Editorial
Environmental–Education Research in the Year of COP 15

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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°C. 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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