accommodated on a finite planet.[2]

Talk to you tomorrow on my last bit.

Cheers!
Million

Copenhagen 10: 15 December 2009

Hi Folks,

I am writing my last Copenhagen report from Copenhagen. The ladies said 'Oh no. We do not have any one to spoil now.' I am lying. By the way last time I wrote about them cooking for me, it was me who took the waste to the waste dump. Talking of the waste, people here have excellent waste sorting mechanisms. You do not throw organic and inorganic wastes together. Bottles are also put separately. They sort it starting from their backyard. I always ask myself 'Do

I know where the waste from my house is going?' That is environmental hypocrisy for you. It is challenging to walk your talk as you know.

It was snowing yesterday. Beautiful to see!

We went to an Ethiopian night organised by GTZ and the German and Danish birdlife international members a day before yesterday. There were beautiful slide exhibitions and tastings of Ethiopian coffee. Very positive image and I was happy as you can imagine. One of the panellists was a South African lady and she said that the problem for the South African communities coping strategy is institutional and information need. During question answer time I raised my hand and boasted of my knowledge of Venda and said that according to the *makazis* (the women traditional leaders) and the chiefs, the main problem is the disintegration of their culture expressed in increasing consumerism, degradation of their territory, disempowerment and the decrease in intergenerational transfer of traditional ecological knowledge. Recently, I was discussing the same issue with teachers and elders in Venda and they said that previously they could tell about weather patterns through reading nature (they watched termite mounds, for example, and when the termites close the openings of their mound, they would know that it is going to rain). But they now get daily environmental information through radio and stopped reading their environment. We saw a movie about technology and human beings disassociation with nature and the message is 'Humans have started seeing the sky through television windows rather than their room windows.' Well this may sound far-fetched but at the root of all our problems is the increasing separation that we are having from nature.

I went to KlimaForum for the last night and was astonished to find George Monbiot speaking. He shocked me when he said that his uncle came cycling to Copenhagen. He was 71 years old. He was found dead today. He asked for half a minute's silence that was observed. Some people! It is difficult in our context to come to speak at a meeting when you lose someone close.

His story about nuclear power is also shocking. Well before him a nuclear scientist spoke about the issue in general. He said the argument for nuclear power is that it is clean, cheap, secure and storage and production processes have improved and with no fear of a Chernobyl kind of crisis. The reasons against it were interesting. He said there is little skilled power in the world now. Those who know about it are either very old or have died. There is also a rising cost for start-up. Huge cost. International relevance is decreasing. There is also a terrorist threat. What will happen if the workers are infected with flu, he asked. The whole plant will be shut, as there is a shortage of skilled power.

George Monibot told story after story of crisis. What surprised me was his story about an Italian mafia family who were commissioned to dump nuclear waste by the Norwegians. He said 'of all people, by the Norwegians. They have the money and are one of the countries with strictest environmental regulations. If they did it, who will not do it?' They sank the ship somewhere near Italy. Once they were caught they said that this was one of the more than 200 ships that they were commissioned to do. The majority of dumping happens near the cost of Somalia. The Somalis have had a vigilante group to control this. This is after the famous tsunami where the waves have taken buried barrels of nuclear waste into the villages of Somalia and killed an unreported number of people. Now there are warships apparently protecting the ships from the Somali pirates but some ships still come to dump their nuclear waste and do illegal

fishing. Do you believe this? Stealing and dumping under the protection of an international community!

We had a lovely dinner with the two ladies of the house. We also used the evening to evaluate ABN's engagement with the COP. We patted each other's backs for the little success that we have achieved. Teresa worked so hard in the last few months of the COP preparations to get us here and prepare us. The house that we live in is really great. She has also contributed to the changes in some of the texts. Anne was connecting with the Africa group and even has participated in some Demonstrations with the Pan African Climate Justice Alliance (PACJA) crowd.

We also said that we could have been more strategic. We could have used the media more strategically. I think the first step in that is to be absolutely clear in our stories and to know how to deliver it clearly and in simple terms. A TV channel interviewed me yesterday and the lady asked me to tell her the story before recording. When I said 'You know we have to be climate resilient through ecological governance …' she cut me short and said 'that is too technical my friend. Simplify your words.' I went on 'Okay, we really need to diversify the livelihood …' 'I am sorry Mr Million this livelihood thing is a big concept please simplify it again …' I looked at her in bewilderment and I said 'Okay. Let us take a farmer in a village. What would it take him to live with climate change? He has to have cohesion with the other community members so that they act together in times of unexpected weather extremes.' She said 'Now you are talking.' Then we continued. See! I think this was a big lesson for me.

We also said that we could have systematically watched each of the stalls and picked something that ABN can emulate. I think Anne and Teresa will do this in the coming two days. We could also have been more strategic in linking with other partners. Overall though, for our number and the scale of the confusion here, we really have done better than other times.

Well, my final word. After engaging heavily with the World Summit for Sustainable Development (WSSD) in 2002, I was disgusted with the whole mumbo jumbo of international meetings and decided to avoid them as much as I could. What kept me sane that time was my work with the farmers of ISD. I avoided after WSSD all the COPs of environment-related negotiations. They can be extremely exhausting. I think if you are true to yourself, it is extremely difficult to influence these processes. So it is better to leave these processes for some who are adept at it. I may engage with these COPs in the future after reflecting on them as thoroughly as I can. I will find my time and energy better used if could strengthen community processes and advocacy at Africa level. I am so excited about the networks that we have started in Africa, Alliance for Food Sovereignty in Africa (AFSA), and I think we should spend our energy to bring more networks in this wing and bring a bigger and stronger front for Africa. This is the way for change. Not big international meetings. I am not denying their importance but you need to be extremely strategic and very clear about the purpose of your engagement. Sorry for talking Big!

Bye my friends! I need to run to the airport. I am already late by half an hour.

Cheers!
Million

Some final thoughts

I was impressed with the amount of information on climate change at the COP 15. It looks as if everything to be known is already known. But on a closer look, you can see that there are many holes to be filled. Many areas of interest for environmental education research! As you can see from my dispatches and musings above, there are so many complexities to the climate change discussions, but for environmental educators, I think the following points are worth considering.

1. The coping strategies of local communities: How do they learn to cope? How do they learn to adapt? How are adaptation techniques by local communities transmitted among generations?
2. How is adaptation gender and age segregated? How do children adapt to change in climate? What is the implication of this for education?
3. How can education help communities to adapt?
4. How do we create activists on environment in the context of climate change at all school levels?
5. How do we communicate climate change to local communities? How can we understand local realities and communication mechanisms and use this to communicate about climate change? How can we make this communication help local communities understand what is happening at the global level and prepare them for the eventualities of climate change?

Endnotes

1 The ISD encourages farmers to do soil and water conservation, to heal the land, planting of trees and grasses to increase plant biomass and produce compost using crop residues and plant material from the planted trees and grasses. It was started in four villages and now it has become one of the programs of the Tigray Region (one of the nine regions in Ethiopia) and is going to be adopted at a country level.

2 See full article on www.monbiot.com/archives/2009/12/14/this-is-about-us/.

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