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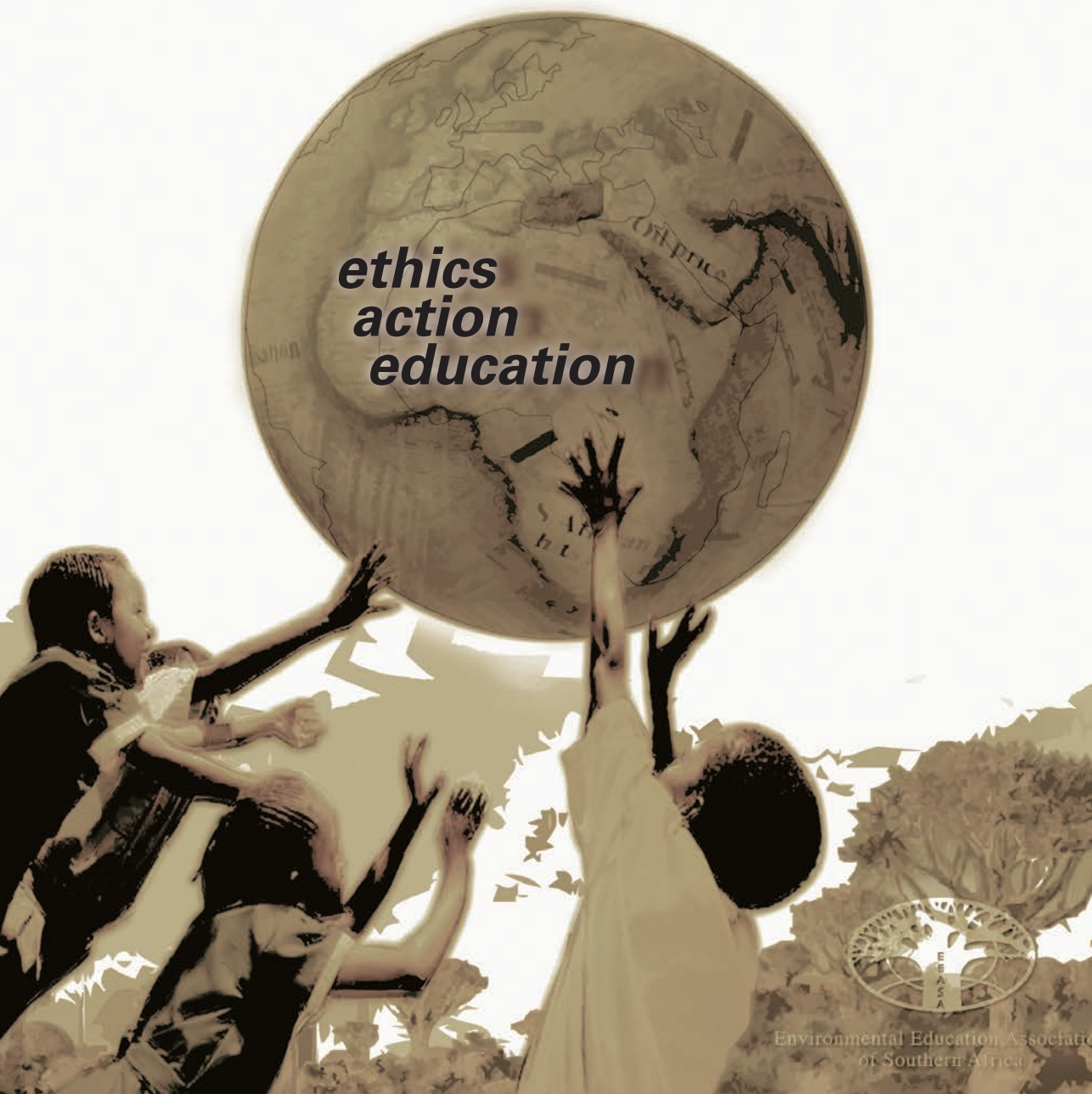

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The Southern African Journal of Environmental Education (SAJEE) is an internationally refereed journal published once a year. The journal is published by the Environmental Education Association of Southern Africa (EEASA).

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 Article 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
## Perspectives on transformations in learning and education

Heila Lotz-Sisitka, Rhodes University, South Africa

The year 2015 officially marks the end of the UN Decade of Education for Sustainable Development. It also marks almost 40 years since the Tbilisi Declaration was first released, providing international guidance on environmental education. The Environmental Education Association of southern Africa has also been around for over 33 years, and 2015 will mark the 31st Edition of the southern African Journal of Environmental Education. 2015 also marks 25 years of the Murray & Roberts Chair of Environmental Education at Rhodes University, where the SAJEE is housed, and from where it has been edited for the past 31 years. In this time, environmental education has been integral to various transformations in the education and training systems of southern African countries, and indeed also internationally where similar transformations are taking place.

Thus, much has been done over the past 30-40 years, providing an opportune time for us to 'look back' on the history of environmental education in southern Africa and elsewhere, and its role in transforming education and society. However, looking back means little if it cannot help us to also look forward. Simply reviewing transformations in education may not be enough as our looking back an forward needs to be contextualized within the changing planetary systems and societies that are being shaped by anthropogenic activities and contemporary development frameworks. In this regard, Anna Stetsenko (2008) suggests that "collaborative purposeful transformation of the world is the core of human nature and the principled grounding for learning and development".

The International Social Sciences Council recently invited social scientists to participate in a new research programme entitled "Transformations to Sustainability". The documentation associated with this research programme suggests that "In the face of ever expanding environmental problems and disaster risks on the one hand, and converging crises of climate, inequality, food, water, finance and social discontent on the other, the focus of demand falls sharply on innovative, sustainable social solutions" (ISSC, 2012). Research on education and learning must form part of the new social science knowledge that is being produced in this context, in order for us to deepen our understanding of the role of education and learning in educational and societal transformations to sustainability.

Against this background, this edition of the Southern African Journal of Environmental Education contains a number of papers that consider the transformative potential of environmental education research and practice. The first paper, by Dylan McGarry, develops an approach to transgressive social learning based on what he calls 'a collaborative connective aesthetics approach'. The paper is constituted as a personal iterative retrospective of a series

of expansive social learning processes that were collaboratively developed through practice-based enquiry across 17 South African towns/contexts. The paper reflects on the formative foundational qualities of arts-based enquiry approaches and shares insights into social learning praxis that emerged 'on the tracks', referring to the mobile platform where the research took place.

The second paper in the journal, by Martha Chaves, Thomas Macintyre, Eliana Riano, Jorge Calero and Arjen Wals, explores the role of social learning in bringing about transformative sustainability processes in individuals and communities. Their paper draws on 12 months of action-orientated research to explore the triple-loop learning process of an ecovillage in Colombia called Atlántida. The paper shows that social learning processes are not always 'smooth' and easy to engage. They report on the process of how disruptions in the community provided an opportunity for members to enter into a process of deep learning because they were willing to collectively reflect on their process.

The next paper in the journal, by Victoria Ferdinand, also addresses the transformative potential of social learning. Her study sought to identify social learning, change and transformation in adaptive co-management interrelations introduced under the project 'Reduction of Emission from Deforestation and forest Degradation' (REDD) at Pugu and Kazimzumbwi Forest Reserves (PKFR) community in Tanzania. The study points to both enablers and constraints associated with learning, agency formation, social change and transformation in this context, and reports that social learning in PKFR community was potentially stimulated by people's relational interactions, reflective thinking, anticipations and their questioning of past practices. However, she points out that most of the REDD-stimulated learning did not transform the practices desired by the project.

The next paper in the journal, by David Lindley, provides a useful overview of the literature on social learning which he says is "enormous", with differently framed ontologies and epistemologies aligned to mutiple perspectives of learning in a social context. These have grown out of the many academic disciplines that have seen the value of social learning. The paper provides a broad-based understanding of transformative social learning by defining social learning with a socially critical orientation, and distilling key elements of social learning important to supporting social change.

The paper by Helen Fox, Tally Palmer and Rob O'Donoghue also addresses the transformative potential of social learning. The paper reports a case study of a severely degraded lake social-ecological system where an environmental education initiative was implemented with the aim of supporting its transformation towards improved social and ecological well-being. The paper highlights and discusses three characteristics of the initiative that appeared to support the transformative process, and reports on the range of new practices that emerged from the social-ecological system transformation initiative.

Coleen Vogel, Ute Schwaibold and Shanu Misser also consider the issue of transformative learning. Their research shares insights into the way in which the design of teacher education materials and curriculum might be more or less tranformative in a climate change response context. They argue that the complexity of climate as an interconnected system, including earth and socio-ecological systems and 'deeper' thinking, requires critical enquiry, reflexive and

transformative education approaches. Extending this argument, the paper provides a synoptic overview of three emerging South African cases of teacher education materials development, high school material design and the design and implementation of a new tertiary degree offering centered on teaching and learning for climate change.

The journal closes with a viewpoint paper and a book review. The viewpoint paper by Pieter Swarts, Julialet Rens and Luiza De Sousa aims at raising interest in working with environmental education pedagogies to enhance the quality imperative of social and environmental responsibility for South African learners through the fundamental subject Life Orientation. Lynette Sibongile Masuku reviews a recently published book entitled *'Intergenerational Learning and Transformative Leadership for Sustainable Futures'* edited by Peter Blaze Corcoran and Brandon P. Hollingshead. Her richly textured book review, conceived in the midst of the recent student protests in South Africa, provides various reflections on and reflections of authors' works in the book, all of which address the important question of intergenerational learning and transformative leadership in turbulent times.

From the above, it is clear that this edition of the *Southern African Journal of Environmental Education* offers readers much to mull over as the topic of transformation and transformative learning remains on the agenda of environmental education research.

# The Listening Train: A Collaborative, Connective Aesthetics Approach to Transgressive Social Learning

Dylan McGarry, Durban University of Technology


## *Abstract*

*This paper explores a personal iterative retrospective of a series of expansive social-learning processes that were collaboratively developed through practice-based enquiry across 17 South African towns/contexts. This reflexive narrative explores the development of a 'Climate Train', a mobile social-learning platform, that was conceived and created through a collaborative social movement of 'cultural practitioners' ranging from visual artists, poets, film-makers, theatre-makers, guerrilla-gardeners, musicians, facilitators, to educational researchers, among others, who created new 'connective aesthetic' social spaces for dialogue and exchange. Drawing from a variety of artistic genres, including but not limited to theatre and social sculpture (an expanded concept of public/participatory art), I reflect on the formative, foundational qualities of these approaches and share insights into social-learning praxis that emerged on the tracks. Of primary focus is the use of aesthetic praxis as a means that transforms how we engage with our inner capacities as well as how we develop our relational sensibilities. Key findings include the vital role of connective aesthetics in establishing imaginal thinking, moral intuition, empathy, participative parity, and emergence, and how these are important for transformation and establishing new capacities for ecological/global citizenship and collaborative intelligence.*


Keywords: Connective aesthetics, transgressive learning, transformation, social learning, transdisciplinary praxis, practice-based research, commons, ecological citizenship.

## *Introduction*

In 2011, I spent 44 days aboard a train that traversed South Africa. As part of a large team, we learnt of the realities of climate change, environmental degradation, and other injustices through open discussions and exchanges with citizens in 17 different towns. Known as 'The Climate Train', this project was a collaborative, social-mobilisation initiative that aimed to create an alternative to the traditional 'conference' space. This was a conference that travelled – and offered South Africans a variety of processes and initiatives that encouraged emergent conversations, exploring everything from droughts, destructive mining, and drug abuse, to innovations in energy, agriculture and activism (as well as many other issues in between). The train was conceived in the build-up to the 17th United Nations Conference of the Parties, or COP17 (a global climate change conference, that meets annually and aims to

create a comprehensive agreement among all nations to reduce carbon emissions and respond collectively to climate change).

The impetus behind the Climate Train Project was to ensure that citizens across South Africa would not be excluded from this huge event that was taking place in December 2011 in Durban, KwaZulu-Natal. The organisers of COP17 seemed primarily or almost exclusively interested in including governments and some civil-society partners, and we believed this to be a massive oversight. The primary focus of the train was to create an experiential, grounded form of environmental education that did not arrive with any particular agenda, but rather created social-learning opportunities in each context which were accessible and relevant to the people living in each town. Put simply, we wanted to create social spaces in which it would be possible to meaningfully listen to citizens. It was an exercise in establishing spaces in which to empathetically witness the lives, ideas and questions of citizens in each town, whilst being culturally neutral and accessible.

In hindsight, I appreciate our naivety, as we aimed to achieve a kind of emergent, 'experiential' or 'grounded' form of dialogue and learning through an experimental-learning approach that was experiential and expansive, although I did not understand it as such at the time. This paper explores some of the relevant experiences I had on the train, and how the train helped me (and my fellow collaborators) to understand the role of aesthetics and active absence in creating social-learning methodologies (concepts I define in the following section). While this is not a research paper, it is a personal, reflexive examination through an iterative narrative of the phenomenon that was the Climate Train and of key concepts I learnt over those 44 days that shaped my understanding of social and expansive learning.

## *Aesthetic Experiential Learning*

Experiential-learning processes encourage discoveries and experimenting with knowledge first-hand, instead of hearing or reading about others' experiences (Kolb, 1984). While we wanted to encourage experiential learning on the train, we also wanted the learning to be expansive and inclusive. Expansive learning in this context was inspired by the work of Engeström (2001) and is reminiscent of Mukute's (2010) work, where active open discussion and reflection are encouraged through a series of communicative and social-learning processes. We also drew from Wals, Van der Hoeven and Blanken's (2009) idea of establishing a relational agency by enabling a learning society that can engage with developing a more sustainable world. In this context, social learning is seen as instrumental in developing a 'learning system in which people learn from and with another and, as a result, collectively become more capable of withstanding setbacks, of dealing with insecurity, complexity and risks' (Wals *et al.*, 2009:11). Our understanding of this was fairly rudimentary and intuitive at the time.

In shaping the 'expansive-learning processes' for the train, we believed that an aesthetic approach would 'open up' spaces for dialogue and exchange, as well as create the common social space in which people could gather and explore questions and ideas. We therefore enlisted a multiple-genre team of aesthetic practitioners from the visual arts, dance, music, theatre, film, poetry and participatory art.

The train was essentially a collaborative social-learning experiment that introduced 'connective aesthetics' as a methodological innovation. 'Connective aesthetics' was initially conceived by Gablik (1992) and has been loosely defined by different practitioners since then. In our context, 'connective aesthetics' offers a tangible connecting force that sparks imagination and intuition, and creates new opportunities for dialogue, exchange and also personal reflection. The role of Gablik's (1992) connective aesthetics and Sacks's (1998) particular expansion of aesthetics – which she describes as the process of 'enlivening' through aesthetic, being the opposite of 'anaesthetic' – played a considerable role in how we were able to lift out these capacities for imagination and intuition of participating citizens and make the invisible aspects of social exchange visible. Sacks's (1998) redefinition of aesthetics, and its direct relationship with ethics and agency, was possibly one of the most influential contributions to how we approached our pedagogic questions, and how we thought about new ways of approaching social learning as an artistic act that focused on agency (both personal and relational).

## *A Permanent Conference*

The train did not emerge in isolation, but was in itself a product of a long, expansive social-learning project. Over a two-year period, I participated as a coordinator of an open group of scientists, activists, artists, and other citizens who formed a series of emergent, 'self-staged' active and reflective processes in the build-up to COP 17. The group aimed to imagine new ways of subverting the static habitual realities of the current COP process, but also imagine new ways of approaching climate change challenges in South Africa.

The aim was to create a 'permanent conference' as inspired by the work of Beuys (2004) entitled 'Honey Pump in the Work Place', which took place over 100 days in 1977. As a growing collective, we named this permanent conference COPART, which was both an acronym for 'Connecting Our Planet And Reimagining Together', and a play on the COP17 event, where we hoped that people would 'COPART' rather than 'cop out'. In order to increase the support for, funding of, and interest in this project, we held public meetings, seminars, and planning sessions over a period of almost two years in which various interested partners were involved. We created the COPART blog,[1] an online platform for holding the conference together, as well as a fundraising tool. We managed to arrange two big 'build-up' events: the first (which coincided with COP16 in Mexico) was the 'Climate Fluency Exchange', which occurred over ten days in Cape Town; the second was the Re-Imagining Festival at the National Arts Festival in Grahamstown, which also took place over 10 days, but six months later.

## *Constructing New Spaces for Learning*

In Orr's (2004) explorations into the 'myths of education', he suggests that the process of learning is more important than the course itself. Orr (2004:13) saw our current approach to learning and education as only crystallising 'pedagogy that reinforces passivity, monologue, domination and artificiality'. Responding to this static and stagnant crystallisation, we believed that a connective aesthetic approach to social learning would help to steer one away

from the product-driven approach to learning and focus on the process, in particular the phenomenological experience of learning. We also found that a connective aesthetic approach to capacity and agency development allowed for new empathic social climates to emerge, and thus greater parity. A connective aesthetic methodology allowed us to construct new social spaces for transforming our understanding of learning processes and social-learning methodology, as they engaged human imagination, intuition and empathy in the learning action (McGarry, 2013; 2014). Agency development (both personal and relational) seems to rely heavily on the social space and structures provided for learning – as can be seen in Archer's work (2000; 2007). What transpired for us as the COPART team was that we asked ourselves: How can connective aesthetics help us construct new spaces for social learning?

## *The Train*

The Train Team included three visual artists, a film-maker working with children, two photographers, three writers, a theatre troupe (consisting of three practitioners), a poet, and a rotating group of different environmental educators from various regions of the country. Apart from coordinating this group, I was responsible for a social-sculpture project entitled 'Earth Forum'. The train itself consisted of ten carriages (see Figures 1 and 2). The first three housed the team, the fourth was the central meeting room, lounge and writing room, the fifth was the dining carriage, the sixth housed the boardroom and open-space classroom, the seventh housed the cinema and second classroom, the eighth housed the exhibition room, and the final two carriages were used for storage and workshop space, as well as for our mobile nursery of indigenous trees, shrubs, succulents, edible plants and seeds. We spent approximately two days in each town, but only a single day in some of the towns. The Climate Train travelled at night, but remained in the town stations during the day, with activities usually happening on the station platforms or near the station.

## *Active Absence*

One of my primary duties in the COPART network was to develop a transdisciplinary, expansive-learning programme on the train that drew from a variety of different artistic genres and disciplines, with visual artists, poets, 'guerrilla-gardeners'/permaculture educators, writers, film-makers, educators, and other practitioners running their own programmes (see Figure 3). What shaped the central ethos of all these projects was the creation of a space of 'active absence', as inspired by the work of Kaplan (2002), who, through his development work with diverse people, saw 'active absence' as a way of actively creating a space for emergence. He uses the metaphor of an opening protea (an indigenous South African flowering fynbos plant). The flower's petals appear to create an enclosed bowl-shape, but there seems to be nothing inside – the bowl is empty. However, these petals have carefully created a safe, sheltered space, away from the wind and the elements, for the plant's delicate sex organs to emerge. This image was very helpful for me, and I saw active absence in many natural phenomena. For example, the womb is predominately an empty space, but, from it, emerges something unique and miraculous.

**Figure 1.** Interior of the Climate Train. A) A daily evening meeting in the living room/office space for Climate Train practitioners. B) Some of the Climate Train Team after a long day near the end of the trip in KwaZulu-Natal. The carriage shown here is the storage carriage where we stored chairs, tables, plants, tools, banners, posters, giant puppets, and other miscellaneous items. C) The versatile boardroom carriage, during an intensive post-Earth Forum discussion on the Draft African Charter for the Rights of Mother Earth presented by elders from the Dzomo la Mupo in Louis Trichardt, Limpopo. D) The boardroom carriage during a workshop with schoolchildren in Limpopo. E) A permaculture design process in the exhibition-room carriage, showing a variety of green technologies and other educational material. F) Children in Pretoria (Gauteng province) participating in a drama workshop led by Kyla Davis, who headed up the theatre troupe in the cinema/classroom carriage. (Images are my own)


## *Examples of These Active Absent Spaces*

The guerrilla-gardeners on the train created gardens, together with local citizens, mostly children, in unexpected places in the towns we visited. The spaces they sought out for gardens were empty, sometimes abandoned, spaces that had been overlooked or were seen to have no purpose, such as traffic circles or verges. Through the process of collaboratively designing the garden and developing a common picture of what should be grown there, and what the garden was for, they created several opportunities for participants to work with new incarnations of their thoughts, ideas and stories.

The visual artists and poets would work in chalk on pavements and platforms, or use massive shared canvases that would roll out and cover ten metres of the station platform. Using these 'actively absent' canvases, they encouraged and guided local citizens to dream together how they would like to see their town in the next ten years. Participants found themselves sharing

**Figure 2.** Images of the Climate Train. A) The lounge/meeting-room carriage during a daily meeting. B) Self-appointed guerrilla-gardener 'Wayward Sun' in the open studio carriage, which, while travelling, housed plants we collected in each town, to plant in the following towns. C) Visual artist Mathias Chirombo and writer co-manager Elizabeth Fletcher sitting in the studio carriage reflecting on a long, hot day in Kimberley (Northern Cape). D) Resident Climate Train journalist Sonia Koopman helping pack trees away as we were about to leave Soweto. E and F) The dining carriage in use. (Images are my own)


a common canvas and navigating one another's dreams and images, offering new forms of emergent democratic dialogue through the shared parity of the canvas.

The 'Earth Junkies' Team worked primarily with small children, whom they invited to tell stories about 'Mother Earth'. They first created a 'portrait' of Mother Earth, and then told one another stories of how she came to have a 'fever', and what might be done to calm her fever. This process was filmed and documented in the form of a short documentary titled: 'The Children's Charter for the Rights of Nature'. The process revealed evocative new ways of embodying abstract concepts such as climate change, and created new forms of exchange and lines of questioning, as the children were able to reflect on issues such as pollution, deforestation, resource depletion and apathy through the embodiment of these concepts in their imaginings and how it related to Mother Earth as a persona.

The 'Well Worn' Theatre Company used similar processes of embodiment, music and dance to explore emergent issues within each town, allowing for participants to tangibly work with questions and challenges in an openly collaborative and reflexive way. 'Applied' and 'forum'-style theatre created the opportunity for participants to constantly feed back new perspectives with great rigor.

**Figure 3.** Some Climate Train practitioners in action. A) Theatre practitioner Kyla Davis working with giant puppets in KwaZulu-Natal. B) Linzi aka 'Liliana-Transplanter' permaculture educator and tropical agroforestry researcher working with children through their 'AM-BUSH' guerrilla-gardening project in Klerksdorp. C) A town meeting on the Draft African Charter for the Rights of Mother Earth coordinated by Christelle Terreblanche in Worcester. D) Mbali Vilikazi, poet and social-development practitioner, creating public poetry speaking spaces in Klerksdorp. E) Artist and educator from the Mpetetsane Modise in Louis Trichardt working with children. F) Visual environmental Artist Simon (MAX) Bannister creating public interactive work on a station platform in Pietermaritzburg, KwaZulu-Natal. (Images are my own)


My personal contribution to the overall Climate Train creative education programme was a social-sculpture practice that I collaboratively developed with the artist Shelly Sacks, entitled 'Earth Forum'. This used a large, round oiled cloth as a shared meeting space that participants (seated on chairs) sat around, reflecting on issues in the town, inspired by Mukute's (2010) approach to expansive learning through what he called 'agentive talk'. Participants gathered handfuls of soil (which was usually found in a suitable, strange public space, such as a traffic circle, a busy street corner, a station platform, a foyer of a bank) and offered each of their handfuls of earth to the cloth as they shared their experiences and went through three different rounds of examining their hopes and ambitions for the town and for the greater ecological world. The cloth would then get stained by the soil and gradually embody these traces from each participant, ensuring that, in the next forum, participants could tangibly see other citizens' involvement in this open dialogue. The cloth itself became the actively absent space, and the soil the central connective aesthetic. We found that creating active absent spaces also lent itself to greater empathic listening and perceptivity on the part of participants, as well as a deeper, more engaged form of imaginal thinking.

## *A Listening Train*

By the time that the Climate Train arrived in Durban for COP17, it contained various artefacts or what Gell (1998) called 'indices of agency', each embodying sincere exchanges between over 8 000 people across South Africa. The artefacts came in the form of stories, photographs, footage, the Earth Forum cloth with people's contributions, large ten-metre canvas paintings made by citizens in each town, GPS locations of gardens in each town, and a collection of poems created in each town. The citizens who shaped these artefacts and participated in the expansive-learning processes included municipal councillors, teachers, learners, young activists, farmers, mayors, landless peoples, scientists, artists, train staff, children, educators, film-makers, photographers, journalists, entrepreneurs, traditional leaders, traditional healers, cultural practitioners, and a poet. By the end of the trip, we had completed a total of 23 Earth Forums, had planted 19 new collaborative gardens, had developed a Children's Charter with just over 700 children, and had gathered these exchanges in a total of ten different languages, including isiZulu, isiXhosa, Afrikaans, Sepedi, Setswana, Sesotho, Xitsonga, Tshivenda, !Xam and English. We felt as though we had new families in Cape Town, Worcester, Beaufort West, De Aar, Kimberley, Klerksdorp, Krugersdorp, Soweto, Pretoria, Mookgophong, Polokwane, Louis Trichardt, Johannesburg, Standerton, Ladysmith, Pietermaritzburg, and, eventually, Durban (see Figure 4).

**Figure 4.** Climate Train route through South Africa

While the train was primarily a 'listening or an empathic train' and not a 'teaching train', we did aim to create this project as a social-learning endeavour that worked with emergent themes and concepts, rather than didactically pushing climate or sustainable-development agendas directly. This allowed us to work with other issues such as alcoholism, teenage pregnancy, HIV/Aids, and the resettlement of farm workers and people living near mines. Here I realised that creating an 'active absent' space was vital for expansive and experiential social learning, as it not only reduced the didactic influence of my own (or the facilitator's/artist's) agenda, but also offered a more emergent, nuanced and rich picture of what the country was struggling with, and what issues influence and affect people's capacities to act as ecological citizens. This shift away from dialogic themes, and instead working with emergent agendas and perceptions, allowed for deeper, more embodied exchanges that were actively empathic and intuitive.

## *Nature Rights for Africa*

Incidentally, we did not choose the name, 'Climate Train'. Ideally, we wanted to call it the 'Listening Train', but our funders did not approve, so we had to rename it. Even though the central ethos was to create emergent opportunities for learning and exchange, we did have one clear goal to contribute to one, predetermined tangible product by the end of the journey. This was to promote and examine the rights of nature, to add to the meaning citizens ascribed to such rights, and to help encourage the creation of an open public platform to explore the development of a Draft African People's Charter for the Rights of Mother Earth[2] that contributes to the Universal Declaration of Rights for Mother Earth.

The Charter, developed by Enact International, was drafted by renowned environmental lawyer Cormac Cullinan to be offered as a document in order to start a new conversation in South Africa. Essentially, the Draft African People's Charter and the Universal Declaration outline a global consensus on the part of thousands of citizens from different countries who have declared that we should recognise the rights of nature in all our decisions and activities.

The Declaration was adopted in April 2010 by the World People's Conference on Climate Change and the Rights of Mother Earth, in Bolivia. The Bolivian government has since submitted it to the United Nations for consideration. The Draft African People's Charter was intended to be an inspirational document with a uniquely African character that can function as a common manifesto that can be used to unite and mobilise many different sectors of South African civil society (e.g. civil rights organisations, trade unions, rural people's organisations, traditional leaders, etc.) around a common agenda.

At its conception, the document was seen to be the first step in establishing an extensive discussion and not as an end point in itself. Our approach to the Charter was to work with people's existing agendas and concerns, and, after reflecting deeply on these collectively, examine the existing Charter and see if it spoke to their intuitive concerns or not, with the space to add to or edit the Charter as we went along. This was a deeply collaborative approach to learning that I was particularly inspired by. The approach allowed for existing dialogic agendas to be 'sidestepped' momentarily to create space for emergent thinking and agendas to rise to the surface. I found this to be vital in creating a common or shared dialogic ethos of the

group – a 'relational agency' as it were – that later helped group members approach the existing Charter with their own questions, ideas and images, and not merely haphazardly consider a document from outside their context.

## *Commons and Collaborative Intelligence*

The role of connective aesthetics allowed for a deeply collaborative and social approach to learning. The use of aesthetics was for us a profound tool that allowed for emergence and for dialogical and experiential forms of learning to emerge. What I learnt from the Climate Train is that finding the educational home for this approach to social learning, and other socially constructed forms of embodied and collaborative learning, would undoubtedly require freely accessible common spaces in which people can learn within their existing cultural structures. Martusewicz (2009:254) refers to the concept of 'collaborative intelligence', which she borrows from Griffin (1996):

> …intelligence, even knowledge, is not born of the human capacity to think or make sense of the world alone, but rather it is the result of a collaborative endeavor among humans and the more-than-human world. In this sense, as human communities are nested within a larger ecological system, we participate in and are affected by a complex exchange of information and sense-making that contributes to the well-being of that system.

Martusewicz (2009:254) relates this idea of collaborative intelligence to Bateson's (1972) notion of the 'ecology of mind', in which the 'mind' is seen as a complex system of interactions and transformation which are created through various elements entering into relationship with one another; and human relationships with other living systems are living, communicating, and part of a generative whole, all set within a limited earthly context. The thinking self, the autonomous 'I', is not seen as the definition of the 'mind' or 'intelligence' but rather as a social convention, and an autonomous 'I' does thus not really exist. This is interesting considering that the majority of contemporary education is assessed and monitored, even valued, by individual merit, and learning is usually primarily recognised as an individual endeavour. Martusewicz (2009) reminds us that humans map the world through discursive forms (language, text, symbols, etc.), and that we build strong epistemological patterns and practices which relate to our words, our knowledge and our culture. We pass these on, which, in turn, informs our meaning-making and our approach to education. This, over time, can blind us to the fact that we are immersed in a broader living system, causing us to confine ourselves and our learning to our own individual experiences and merits.

Considering the communal, social and interactive understanding of intelligence and mind, as outlined by Martusewicz (2009) and Bateson (1972), the creation of intelligence and therefore learning is also inherently social and communal, and consists of an interaction between human beings and the more-than-human world. Social-learning processes, therefore, exist within the commons and a commons approach to education. Commons are spaces that are not owned, but rather belong to everyone and do not require money or social status to access them

(Martusewicz, 2009). What then is the purpose of education in the commons, and how does education contribute to the development of collaborative intelligence or the ecology of mind?

Martusewicz (2009:258) sees education within this context as enabling of systemic wisdom where learning is oriented to understanding and acknowledging the ways in which we interact, depend on and impact a larger system of intelligence. Education within existing cultural commons can be found in food-cultivation spaces, medicinal practices, the arts, decision-making practices, and so on. Yet these commons spaces which offer socially constituted forms of learning are affected by Western forms of education and commodification, making it difficult now to identify them as still existing.

The commodification of education, and knowledge itself, through intellectual-property processes has made the establishment of commons ever more difficult. The development of the Climate Train as an experimental approach to social learning was inherently collaborative, practice-based, social and communal, and within the 'commons' community. While, in practice, it was all these things, I found challenges and obstacles omnipresent when attempting to conduct and document this process, not to mention analyse it systematically. The project was shaped by so many different people, and by a rich array of contexts and histories, and explored various themes and ideas. I felt that we were 'listening' to stories that travelled beyond the contextual boundaries of the towns that told them. What we heard spilled beyond issues of climate change or environmental degradation, and revealed personal and social ontologies that unearthed further questions for all of us involved. Beyond these obstacles, I found institutional paradigms that sought to commodify this research as the merits of a single individual (i.e. my PhD) – and not the social, ecological community that actually produced them – even more challenging. If we are to fully engage with expansive social learning both in theory and praxis, we will also need to rethink and reshape the institutional frameworks that govern contemporary research which encourage collaborative, multi-authored reflection and recognise collaborative intelligence. If learning is social and relational, how we assess and review it cannot be held by the perceptions of a single individual.

## *Final Thoughts: Lovers of Every Kind*

While the Climate Train provided a dynamic exploration into practice-based collaborative experiments in expansive social learning, it was not merely a research process, but an emergent social phenomenon. The Climate Train was the embodiment of a collaborative intelligence that created a 'mobile commons'. We aimed to achieve a kind of emergent, 'experiential' or 'grounded' form of dialogue and learning through an experimental-learning approach that was experiential and expansive, and I believe we achieved this. We did not have any particular expectations of what might emerge, but, rather, we knew we wanted to primarily 'listen' and create spaces for people to speak and learn freely. While sometimes clumsy, and perhaps naïve, it was clear we created a version of this initial dream. Not only did we listen, but the guerrilla-gardening, portrait storytelling, earth forums, theatre and painting allowed us to capture the stories and reflexively iterate them collaboratively. The aesthetic tools also reduced the role of facilitators, and fostered parity.

I look back on the train journey and see it as the birthplace of my understanding of the role of empathetic attentiveness, and how vital this is for social-learning processes. In reflections after the train journey, all the practitioners agreed that the train could not have come about without its focus on connective aesthetics and establishing emergence using the concept of 'active absence'. An aesthetic approach to social learning, whether in the form of poetry, guerrilla-gardening, theatre, music or storytelling was essential, as it continuously created a common ground, a relational agency, and a sense of belonging, regardless of what town we were in, or what language we were speaking.

If social learning is to expand and transgress the boundaries of existing educational dogma, I believe it would need to embrace deeply the notion of connective aesthetics and active absence, and allow for emergent dialogic spaces.

Orr (2004:11) explains in his final myth about education that we somehow believe that the purpose of education is to give students the means for upward mobility and success, when, actually, this only creates people who are able to participate in society in a limited way, and does not create people with the capacities to respond meaningfully to the ecological crisis. Orr quotes Merton (1985:11) who once identified modern education as the:

> …mass production of people literally unfit for anything except to take part in an elaborate and completely artificial charade… .The plain fact is that the planet does not need more successful people. But it does desperately need more peacemakers, healers, restorers, storytellers, and lovers of every kind. It needs people who live well in their places. It needs people of moral courage willing to join the fight to make the world habitable and humane and these qualities have little to do with success as our culture has defined it.

What two years of connective aesthetic collaboration, and 44 days on the Climate Train, taught me is that peacemakers, healers, restorers, storytellers and lovers are all across this country, and they have the moral courage to join the reimagining of their futures. I believe we as educators have the responsibility to create the empathetic spaces and imaginative structures in which they can be heard.

## *Endnotes*

1 www.dontcopoutcopart.blogspot.com.

2 http://therightsofnature.org/the-peoples-charter-for-africa/

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# Death and Rebirth of Atlántida: The Role of Social Learning in Bringing about Transformative Sustainability Processes in an Ecovillage

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## *Abstract*

*This paper explores the role of social learning in bringing about transformative sustainability processes among individuals and communities. At a time when sustainability is being seriously questioned in terms of what it is and how it can be implemented and evaluated, there are increasing calls to focus instead on sustainability processes. Drawing on 12 months of action-oriented research, including interviews and community-reflection meetings, and with contributions by two co-researchers from the community studied, this paper explores the triple-loop learning process of an ecovillage in Colombia called Atlántida. The findings show that disruptions in the community provided the opportunity for members to enter into a process of deep learning, because they were willing to reflect collectively on their process. This, however, took place in a tough reflective environment in which it was realised that differences in world views, ethics and leadership among members had contributed to the 'death' of the community, while their acknowledgement and acceptance of these differences were contributing to a process of transformative 'rebirth.' We therefore conclude that, when we talk about social learning as a deep transformative process, it is vital to remember that, though it may be necessary, nobody said it was going to be easy.*

## *Introduction*

> There is an open invitation to live on a piece of land, to build together a community that celebrates the sacredness of life … the earth should not be owned by anybody but used responsibly by all … I want this for my child. (Y. Campo, personal communication, 20 February 2014)

This was on Yami Campo's mind when she arrived in Atlántida 12 years ago in 2003, with her partner Jorge and their baby girl Inanna. Their vision was to create an 'ecovillage' in the countryside; an intentional community which would bring together social and ecological values through communal living in close contact with nature. It would be run through horizontal organisation, and would serve as a sustainability laboratory and as a source of inspiration for the rest of society. Nine years later, in 2012, the bustling community of Atlántida, with 15 permanent members and a strong focus on spiritual and community life, held 'The Call of the Mountain', the annual Colombian ecovillage gathering. With more than 450 participants from 26 countries attending, the event was a success, and Atlántida became, at that time, the best-known ecovillage in Latin America.

It is now September of 2013, almost two years later, and the community is falling apart. The residents of Atlántida are sitting down for a community meeting with less than half the people that used to live in the ecovillage, thinking and reflecting on what happened, on what they have learnt throughout the years, and on what to do next. This deep and challenging learning journey continues until this day.

As this paper will show, there is a lot to be learnt from people who have experienced living in an ecovillage and have reflected on the deep personal changes and realities of trying to establish sustainability in practice. Far from the abstract world of 'academic' sustainability, or best practices of recycling and buying 'green' products, living in an ecovillage forces an individual to face the interconnections of everyday sustainability actions directly through a communal setting. This includes the dilemmas and consequences of narrowing the knowledge–action gap and the sharing of agency when putting into practice (or not) visions of sustainability *together* with other people.

Yet ecovillages, in line with discourses on sustainability, face a profound challenge: putting them into practice is not easy. Taking the definition of an ecovillage (e.g. Litfin 2009:125) as 'a planetary knowledge community grounded in a holistic ontology and seeking to construct viable living systems as an alternative to the unsustainable legacy of modernity', one can quickly begin to imagine how difficult this would be to put into practice. In fact, as Christian (2003) argues, only 10% of intentional communities succeed in the long run, thus demonstrating the difficulty in reconciling the intentions and ideals of a community with its day-to-day realities. It is therefore not surprising that measuring sustainability in an ecovillage could be a disappointing experience. Even using a framework such as that developed by Gaia Education (2015), which is the academic arm of the ecovillage movement and which divides sustainability into the four 'keys' of sustainability – World view/Spirituality, Social, Ecological and Economic – a community such as Atlántida would fare poorly.

Yet there is increasing resistance to evaluating sustainability through indicators, with Sterling (2009) arguing that this encourages disconnective thinking and disintegrative practices in our education and society. Instead of looking at 'successful' sustainability – at what could or should be – there are increasing calls for more radical learning-based transformations among individuals and communities so as to transition towards a more reflexive and process-oriented interpretation of sustainability (Wals, 2009). In this sense, it may be more productive to think about the above ecovillage definition as aspirational in nature, and focus more on the processes involved in constructing more viable living systems. For, as Wals and Schwarzin (2012) argue, it is one thing to say that we need reflexive communities of learners; becoming one is a whole different matter. Individuals and groups actually need to learn to become reflexive, and this is a challenging venture. Considering the lack of research into defining how to achieve this in a practical sense (Medema, Wals & Adamowski, 2014; Sol, Beers & Wals, 2013), this paper will address this gap by providing a practical example of how a social-learning process has unfolded within the community of Atlántida, focusing on the reflexive loops of learning and on the dynamic nature of 'disruptions' within this process which have the potential to promote learning. It concludes with the wider implications this has on society's journey towards a more reflexive world.

## *Methodology*

An important means of gaining access to these social-learning processes was obtained through collaboration with research subjects. For this reason, this research is action-oriented, which, according to Reason and Bradbury (2001), is an interactive inquiry process that balances problem-solving actions implemented in a collaborative context with data-driven collaborative analysis. This was accomplished through 12 months of ethnographic research by two of the researchers, which included semi-structured interviews, participation in day-to-day communal activities, as well as in-community reflection meetings.

The reciprocal relationships between researchers and subjects generated during this stage of research resulted in two of the subjects demonstrating an interest to act as co-researchers for this investigation, a characteristic of action research which acknowledges that knowledge is something generated *together* with other people (Valkenburg, Beukema, Almekinders & Tromp, 2009). To this end, the first co-researcher, Eliana Riano, provides an account of the collective reflections of the community, and what it has learnt about the complexities of putting visions into action. Finally, the co-founder of the ecovillage Atlántida, Jorge Calero, provides an account of his de-learning journey of transformative leadership, and the role this has played as far as he and the community are concerned.

## *From Horizontal Dreams to Circular Realities: Atlántida's Multi-loop Learning Journey*

Located in Cauca, a region in southern Colombia, the ecovillage Atlántida has been involved in processes of learning about organisational issues and sustainable living throughout the last 12 years (2003–2015). This learning can be characterised as a type of multi-loop learning, signifying that the community has been through deep learning processes promoted by its desire to periodically reflect and use their learning outcomes as a base to improve the collective system.

In a general sense, multi-loop learning involves several layers: single-loop learning generates knowledge from 'doing' and entails corrective actions which do not alter present rules, objectives or mental maps (Are we doing things right?); double-loop learning explores the values and assumptions underlying our knowledge, and entails reframing (Are we doing the right things?); and triple-loop learning involves reflexivity on the process by which learning has taken place, and developing new processes for reframing values and mindsets; hence producing deeper changes (How do we decide what is right?) (Georges, Romme & Van Witteloostuijn, 1999; Medema *et al.*, 2014). This type of learning is increasingly viewed as a crucial element for sustainable decision-making in the field of resource management (Medema *et al.*, 2014).

### The first loop: Are we doing things right?

One of the primary forces driving the early stages of Atlántida 12 years ago was the profound desire for a horizontal organisation based on relationships of equality and freedom. Decision-making was carried out through consensual processes, where the goal was to take into account

all individual opinions and interests, and to make a final decision only if everyone agreed upon the terms. The sense of community was highly promoted and the time spent on communal activities was valued more than that given to individual development. Members were encouraged to contribute to the collective gardens, the communal kitchen, and community chores, thus centralising the energy of the community rather than dispersing it through individual pursuits such as creating one's own garden or kitchen.

This was due to the desired rupture with the perceived individualistic modern life-style, in favour of serving the collective. At the same time, there was hostility to private ownership, and, with the possibility of using the existing infrastructure in the community, there was little incentive to construct one's own house. Land tenure was not discussed by members of the community, based on the philosophy that no ecovillager owned the land, not even Jorge Calero, whose father was lending him the land in exchange for administering it. Furthermore, the ecovillage attracted people with few monetary means or needs, enticed by a solidarity economy based on free housing and food subsidies for all residents. This was made possible through a collective budget generated by spiritual events held by the ecovillage, such as dances for universal peace, in which all residents were meant to participate.

This configuration helped the ecovillage grow in members, and the yearly events led to increased recognition of, and income for, the ecovillage. Nevertheless, over time, it also created tensions among residents. Several argued that decision-making was not democratic, as the most experienced members and those with the strongest personalities and leadership ended up dominating the decision-making process. On the other hand, the more proactive members complained about tasks not being satisfactorily completed. This led, in 2009, to the first thorough collective evaluation and reflection on *how they were doing things*. The community arrived at the conclusion that there was a need to change the organisational structure and the decision-making methodology so as to be more effective during meetings, and to give a stronger voice to those who were naturally more reserved.

Sociocracy was put forward by one of the community members (who had seen it used in other ecovillages) as a methodology for improving governance and decision-making. These organisational arrangements included horizontal and vertical structures of decision-making to improve effectiveness while maintaining participation. This way of organisation recognises that the best solution will come out of the collective wisdom of those closest to the problem, regardless of their formal position or group membership, and that feedback rather than power is the basic organising principle (Georges *et al.*, 1999).

Within this logic, a hierarchy of 'circles' was created. Each circle decided upon issues that were relevant to their work objectives through consent and was represented in the next-higher circle by a functional leader and one or more additional representatives, also chosen from the circle through consent.

**The second loop: Are we doing the right things?**

Although time spent in meetings was substantially decreased, the expectation of improvement in equality and decision-making through an organisational change was not met. Even though sociocracy supposedly decentralises leadership and power, many members felt that they were

still being inspected and criticised, while leaders on their side were arguing that only *their* circles were the ones working well and meeting expectations. Furthermore, commitment and dedication to the community began to be questioned among members.

During a meeting on conflict resolution, a second loop of reflection was undertaken in the second half of 2010. It was posited that the difference in commitment to the project and the inequality in decision-making processes were not being adequately addressed by sociocracy, because of the deeper issues of power resulting from the land-tenure situation. Commitment to the project and trust between members were believed to be influenced by these power relations, related to the fact that the community did not own the land. The community consequently took the decision to buy part of the property in the form of communal ownership (seven of the 45 hectares of the ecovillage), which was achieved by inviting new members to the community who paid a fee for joining. This action was carried out as a means of assuring ownership of land so as to promote commitment and equity.

In 2012, the issues of circular organisation, the arrangements in respect of new land ownership, and the arrival of new members in the community were put aside in favour of the opportunity of hosting the first Ibero-American ecovillage gathering in Latin America – a great honour, but a tremendous challenge for the community. All members of the ecovillage worked together to organise this event; 40 volunteers from around Colombia arrived to help, and people perceived the community as thriving. All members concentrated on the same goal: hosting volunteers and making the event a success, and tensions were put aside so as not to interrupt this momentous occasion. The event was considered a success by participants, transforming Atlántida into the best-known ecovillage in Latin America at that time.

During interviews, all members pointed to the event as a high note in the history of the ecovillage, but the event took a heavy toll on the community itself. The stress during the event, unresolved issues that had been put aside, and new ones arising through day-to-day communal life began to build up tensions and set the scene for what happened next. A severe emotional conflict between some community members acted as catalyst in which, in the words of Yami, 'all the dust previously swept under the rug, began to appear'. Facilitators from outside the community were asked to help with the process, and several meetings to deal with the management of emotions and conflict resolution were held. During this tumultuous process, some of the residents ended up leaving the ecovillage, a few on bad terms, while others did so because they were tired of community life. The golden age of the community was over.

**The third loop: How do we decide what is right?**

After several months, in September of 2013, a meeting to gather collective-learning outcomes from all experiences and realisations was held with those still living in the community. In the following section, Eliana and Jorge each share some insights into this last loop of reflexion.

*Eliana's attendance at the 'University of Life'*

My name is Eliana, and I was 30 years old when I arrived in Atlántida in 2008 after leaving behind my life as a psychologist, researcher and teacher at several universities in Bogotá. I started living in Atlántida to help co-create an environment which would facilitate human

development in all its forms. I now consider that my seven years of experiencing Atlántida has been like attending an intensive course at the 'University of Life'. In the text that follows, I would like to share with you some of the lessons learnt.

After the 2012 gathering of the 'The Call of the Mountain' and the unfolding emotional conflict, it took us about three months to gather the energy to come together again to reflect on, and learn from, what had happened. The first fundamental aspect which we had to review was the assumption that we shared common ethics in terms of sexuality and relationships. Although there had been an initial intention in the community to be tolerant of different views on relationships and sexuality, in reality there was great difficulty in accepting, respecting and articulating the different emotional and sexual practices of community members. For example, some advocated free love as a self-development path, while others believed in more traditional family structures. We began to realise that the ethics of community members had changed over time and was a continuous source of tension which had not been resolved. The collective-learning outcome in this respect is the importance of periodically socialising individual ethical codes, as these can change over time.

This disarticulation of ethics brought about several emotional conflicts in the everyday life of the community, which were not always well managed. Although different spaces and methodologies for emotion-management were proposed, few members attended the meetings. There were several reasons for this. Firstly, there was an environment of mistrust promoted by power dynamics and alliances within the community. This hindered the creation of an atmosphere of trust and neutrality, which resulted in some members feeling uncomfortable in sharing their feelings during emotion-management sessions. Secondly, there has always been an underlying feeling of collective saturation in the community as a consequence of excessive communal activities and responsibilities. Organisational activities were put before emotional ones, in part because the solidarity economy scheme depended on collective earnings during events being used to subsidise the livelihoods of members. At the end of the day, there was a lack of energy for an effective emotion-management process.

The above reasons are connected to the realisation that the world views of community members had changed over time and were now in tension with one another. Despite the apparent homogenous world view in the community of living together in harmony, learning from one another, and being connected to nature, deep differences emerged during everyday activities. On the one hand, there was the prevailing 'Yang world view', as I will call it. Great importance is given in this world view to the achievement of stated goals through action. This demands planning, organisation and strong leadership. Moreover, the mental capacities of problem-solving are highly valued, while emotional and artistic skills are considered more of an added benefit. On the other hand, the 'Ying world view' gives importance to emotions, and thus to emotional well-being. In this world view, appreciation of creative and artistic skills is highly valued and their development takes a lot of space in day-to-day activities. Moreover, time for contemplation and meditation are crucial, and thus a slower pace in activities is needed. This Ying-Yang dichotomy is obviously an oversimplification, with members often displaying aspects of both, but it serves to demonstrate the opposing tendencies in the community.

A continuous struggle between these world views is embedded in Atlántida's story and has manifested itself in many ways. It is connected to a difference of work rhythms, leadership styles, economic schemes, and individual versus communal development. It is therefore little wonder that neither a change of organisational structure (first loop), nor a change to collective land ownership (second loop), adequately addressed power struggles in the community.

A pertinent example is the disagreements over how the economy should be generated and partitioned in the community. While, for some, it was important to generate resources and investment in infrastructure to improve events, for others, especially members who had families with small children, it was a priority to reinvest in sustaining welfare conditions. Eventually, there was a transformation from a clear sense of paternalism – the community taking responsibility for the economic well-being of its members – to a realisation of the need for members to resolve their own economic circumstances. Subsidies were removed, and members now have to gain at least part of their income outside the community so as to pay for services and food.

To conclude, although there are many other factors and interconnections which we unfortunately do not have space to share, we realised three main things. Firstly, to find a community balance, it is imperative to begin by resolving problems in the individual sphere before constructing the collective – for, in a collective, unresolved situations are always amplified. Secondly, a person's agency in a community (the capacity to influence and change activities around oneself) depends to a great degree on the collective. A person can have a great capacity for agency and a desire to change the status quo, but if he or she is not supported by other members, change is impossible. Thirdly, difference is always present; thus it is crucial to sincerely acknowledge and accept it so as to co-create sustainability and a learning community.

*Transitioning towards a transformative leadership: Jorge's journey of (de)learning*

The following account details the main processes of (de)learning which I have experienced in what I call 'transformative leadership'. In comparison with classical forms of leadership, which are based on motivating and encouraging people to take responsibility for their actions, this is an individual process of awakening and evolution towards new levels of understanding.

To contextualise the results of my de-learning processes and reflections, I consider it necessary to begin with a self-portrait. I am 37 years old and a father of a ten-year-old daughter. Being active since childhood in social and environmental initiatives, I felt, from an early age, a spiritual call that led me on various roads that currently converge in my practice of Sufism/Dances of Peace and the Native American spiritual path. My strong commitment to making the world a better place is now balanced by the realisation that spiritual growth is the spinal cord of any long-term process of social change.

Through my work with grassroots communities, social movements, and, especially, as the co-founder of the ecovillage Atlántida in 2003, the relationship with my peers has been strongly influenced by my performance as a leader. In the light of the major conflict mentioned above, the subject of my own leadership in the project has been a significant component of the crisis and subsequent reflections.

I consider that the abuse of rank in leadership is one of my (de)learning points. By 'rank' I mean the natural hierarchy that occurs in every group and system. My rank originated from me

being the founder of the project, the landowner's son, having more experience and capacities in respect of environmental issues, permaculture and ecovillage design than the rest of the group, the ability to organise ideas and express them, and having economic security which some of the other members did not. Totally unaware of these simple facts, I have unconsciously been using my rank in the ecovillage for many years. I am now understanding what Mindell (1995:64) means when he says: 'You cannot let go of your rank … the unconscious use of the rank is shown in the tendency to marginalise the problems of others'.

The aspect of efficiency serves as a perfect example to characterise this abuse of rank. Personally, I stand on the side of the efficiency 'addicts' who are constantly frustrated when their peers do not adequately fulfil their commitments, which results in the overall system not reaching its projected goals. Specifically, I was very determined in promoting shared leadership, as I believed that we are all potential leaders – that we all aspire to leadership consciously or unconsciously – and that all we need are the opportunities and motivation. Yet, encouraging leadership in others resulted in tensions, as, on the one hand, I became intolerant of the efficiency shortages of my peers, marginalising their personal problems and not being able to see their own limits and real capacities. On the other hand, people felt dissatisfied because they were not reaching their goals and were being criticised and oversupervised. These tensions in the expectations of leadership contributed to the crisis in the community.

During the processes of reflection after the crisis, in which I was forced to stay still for a period of time due to a motorbike accident, I began to relax and decrease my internal rhythm, my constant acceleration, and began to become aware of this simple fact of rank in groups, and the problems of unconsciously using it. It became clear that the problem of inefficiency originated in me and my tendency towards direct and classical leadership, which was to hold a clear vision of the path ahead and motivate others to share responsibility for the actions required to stay on this path. Instead, I am now acknowledging different types of leadership and learning how to use rank beneficially by enacting a new type of leadership. This is based more on mentoring systems in which the most important thing is no longer the result of the action, but the learning process involved.

The conclusion then is to respect and thank conflict as an alchemical path of transformation. As identified by Mindell (1995), conflict has the potential of being an enlightened sword that cuts the veil of illusion and makes visible what was secretly eating away the foundations of the group. There is conflict in the evolution of any group, and the challenge is not to run from it, but rather take advantage of its transformative fire.

## *Conclusion*

> I feel Atlántida is in a transitional point in its cycle similar to that found in nature: life, death and rebirth. As an organism Atlántida is dying, and this death is also a part of our learning process … we're all in this transformation towards a re-existence … re-creating from what we have learned without running away from the process. (Y. Campo, personal communication, 20 February 2014)

We can see in this quote from Yami the long circular journey she and fellow community members have come from their introduction to community life. From the ideals of living a sustainable life together with like-minded people, to the often difficult realities of enacting change together, this paper has attempted to show the complex processes involved in learning to live with one another and walk the talk of living a sustainable life. As Yami and other members have shown, this process is an organic web of life involving 'life, death and rebirth'. This echoes the ideas of Capra (1996), who links society, sustainability and ecosystems within networks of mutual dependencies and diversity.

Another characteristic of ecosystems, which Atlántida has also developed, is the capacity to withstand disruptions and learn from its effects. As Hurst (1995) notes with regard to ecosystems, we can perceive periods of relative stability and calm, which alternate with periods of increased dynamics and greater degrees of insecurity, brought about by disruptions or new challenges. Learning from the case of Atlántida, we can add that, in these periods of stability, a set of routine activities emerges where people encounter their dilemmas and paradoxes of the discourse–action/vision–reality gap, which can lead to frustration, negativity and a decline of energy. These periods of stability are broken by disruptions that can be in the form of negative forces (such as conflicts regarding land tenure and organisation in Atlántida), or a positive force (such as the joint mission of Atlántida to hold the ecovillage gathering). The importance of these disruptions is that they act, in the words of Jorge, as 'transformative fires' which maintain the activities as dynamic and evolving.

According to Wals, Van der Hoeven and Blanken (2009), it is specifically in the periods of dynamics and insecurity that one must rely on the learning ability of the system, and hence on social learning. The question we are then left with is: What was the learning ability of Atlántida, and what are the greater implications for social learning and sustainability in our society?

Some community members of Atlántida have shown a great deal of reflexivity in the life cycle of the community, as is demonstrated by the loops of learning they have gone through. There is also a surprising level of difference among its members, highlighting that, rather than an ecovillage being 'a planetary knowledge community grounded in a holistic ontology… '(Litfin, 2009:125), there is ontological heterogeneity which brings diversity and the need for a great level of flexibility. This is shown by their high tolerance for experimentation and failure, and an ability to employ systems thinking, acquired from their triple-loop learning process and their hands-on experience in practising sustainability. All these features have helped the community to navigate their internal processes. Yet it is interesting that it was a lack of acknowledgment and acceptance of difference which contributed to the big disruption which brought about the third loop of learning. Would they have reached the deepest and most difficult level of reflection had it not been for the conflict which accelerated the unravelling of the community?

Echoing today's world, the story of Atlántida suggests that disruptions will be important for the transition towards a more sustainable future. Despite the consequences of tough reflexive environments, such as broken relationships and dreams, these types of transformative processes are vital for a society to more realistically address the quagmire in which the discourse on sustainability is currently stagnating. Although we do not all need to live in an ecovillage to accomplish this, it is important that we learn from the experiences of communities such as

Atlántida so as to design and facilitate spaces for these 'disruptive' processes to happen in both formal and informal learning environments. This will require further theorisation into the role of disruptions in sustainability contexts, as well as the commitment of people and society to leave the comfort zone of the status quo and embark on deep, and perhaps painful, transformative processes.

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# The Influence of Adaptive Co-management Interrelations on the Social Learning, Change and Transformation of the Pugu and Kazimzumbwi Community in Tanzania

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## *Abstract*

*This study sought to identify signs of social learning, change and transformation resulting from adaptive co-management interrelations in terms of the project 'Reduction of Emission from Deforestation and Forest Degradation' (REDD) at the Pugu and Kazimzumbwi Forest Reserves (PKFR) community in Tanzania. The study therefore presents some enablers and constraints in respect of learning, agency formation, social change and transformation potentially influenced by the REDD. This is a qualitative case study that explored 'learning'[1] from living experiences of local people at the PKFR and from local mechanisms of the REDD project. Reflexive workshop interventions were used to validate the performance of local REDD practices against the adaptive co-management framework. Other data was obtained through interviews, focus-group discussion, the analysis of documents and direct observations.*

*The study found that individual people may deepen their understanding of forestry issues through collaborative interrelations. Social learning in the PKFR community was potentially stimulated by people's relational interactions, reflective thinking and anticipations, and questioning of past practices. Learning occurred subtly, and the learning process was not endured firmly enough to foster the complex learning dynamics necessary for transformational changes. As a result, most of the REDD-stimulated learning did not transform the practices desired in the project.*


Keywords: Social learning, transformations, interrelations, adaptive co-management.

## *Introduction*

The rationale for researching transformative social learning was based on the prominence of Participatory Forest Management (PFM) approaches introduced to the Pugu and Kazimzumbwi community over the past 15 years. Later in 2011, the REDD project was introduced in the community as a new form of PFM in order to focus on community empowerment for transformative adaptation to climate change impacts. The global framework of the REDD project emphasised the assumptions of social learning as ways of achieving social transformation and adaptive practices in climate change-vulnerable communities (Cornell, Berkhout, Tuinstra, Ta'bara, Jager, Chabay & Van Kerkhoff, 2013; IPCC WGII AR5, 2013). The research therefore sought to identify potential conditions of social learning, agency formation, social change and transformation influenced by local practices as a result of the REDD project. This paper draws on a 2012 and 2015 PhD study which investigated the influence of PFM approaches on

transformative social learning at the Pugu and Kazimzumbwi social–ecological community (Ferdinand, 2015).

The paper presents some conclusive results of a one-day reflexive workshop and its interactions by means of which community members shared and examined the learning outputs from previously conducted interviews and group discussions. Workshop members were required to collectively discuss and deliberate on major learning issues before making a conclusive validation of the relevance of REDD practice mechanisms to interrelation standards of adaptive co-management. The output of the validation results expressed indicative conditions for enablers and constraints with respect to learning, agency formation and transformative changes in the community. This paper uses the inductive mode of inference to describe some probabilities of community learning, agency formation and transformative changes in the PKFR context of REDD project frameworks.

## *Social Learning and the REDD Project*

The idea of social learning for progressing transformative adaptions or promoting a change in practices emerged from learning processes that are capable of reorienting people's perspectives towards the intended learning objectives (Mezirow, 2000; Mezirow, 2004; Wals, 2007; Wals, Van der Hoeven & Blanken, 2009; Reed, Evely, Cundill, Fazey, Glass, Laing & Stringer, 2010; Wals & Corcoran, 2012). Social learning is described by Reed *et al.* (2010) as a facilitative process of change in people's understanding, which may also extend to social networks. This research linked social learning with local processes of implementing the REDD pilot project in the Pugu and Kazimzumbwi community in Tanzania, in which collaborative stakeholder engagement was intended to institute structures for governing the reduction of greenhouse-gas emissions (Plummer & Armitage, 2007; Plummer, 2009, 2012; Armitage, 2008; Cundill & Rodela, 2012; Cundill & Fabricius, 2009). Learning through collaborative management of resources is an essential practice of adaptive management as promoted by Pahl-Wostl and Hare (2004), Pahl-Wostl (2006) and Pahl-Wostl, Mostert & Tabara (2008), who extensively researched the management of water resources in Europe. Pahl-Wostl and Hare (2004) describe the important roles of learning and the value of treating learning as an essential element of resource management. This paper also uses some valuable highlights of adaptive co-management from the REDD project framework recently published by the Intergovernmental Panel on Climate Change (IPCC WGII AR5, 2013) and the IPCC (SREX) (2012 reports). The reports also identified social learning as an essential component of adaptive transformations necessary for climate change resilience in African communities.

Assumptions concerning social learning lie in putting people's experiences at the centre stage of social practices (Scott & Gough, 2004; Muro & Jeffrey, 2008), the origin of which can be traced way back to Vygotksy's work in the 1930s (Lotz-Sisitka, Belay & Mukute, 2012; Daniels, 2008). Vygotksy's work emphasised the engagement of learners' consciousness in learning processes so as to stimulate interactive learning experiences. This idea of learning has influenced the field of learning in today's pursuit of environmental education and collaborative resource management (Cundill, Cumming, Biggs & Fabricius, 2011; Lotz-Sisitka, 2012; Lotz-Sisitka

*et al.*, 2012; Lupele & Lotz-Sisitka, 2012; Cundill & Rodela, 2012; Cundill, Schackleton, Sisitka, Ntshundu, Lotz-Sisitka, Kulundu & Hamer, 2014). Some of the learning-focused management approaches are recognised as community-based, participatory and/or social–ecological (Pahl-Wostl & Hare, 2004; Muro & Jeffrey, 2008; Stokols, Lejano & Hipp, 2013). Cornell *et al.* (2013) described the general structure of learning mechanisms in the REDD project as enhancing open knowledge systems in which learning is socially stimulated. This description conveniently bridges the social-learning assumptions discussed earlier in this paper with the open knowledge systems for adaptive management of climate change impacts, as broadly guided by the IPPC (Cornell *et al.*, 2013). It also empowers the objective of this research in order to validate the performance of REDD project practices at Pugu and Kazimzumbwi with regard to participatory frames of adaptive management; hence its relevance to some principles of interrelations reflecting social-learning processes. Already, some scholars have challenged the framing of implementation strategies in most learning-focused management approaches, commenting that these sometimes constrain knowledge up-take and result in defective learning and adaptation (Babikwa, 2004; Jickling, 2004, 2013; Scott & Gough, 2003).

## *Research Design and Methodology*

The first step in designing this research was to keep abreast of ontological and epistemological stances in framing a socially oriented and practice-based learning process; hence the need to clearly define some indicator conditions for identifying the occurrence of learning from local people's experiences. A deeper understanding of what social learning is, and how and why it occurs, was inevitable. As a researcher and learner, I consulted the literature associated with social-learning theories, transformative learning theories, and the theoretical concepts of learning as a process and outcome of social practice. Five indicative conditions for transformative social learning were summarised from the insights gained from the literature. The five indicators of learning were (but not limited to): (a) engagement of people; (b) people's motivation/empowerment; (c) coping with tension; (d) change in people's understanding; and (e) change in practices. These indicators were adopted in this research for the identification of evidence of learning spaces within the locally emerged interrelations of REDD project stakeholders (see Table 1).

Four villages, namely Kisarawe, Maguruwe, Kisanga and Nyeburu (see Figure 1) were actively involved in the research. Figure 1 presents a map of locations and distribution of the four villages around the PKFR. While Kisarawe village is located around the Kisarawe district centre to the north of Kazimzumbwi Forest and south of Pugu Forest, Nyeburu is located in the south-east, and Kisanga and Maguruwe South on the west of the site. The population sizes of the participating villages in terms of household estimates are shown in Table 2.

This research was conducted in the form of a qualitative case study. At the start of the study (2012– 2013), I critically analysed archival documents, historical records, and observable features of relevance to PFM implementation at the site. This was done so as to establish baseline information on past, present, and potential future processes of learning from PFM interventions. In-depth interviews were then conducted to explore individuals' experiences of, and perspectives on, local issues of participatory management of forests. The interviews were

**Table 1.** Five indicators of learning and the associated clusters of iterative learning processes

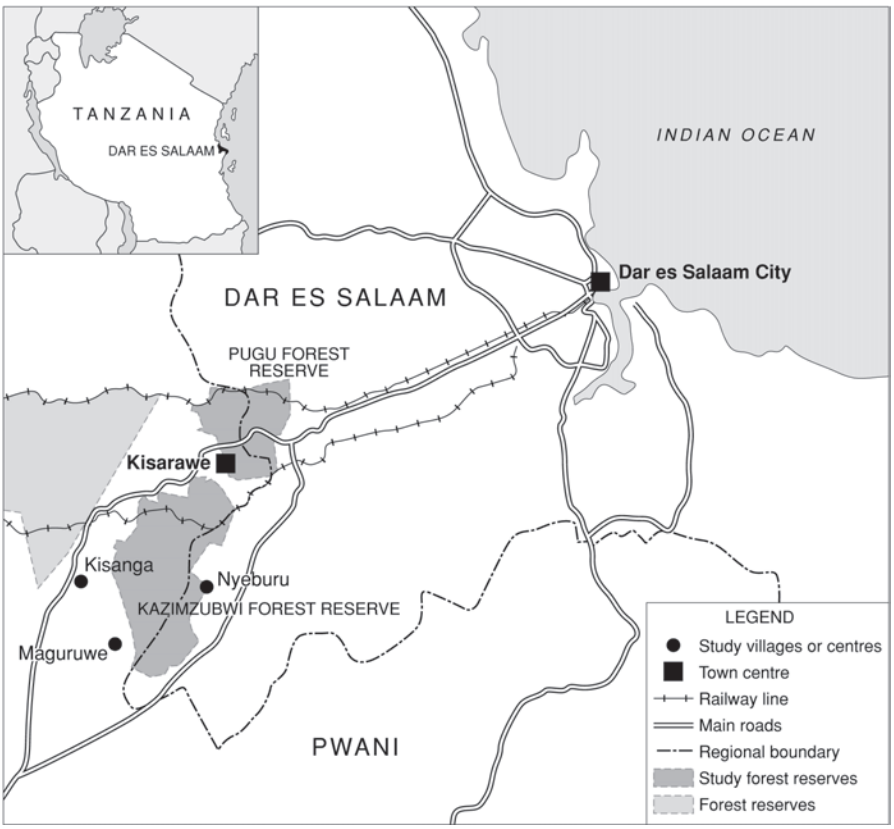
| Learning indicator | A cluster of iterative processes that form the indicator |
|---|---|
| People's engagement | A cluster of iterative learning processes that include communicative discourses, doing tasks, training, implementing new rules, policies and regulations, thinking and talking about project issues, etc. (Mezirow, 2000; Schatzki, 2000, 2001, 2012; Wenger, 1998; Reed *et al.*, 2010; Kemmis & Mutton, 2012; Cundill *et al.*, 2014; Kemmis & Mutton, 2014). |
| Motivation/empowerment | A cluster of iterative learning processes that include people's commitments, inspirations, motivations, praxis, signs of social justice, and emancipation (Mezirow, 2000, 2003, 2004; Wals, 2007; Wenger, 1998; Hargreaves, 2011; Schatzki, 2012; Cundill *et al.*, 2014; Kemmis *et al.*, 2014). |
| Coping with tensions | A cluster of iterative learning processes that include people's flexibility and reflexivity, critical thinking, rationalising, rethinking ideas, creativity, innovations, etc. (Mezirow, 1998, 2009; Dirkx, Mezirow & Cranton , 2006; Archer, 2007, 2010; Wals *et al.*, 2009; Reed *et al.*, 2010). |
| Change in understanding | A cluster of iterative learning processes that may include a combination of any processes that lead to a change in people's understanding at individual and group levels (Mezirow, 2003, 2004; Wals, 2007; Muro & Jeffrey, 2008; Reed *et al.*, 2010; Hargreaves, 2011; Glass, Scott & Price, 2012; Cundill *et al.*, 2014). |
| Change in practices | A learning process that may discursively occur from any of the clusters of iterative learning processes mentioned above. It is an ever-forming and ever-changing product as well as process (Muro & Jeffrey, 2008; Pahl-Wostl *et al.*, 2008; Hargreaves, 2011; Schatzki, 2012; Kemmis *et al.*, 2014). |

**Table 2.** Population sizes of villages in terms of household estimates

| (North-east of Kazimzumbwi Forest) | (Around Kisarawe District centre) | (South-west of Kazimzumbwi Forest) |
|---|---|---|
| Nyeburu Street (estimate: 2 500 households by 2012) | Kisarawe Village and subvillages around the district centre (estimate: 2 500 households by 2011) | Kisanga Village (estimate: 478 households by 2012) |
| Kimwani Street (slightly more households than Nyeburu by 2012) | | Maguruwe Village (estimate: 160 households by 2012) |

followed by focus-group discussions in the last quarter of 2013 to consolidate major learning issues that had emerged in the community, as perceived by individuals, and kept in the form of PFM records, documents and objects. The focus-group discussions were guided in order to stimulate local perspectives on change in people's practices as the community implemented PFM through REDD project activities. The discussions were also used as platforms for sharing both positive and negative perspectives and opinions of local people about the REDD project activities in the community. Members of the discussion groups were encouraged to make suggestions as to what PFM projects could do, how this could be done and why, with a focus on REDD practice mechanisms. A summary of results from the focus-group discussions is presented in Table 3.

**Figure 1.** Map showing village distribution around the study site (modified from Kashaigili, 2013)




A reflexive workshop involving all individuals who took part in interviews and those who took part in focus-group discussions was later conducted in May 2014. The aim of this workshop was to facilitate an inclusive forum for collaborative sharing and discussion of, and deliberation on, major learning issues arising from interviews and focus-group discussion. Workshop participants learnt and agreed on principal interrelation mechanisms inherent in the adaptive co-management framework established in the works of Cundill and Rodela (2012), Cundill (2010), Cundill *et al.* (2011), Berkes, Colding & Folke (2003), and Pahl-Wostl *et al.* (2008). Five categories of interrelation mechanisms (see Table 4) were used by workshop participants to validate the performance of REDD project practices against the adaptive co-management framework.

Different modes of inference were used to interpret issues emerging at different levels of this study. In analysing the results of focus-group and workshop discussions, an inductive mode of inference was used to draw out learning possibilities and identify conditions that enabled and constrained learning in REDD project implementation (as perceived by local people at the PKFR).

## *Presentation of Results*

This paper reports the results of the focus-group discussions and the deliberations from a reflexive workshop in order to argue the modes of occurrence or learning in PFM projects, with a focus on REDD project practices at the Pugu and Kazimzumbwi site. Table 3 highlights what transpired in the focus-group discussions. Four themes are inductively derived to cover learning issues that were deliberated on in the discussions.

1. Reflections on past experiences of other PFMs and REDDs;
2. REDD approaches in respect of local forest enforcements;
3. Government approaches in respect of local forest enforcements; and
4. Incentive schemes and capacity building with regard to other PFMs and REDDs.

Table 4 presents the results of workshop deliberations. The workshop participants validated the performance of local practices in respect of the REDD project by rating the effectiveness of some events in promoting adaptive, co-management interrelation frameworks.

**Table 3.** Four learning focuses that emerged from focus-group discussions

| **Reflections of past experiences of the PFM and the REDD** | **REDD approaches to enforcement in respect of forests** |
|---|---|
| • Reflections on past PFM experiences brought back memories of failing to achieve Joint Management Agreements (JMAs).<br>• Reflections also surfaced the difficulties experienced by the community in working with departments of central government.<br>• Reflections explored some factors which resulted in institutional barriers for the district authority in handling JMA issues, as the district authority was not authorised to manage issues relating to the National Forest Reserves. | • The idea of carbon trading through the farming of trees and encouraging regeneration was introduced. An estimated 250 000 trees were planted in the forest reserves.<br>• Fire-control committees were established in order to strengthen the village environmental committees that existed.<br>• District and village authorities were not legally bound by the REDD project. Consequently, there were no memoranda of understanding or legal contracts between district/village governments and the REDD project. |
| **Government approaches to enforcement in respect of forests** | **Incentive schemes and capacity-building** |
| • Government management structures for governing the work of non-governmental organisations (NGOs) within the PKFR community were weak in ways that created room for NGO workers to carry out their duties without government monitoring.<br>• The capacity of government management structures to control forest encroachments was inadequate.<br>• Government support for locally initiated strategies to enhance forest management was inadequate. | • There were adequate plans for both incentives and training schemes with regard to the PFM and REDD project.<br>• The skills that were acquired by local people from training were not put into practice in the community due to a lack of resources. The certificates offered were therefore worthless.<br>• Financial incentives for local projects were too meagre to ensure sustainability. There was underbudgeting for local activities, whereas NGOs received the lion's share. |

**Table 4.** Table showing the validation of the performance of the REDD project mechanisms against adaptive co-management

| No. | Interrelation mechanisms for the adaptive co-management framework | Workshop validation of the performance of the REDD in respect of the interrelation mechanisms |
|---|---|---|
| 1 | Openness of collaboration, networks and information communication | The workshop participants validated the performance of the REDD project with regard to openness of collaboration and networks as low. The project planning was not collaborative enough, since the roles of villages and district governments were not regarded as institutional. Local project mobilisation was done through village leaders, village committees and environmental activists. Village meetings were used to initiate communication in respect of the project agenda, but were not legally part of the project. This tended to obscure lines of communication, collaboration and networking between district/village governments and the rest of the project stakeholder team. |
| 2 | Collectiveness in framing of shared objectives and in tenure of resources | The workshop participants validated the performance of the REDD project with regard to collectiveness in the framing and sharing of objectives as low. During the workshop, community members, including village chairpersons, were not aware of the time span of the REDD pilot project, which was five years. This indicates inadequate sharing of project objectives. When the REDD project was terminated in 2013, village governments had not given their consent and did not receive official notification of the termination. Village communities did not know whose interests were served by the termination. The lack of shared strategies in respect of land tenure gave rise to poor resource monitoring. such as a lack of effective by-laws. |
| 3 | Willingness to learn from one another, and trust-building among stakeholders | The workshop participants validated the performance of the REDD project regarding willingness to learn and building trust among stakeholders as low. Workshop members said that the community was less confident about project partnerships, since it (the community) did not trust some of the project implementers, including NGOs. The community viewed NGOs as opportunistic, individualistic and malicious. Local people in the community were not sure of the tangible benefits of the project as communities (not as individuals). Experts in different fields covered by the project were not willing to learn from ordinary people who were not educated. |
| 4 | Funding of local initiatives and other local incentives | The performance of the REDD project with respect to funding local project initiatives was validated as low, since the budgeted funds for local activities were claimed to be insufficient for community development. The community was not involved in budgeting for local activities, so it was difficult for it to contribute ideas for favourable development. Financial incentives resulting from the project were greatly acknowledged by individuals as producing casual wages from project work, lunch and/or transport allowances, and promised capital for micro-projects. The community wished that the project could pay revenue to village governments, and also proposed this. |

| No. | Interrelation mechanisms for the adaptive co-management framework | Workshop validation of the performance of the REDD in respect of the interrelation mechanisms |
|---|---|---|
| 5 | Effectiveness of local leadership | The workshop participants validated the performance of village leadership relating to the REDD project as high, and the performance of leadership from other local institutions in the community as low. Leadership at village levels was regarded as effective in communicating project information through organised meetings and village committees. Village chairpersons were seen to be serving the interests of local communities. Leadership from other local institutions, including law enforcers (e.g. the police and magistrates), NGOs and country universities, was regarded by the community as ineffective, as these seemed to lack the willpower to pursue community interests in the course of the project. |

## *Discussion of Results*

### Learning through interrelations

Before discussing the analysis of the results in Table 4, comments on the epistemological and methodological framework used in arriving at the results are given. The workshop, which was participatory, reflexive and collaborative, was, in itself, a version of interrelation space that provided learning opportunities assumed in an adaptive co-management framework. As a researcher engaged in the participatory discussions, I did not just monitor the learning experiences but was also involved as a social learner through my own experiences. This occurred in the course of talking, sharing ideas, and reflecting on my own feelings about forest issues. I inevitably interacted with workshop participants, and responded and (re)acted concerning issues that were raised. Nevertheless, my role of observing, reflecting on, and analysing the learning experiences of individual participants as they were arguing about and discussing forestry matters was maintained throughout. Muro and Jeffrey (2008) suggest that people tend to increase their chances of improving their understanding of things when they participate in collaborative reflection. People may gain clarity on issues as they listen to one another, understand one another's perspectives, and are empowered by having others around them (Muro & Jeffrey, 2008). Box 1 presents some quotes representing the remarks made by workshop participants which revealed improved understanding of forest-management issues through the workshop interactions:

**Quote box** 1. Quotes revealing improved understanding

- We never knew we would be able to recheck the project practices in [the] way you have guided us through this [reflection]. You know what? We had to think critically, face challenges and [use] our brains to come up with results. This is an eye-opener … we have benefited a lot from this workshop… . This piece of work is really a lesson. I am going to keep this paper … . *(participant from Kisarawe Village)*

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- Thank you… . I think even the government must be very careful with project implementation. And we will be better informed when new projects come in … . We were so naïve in most of the past engagements because we did not know it was our right to understand all these things… and to be considered in such [a] front position … . The workshop has been very enlightening … . *(Participant from Maguruwe Village)*

**Social learning analysed from the research results**

The explanations in both Table 3 and 4 are indicative of the local potential and possibilities for community learning at the PKFR in terms of the REDD project framework. When people were engaged in reflections on past PFM experiences, learning about the present conditions and the capacities of the REDD project to address the existing PFM gaps in the community was indicated. Kemmis, *et al*. (2014:2) recommends the process of reflecting on past experience as a potential stimulant for social learning: 'It is an achievement secured by human *practice* – the practice by which we secure and stabilise the world of today as continuous with the world of yesterday, and as the precursor of the world of tomorrow' (emphasis in the original). Discussions on the past experiences reflected on by the community were apparently an indicator of the community's potential for social learning and for enhancing the possibility of informed social change.

Furthermore, some moments where learning processes were constrained by gaps that emerged in stakeholder's perspectives were identified from the results. There were, for instance, some constraints in respect of social–relational collaboration among REDD stakeholders, something that the project mechanisms could not address in full. Such constraints could impede the process of social learning that had emerged from community enthusiasm regarding the REDD project. As indicated in Table 3, the community noted that there was some power tension among NGO (non-governmental organisation) workers, government institutions and donor agencies. Table 4 shows that the community was practically unhappy about other stakeholders in the project, especially state actors. The community explained that it did not trust the intentions of these stakeholders in supporting community interests. Such claims may indicate ineffectiveness in dialoguing different group interests, thus limiting the capacity for developing the common objectives of the project. Lack of mechanisms for defining and monitoring each group's interests may clearly hamper collaborative learning in respect of understanding and social support of the project. The results show that the mechanisms for implementing the REDD project in the PKFR were not properly framed so as to mediate emerging learning-tensions across different actors. The REDD project mechanisms lacked an appropriate framework for governing the social–relational feedback that is essential for stabilising the project's ecological

objectives. Feedback such as people's doubts, complaints, diversity of interests, and institutional hegemony influenced by the context could have informed the REDD project practices and facilitated review processes. Such a management cycle is part of the iterative-learning process in ecological management. To support the importance of developing social relations among project stakeholders and reframing institutional structures to support emerging social entities, Pahl-Wostl *et al*. (2008:3) stated:

> The problem that we face when we deal with sustainability lies not so much in our lack of understanding of the functioning of ecological systems, but in our lack of understanding of the governance and cultural systems and how they are structured and managed and interact with ecological systems … Social learning entails developing new relational capacities, both between social agents, in the form of learning how to collaborate and understand others' roles and capacities differently, and also between social-ecological systems (sustainability learning). New institutional arrangements are needed to structure the more sustainable relationships, based on new framings of the issues at stake and the agents involved.

These findings are also supported by Hart (2004), who suggested a dialectic debate (about resource-management systems) that balances out ecological demands from challenges of social demands. The dialectical debate may emerge between the project's ecological perspectives and change perspectives. Issues of social relations in the REDD project at the PKFR were, for instance, part of the natural debate in support of ecological reduction of greenhouse gasses through a multistakeholder framework as part of the REDD project. Projects such as the REDD could be reviewed/redesigned to address drivers of social change (the people's agency for making change happen) of equal importance as people progress ecological motives (what they want to change in the ecology). According to Hart (2004), consciousness in mediating social relations could potentially open possibilities for adjustments and re-theorisation of project plans. As found in the research (Ferdinand, 2015), the forest-governance structures of the REDD project in the PKFR failed to support the social and relational challenges emerging from integrative social–cultural systems and the learning mediatory conditions necessary for ecological management.

**Agency formation, social change and transformation**

By virtue of its iterative and generative ontology, social learning is an ever-emerging process. The learning process may gradually and constantly reorient people's ways of thinking about and viewing things as they engage in ecological activities and in developing new social relations. Both Table 3 and 4 show some potential for the reformation and reshaping of local agency. Table 3, for instance, expresses changes in people's experiences as they are learnt by living in the older ways of PFM projects, in contrast to the PFM currently introduced by the REDD project. Evidence of changes in people's experiences suggests the occurrence of subtle changes in their understanding of things and social practices. Active engagement in thinking about, and rethinking, issues for coping with project challenges (Table 3 and 4) has demonstrated varying

levels in the formation of local agency for learning and social change, as described by Eteläpelto, Vähäsantanen, Hökkä & Paloniemi (2013). Different levels of agency formation may, according to Eteläpelto *et al.* (2013), develop from collective, or an individual's, participation in a working community. These authors describe this as 'life course agency' in which people plan their lives and strive to make the right choices for their own well-being and self-fulfilments (Eteläpelto *et al.,* 2013:46–47).

The main challenge in agency formation was identified by Lotz-Sisitka *et al.* (2012) as how acquired agency may orient towards desired changes, as this cannot be a predetermined process, but must emerge as individuals and communities make choices and decisions in relation to the histories, cultures, and structural conditions and contexts in which they find themselves. While trying to address this challenge, the agency formed by the PFM and REDD project interventions in the Pugu and Kazimzumbwi community could not achieve the ultimate goals of the projects. It seemed difficult for the PFM and the REDD projects to manage social changes and to take charge in controlling conditions that improvised significant impacts in changes of local agency. Kemmis *et al.* (2014) examined the challenges of managing changes in social practices and advised change managers to stay focused by ensuring sustainability in conditions that cause and support change. The critical need for sustaining conditions for change is supported by claims from interview data, as quoted in Box 2 below:

**Quote Box** 2. Quotes from interviews showing unconsolidated learning processes in both the PFM and REDD

If there is any chance of changing … what's your suggestion?

**Participant from Kisarawe Village:** I think if people [are] engaged deeply enough to be able to really see the impact of changes [and] the benefits, and [are] able to sustain [these] in life … , [they] could change. People want to see surprising success … and be able to wow [applaud] [it]… . "Aha! So it truly works!" People want to see the 'fruits'.

**Participant from Nyeburu Village:** There is a need to have a better and truly sustained relationship between forest authorities and the community. If the forest authority takes this relationship serious[ly], people will see the value of [protecting] forest reserves. Outsiders [will, therefore,] not have the chance to invade local forest areas.

**Participant from Nyeburu Village:** There must be a connection between what we did in [the] PFM and what [the] REDD is doing now. They must involve us. The new forest committees must involve the older members of PFM committees. They must know what we [have done], and how we did it.

**Participant from Kisanga Village:** In terms of environmental awareness, we have had enough. We have enough forest[ry] education in our village. Now we want the government to let us own the forest reserves and [it] will see the outcomes. The government has failed to manage forest reserves, [but] we can do it. You will see changes.

The quotes in Box 2 may explain how much learning had occurred among local people during the PFM and REDD projects at Pugu and Kazimzumbwi. The quotes, however, indicate that the change managers (in the PFM and REDD projects) were not able to coordinate the learning that had occurred and the significant changes for transforming people's social lives and practices. As advised by Kemmis *et al.* (2014), the best turning point for transforming social practices in communities could be based on addressing the existing material conditions of the projects, social–cultural systems and interrelations that impede desired changes, so that more desirable changes have the space to emerge from existing contexts and practices. The quotes from the interviews have expressed the need for enduring change systems for any significant transformation to occur. This apparently remained unheeded in the PFM and REDD projects in the Pugu and Kazimzumbwi community. The first column of Table 3, for instance, expresses the limitations of the PFM projects to endure learning challenges for achieving Joint Management Agreements (JMAs). Similarly, Table 4 shows a one-year-long challenge of enduring social-learning processes in REDD project mechanisms for which the conditions for change and transformation were not sustained. In short, apart from evidence of subtle learning and the occasional building of agency, there was no substantive evidence to claim sustainable change and social transformation resulting from the REDD and PFM initiatives.

**Transformational adaptation to climate change**

The notion of transformational adaptation as a measure of mitigating the impacts of climate change and other environmental challenges was recently proposed by O'Brien and Sygna (2013), and Jones and Carabine (2013). Among writers on education for sustainability, Wals and Corcoran (2012) and Smith (2008) also made the same proposal. All frameworks for transformational adaptation to climate-change challenges were apparently proposed to emphasise integration of social–cultural conditions in resource management systems. The National Adaptation Programme of Action (2007) in Tanzania has, for instance, outlined several adaptation actions to potentially address the sectoral challenges of environmental sustainability in the country. The forestry industry is one of the prioritised sectors in which the need for collaborative community learning was proposed for re-correction, the improvement of coping strategies, and the transformation of new practices. Other adaptive techniques in community-based forest management were proposed through monitoring of habitat destruction, promoting alternative-energy technologies, as well as enhancing collaboration and community participation. To better achieve the identified strategies, actions and techniques, the National Adaptation Programme of Action may also need to engage a critical focus on the social-learning agenda for and reflexive drivers of transformational changes. However, some popular community-based programmes in the country may continue to report the usual success stories without reflection on achieved learning, change and transformation, thus glossing over the deep-seated, more sustained and meaningful change needs of communities as expressed by themselves, as was the case in this research (Ferdinand, 2015).

## *Conclusion*

In conclusion, the research focused on the PFM and REDD project within the Pugu and Kazimzumbwi community in order to highlight the influence of globally introduced management frameworks and their local implementation strategies for stimulating learning. This paper has presented some evidence to show the role of social interrelations in social–ecological management for promoting collaborative learning and enhancing possibilities for change and the transformation of practices. The paper specifically describes ways in which interrelational spaces can be created and sustained so as to fulfil learning objectives and endure desired levels of change in agency and social transformation. Further, the paper has demonstrated some enabling and constraining conditions for learning in respect of forestry practices and has shown how both conditions emanate from institutional support and governance mechanisms improvised by forest-management systems.

This research made use of local people's voices to determine REDD support mechanisms for the learning of forestry practices by the community. The findings of this research were obtained from an in-depth analysis of the evidence on learning as seen through local people's perspectives in the Pugu and Kazimzumbwi community. Local people's perspectives are normally underrepresented in most stages of project development, including planning, monitoring and evaluation. This diminishes the autonomy of local actors in valuing and validating the roles of other actors and, apparently, their own roles in participatory partnership projects, and thus also in the change processes.

## *Endnote*

1. The term 'learning' as used in this study may reflect an overall process of iterative, socially emerging change in people's understanding that initiates a change in local agency and social transformation.

## *Note on the Contributor*

Victoria Ugulumu Ferdinand was a PhD fellow at Environmental Learning Research Centre at Rhodes University South Africa and has since obtained her doctorate. Before embarking on her PhD research on Transformative Social learning, she worked with the Wildlife Conservation Society of Tanzania (WCST) as a specialist in Environmental Learning and Awareness.

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# Elements of Social Learning Supporting Transformative Change

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## *Abstract*

*The body of literature on social learning is enormous, with differently framed ontologies and epistemologies aligned to multiple perspectives of learning in a social context. These have grown out of the many academic disciplines which have seen the value of social learning. This paper highlights the need to be aware of these multiple perspectives, and draws on the work of Lotz-Sisitka, Mukute and Belay (2012) to argue that there is a need to understand, and engage deeply with, the antecedent perspectives on social learning and to avoid ontological collapse in social-learning research in environmental education research and practice. It provides a broad-based understanding of transformative social learning by simply defining social learning with a socially critical orientation, and distilling key elements of social learning important to supporting social change. A recommendation is made for interventionist researchers and practitioners to use a theoretically sound, ontologically congruent methodology to support their social-learning research and implementation.*


## *Introduction*

By drawing on a review of the social-learning literature in environmental education from a socially critical orientation, key elements of informal adult learning have been distilled as being important for transformative change interventions. This formed part of a broader literature review for a PhD thesis that I completed on organisational learning and development. As an interventionist researcher, I investigated in my thesis how informal adult learning supports organisational change to strengthen wetland and environmental sustainability practices within a corporate-plantation forestry context (Lindley, 2014). How individual and/or group-based learning interactions translate to the collective, at the level of organisational change, was a key issue probed in this study.

In this paper, the context of transformative learning is provided through highlighting the need to cross the gap between knowing and doing. The theoretical grounding of the paper is explained by defining what social learning is, and the notion of ontological collapse as discussed by Lotz-Sisitka *et al.* (2012) is introduced to demonstrate how the key elements can support environmental education researchers from falling into this trap. Key elements of transformative social learning that emerged from the literature are described.

These elements strongly supported implementation of the interventionist research project that I was engaged in during the PhD study, which used the emancipatory oriented Expansive Learning Cycle as its methodology, a concept emanating from cultural–historical activity theory

research after Engeström (1987, 2000; see, also, Engeström & Sannino, 2010). The elements as discussed in this paper cover the following key dynamics of social learning: *how social learning takes place* is emphasised as being just as important as its outcomes; the importance of recognising dissonance and contradiction in social learning; possibilities of deliberative democracy; open-process approaches to epistemology and risk engagement; and participation practices.

## *Transformative Learning Context: Need to Bridge the Gap between Knowing and Doing*

Most of the literature on social learning implies, directly or indirectly, that social change is one of the outcomes of social learning (Tilbury, 2007, 2011; Lotz-Sisitka & Le Grange, 2010; Reed, Evely, Cundill, Fazey, Glass, Laing, Newig, Parrish, Prell, Raymond & Stringer, 2010). However, this outcome is often not realised. As Glasser (2007) saliently points out, there is a growing concern with environmental learning that results in a lack of environmental action. He sees a massive gap occurring between the sustainability that many in society are calling for, and what is actually happening in practice. Glasser explains that, despite extensive awareness of our unsustainable lifestyle, ample evidence of the impact of it, and even a concern to do something about it, we still do not see sufficient action being taken to work towards what he terms 'eco-cultural sustainability'. Interestingly, Hungerford and Volk (1990) also reported over 20 years ago that changes in the availability and understanding of environmental knowledge do not necessarily result in changes in environmental attitudes and behaviour. In my experience of supporting social change for improved wetland and environmental management over the past 22 years, I, too, have found this. It provided the impetus for my PhD research – to understand more deeply why wetland and environmental sustainability practices were not integrated into a plantation forestry company's operations, despite over a decade of working with company staff to do this.

Through my reading, it became apparent that the bulk of social-learning literature is particularly weak in explaining theoretically how social change comes about through learning in participation, and that social-learning processes are poorly understood. This, among others, may be the reason for the gap that Glasser describes. What this does highlight is that, as environmental educators, instead of assuming that social change will automatically emerge from social-learning interventions, one needs to carefully consider and understand how people learn in social-learning contexts, how people can meaningfully participate in social learning, the role social learning can play in supporting social change, and how we can better facilitate environmental learning to support social change for improved environmental practices, *without* social learning becoming another form of behaviour modification through social engineering; that is, there is a need to consider the freedom of people to participate in the co-creation of new activity and practice without coercion. It is from this perspective that Engeström and Sannino (2010) argue that cultural–historical activity theory is a form of *formative* interventionist research, with the emphasis on collective participation in the formation of new human activity.

## *Theoretical Grounding of the Paper*

### Defining 'social learning'

The literature in the field of social learning is vast. It is a meeting place for different perspectives on learning in a social context that has grown out of the disciplines of psychology, sociology, education, management studies and environmental management, among others. As a result, there are many different meanings of 'social learning', meanings that relate both to the social aspects of social learning and the learning aspects of social learning (Wals, 2007a; Pahl-Wostl, Craps, Dewulf, Mostert, Tabara & Taillieu, 2007; Armitage, Marschke & Plummer, 2008; Kilvington, 2010; Reed *et al.*, 2010; Cundill & Rodela, 2012; Lotz-Sisitka *et al.*, 2012). For example, Kilvington (2010) highlights that some consider social learning an end state, while others consider it as a means to the end. Wals (2007b) provides a helpful explanation which can be drawn on in clarifying social learning. He describes his way around the confusion of numerous descriptions of social learning as follows: 'It is safe to say that social learning tends to refer to learning that takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to meaningful interaction' (Wals, 2007b:39). However, the debate about what social learning is has been going on for a while, and will most likely continue for years to come. It was Parson and Clark who, almost 20 years ago, summed up this confusion rather eloquently, describing why the debate still continues to this day:

> The term social learning conceals great diversity. That many researchers describe the phenomenon they are examining as 'social learning' does not necessarily indicate a common theoretical perspective, disciplinary heritage, or even language. Rather the contributions employ the language, concepts, and research methods of half a dozen major disciplines; they focus on individuals, groups, formal organisations, professional communities, or entire societies; they use different definitions of learning, of what it means for learning to be 'social', and of theory. The deepest difference is that for some … social learning … means learning by individuals that takes place in social settings and/or is socially conditioned; for others it means learning by social aggregates. (Parson & Clarke, as cited in Glasser, 2007:48)

### The risk of ontological collapse

When reading the mountain of literature on social learning, many different and conflicting viewpoints emerge, which can be very confusing. I therefore found it extremely important to be aware of the diverging ontological (and epistemological) origins of much of the literature. When reading the wide variety of literature available, it is possible to differentiate between authors' ontological positions, and this can help to develop a coherence in the way of engaging with the vast body of social-learning literature. One danger that emerges when reading the literature is that social learning can be objectified and used as a tool to achieve certain outcomes, rather than seeing it as *a learning process* with a socially critical orientation where the outcomes are not predetermined. Lotz-Sisitka *et al.*, (2012) believe that this can easily happen when the meanings and the theoretical origins of the 'social' and the 'learning' aspects of social

learning are not well understood, thus leading to ontological collapse of research and practice.

Referring to Sfard, Lotz-Sisitka *et al.* (2012) describe how ontological collapse in social-learning research occurs when insufficient understanding of the social processes of learning and social change gives rise to these social processes being objectified through: (a) *reification*: that is, when the dominant social-learning discourse is about *what* social learning is, its outcomes, and the competencies required for social learning, with far less focus on the *how* – that is, the processes and actions that facilitate and support the occurrence of the social-learning process; and (b) *social alienation*: that is, when explanations of social-learning outcomes such as co-management of natural resources are said to occur virtually on their own, without sufficient consideration given to who is actually undertaking these processes and how they are undertaking them. To avoid the errors of reification and alienation, as argued by Lotz-Sisitka *et al.* (2012), it is therefore critical to illuminate the processes that make up what it is to be social, and to participate socially in learning and change processes. It is with this warning in mind that the following elements of transformative social learning emerged as being important to the formative interventionist research that I undertook in my PhD study.

## *A Discussion of Key Elements of Transformative Social Learning*

While it is important to raise the potential problem of ontological collapse, the aim of this paper is not to trace the genealogy of the approach to social learning that I drew on. Instead, Kilvington's cue has been taken when she concludes from her review of the social-learning literature that 'it is arguably more helpful to regard social learning as a collection of elements critical to understanding and supporting the social and situational factors that underpin complex environmental problem solving' (Kilvington, 2010:65). In the following sections, while being mindful of the notion of ontological collapse in selecting key references, particular elements of social learning are introduced that I have found to be helpful in developing a broad-based understanding of transformative social learning in the field of environmental education. These elements strongly supported implementation of my formative interventionist research project.

**Importance of valuing social-learning processes over products**

An element of social learning that I identified as being important to my PhD research (Lindley, 2014) was that the processes of *how* social learning takes place are as important as its outcomes. This point is strongly made by Wals and Van der Leij (2007) who emphasise that, regardless of how 'social learning' may be defined, perhaps the most pertinent point is that the crux of social learning is not *what* people need to know, which could be seen in the light of the scientific instrumentalist orientation, but rather *how* people learn and what they want to learn, and how they will be able to challenge and transcend societal norms for a more sustainable future. In support of this, Reed *et al.* (2010) report that there is often confusion in the literature between interpreting social learning as a process of people learning from one another, and seeing it as an outcome of these social interactions. As a result, the social-learning processes and products are often conflated, with primacy being given to the outcomes such as improved environmental management, or enhanced stakeholder capacity and empowerment. Although social learning

is both a process and a product, I have found it is important in formative interventionist research to understand and facilitate the social processes of learning rather than to focus only on the learning outcomes. In my experience, this is reflected in many instances when the senior management of organisations and funders I work with often want to hear more about the outcomes of a social-learning project than the processes. Product/s (outcomes) therefore becomes a major driver for learning that is outcome-driven, creating an axis of tension that continually needs to be balanced.

**Changing values, beliefs, ideologies and assumptions**

Researchers such as Glasser (2007) believe that it is only through learning that we develop the values, concerns and attitudes which make up our perception of reality. Therefore, it is only through participative learning about new information different from our own that we can test our own values and concerns against our reality and reorient our values and actions. The social change that is required to reorient a change in values, beliefs and ideologies with regard to how society uses and manages its natural environment will therefore require a special type of learning – social learning. Wals and Heymann (2004) consider this approach to learning as needing to take place in rich social contexts where people with a diversity of views, assumptions, values and ideologies are provided with the opportunity to safely discuss their world views without fear of retribution, and that this discussion needs to take place within a facilitated environment of moderate dissonance and divergent views. Since my research was emancipatory in orientation and required the research participants to challenge their existing values and assumptions, this type of learning was considered as paramount in order to support the Expansive Learning Cycle formative interventionist methodology of Engeström (2000) that I used.

**Dissonance and contradiction as a precondition for learning**

The dissonance aspect of this approach is interesting and not widely recognised by educators and researchers as being important to learning for improved sustainability practices. This is surprising when one considers the quantum changes that are required to address the sustainability challenges that the world currently faces. However, Wals and Heymann (2004) see the conflicts that emerge from discussing divergent views as a prerequisite for the type of learning required, rather than as a barrier to learning. They call for a rethink of the role of conflict in learning: 'Dealing with this complexity and uncertainty, with conflicting norms, values, and interests in a world characterized by ever-expanding globalization requires a re-conceptualization of the role of conflict in transformative learning processes (Wals & Heymann, 2004:129). In discussing the important attributes of meaningful dialogue, both Fischer (2004) and Kadlec and Friedman (2007) also note that exposing conflicts of interest leads to expanded capacity, rather than polarisation – as long as the right conditions and design of the facilitation are put in place. In fact, Kadlec and Friedman (2007) found that a conflict of interests actually legitimised the deliberation process, and Fischer is quite explicit in saying that conflict and disagreement should be seen as a precondition for the development of social understanding. Although these authors state the importance of dissonance in deliberation and

learning, none of them explicate it further. Wals and Heymann (2004), on the other hand, open up the idea in more depth through their process of dialogical deconstruction. They point to the importance of providing sufficient 'space' for dialogue on contentious issues, and claim that this learning space needs to be 'safe' and free from reprisal, retribution, ridicule, scorn and contempt if the conflicts and their underlying sources are to be explicated, deconstructed and understood. Dialogue is seen as a crucial component of the learning process in dealing with conflict:

> Through dialogue an understanding and appreciation of social learning, the role of conflict and diversity, and an awareness of different norms, values, interests and constructions of reality, their underlying assumptions and their history, may develop between participants. Viewed as such, dialogue becomes both a purpose and a possibility for acting and forms the basis for purposeful action. (Wals & Heymann, 2004:131)

Deconstruction through dialogue is therefore seen to be a crucial process that can help unravel people's preconceptions, assumptions and ideologies that frame their thinking. When this is done in a collaborative and safe learning space, and dissonance is used to catalyse the unravelling of people's divergent views on conflicting issues, and if managed appropriately, Wals and Heymann (2004) believe that people can begin to recognise and review how they see issues and are, in turn, exposed to the deconstructed frames of others:

> Participants then confront the way they ascribe meaning to their ideas, interests, values, and knowledge. Rather than focusing on their often persistent frames of reality, attention is immediately shifted to their prior perceptions and process of sense making. This guided self-confrontation usually leads to an increased understanding of the different frames that can be found within the group of involved stakeholders. Participants become aware that people's frames are rooted in different contexts of sense and meaning making. (Wals & Heymann, 2004:135)

Once this deconstruction of their own and one another's views has occurred, participants are challenged to collaboratively reconstruct new lenses and solutions together. It is this emergent awareness and dialogic deconstruction of one's own frames or lenses, and those of others, and the reconstruction of new ones, that Wals and Heymann (2004) see as being critical steps in transformative social learning.

The importance of dissonance being a trigger for the learning process, as Wals and Heymann (2004) describe, was clearly highlighted for me during the formative interventionist research process (Lindley, 2014). However, the Expansive Learning Cycle methodology of Engeström (2000) deepens the notion of dissonance as used by Wals and Heymann (2004), as it focuses on deep-seated structural contradictions. Engeström's (2000) formative interventionist research methodology required that contextual data generated on culturally–historically constituted contradictions prior to or during engaged research with participants be mirrored back to them as a way of creating a discontinuity that catalysed deliberations through critical reflection on and questioning of existing ways of thinking and doing. This took place in safe spaces created

through the Change Laboratory or interventionist workshops recommended by Engeström (2000) in his formative interventionist research approach, which are an important part of the Expansive Learning Cycle. As experienced in my research, these spaces successfully allowed the participants to reflect and deliberate on one another's views, discover the deep-set contradictions inhibiting improved wetland and environmental management, and begin to co-construct solutions to deal with the contradictions (Lindley, 2014).

**Dialogical social learning and thought processes**

Although dialogue is an important part of social learning, Selby's (2007) concept of dialogical social learning can further strengthen and support the process of deconstruction that Wals and Heymann (2004) discuss, and dealing with contradictions that Engeström (2000) discusses. Drawing on Bohm's concept of dialogue and expanding it, Selby (2007) explains why it is critical to focus on thought processes that are at the core of dialogue, rather than on the thoughts themselves, because thought processes reflect or mirror the origin of the problems we are faced with. He therefore proposes dialogical social learning as a way of 'creating contexts, climates and personal and collective dispositions whereby a "flowing through" (Bohm, 1998:118) can occur, out of which radically new ways of seeing the world may emerge' (Selby, 2007:170). Selby characterises dialogic social learning as having the following fundamental thought processes: empathic and alert listening; participants being aware of their own emotional and somatic responses to what others say; sharing perceptions of what they consider others to be saying as misperceptions; explicitly suspending their assumptions and opinions in the company of others; halting the impulse of necessity to argue on issues that one feels are not negotiable; being open, honest and collaborative in what one thinks and says; and revealing one's tacit thoughts in the open and exploring with others if these thoughts resonate with them. Selby therefore believes that it is these types of thought processes of dialogical social learning that can support deep and meaningful individual and collective learning and potentially catalyse transformation. However, an important point that he highlights is the important role that facilitators play in not merely creating an environment for dialogic social learning to take place, but also in supporting participants to understand and develop these thought processes of dialogical social learning. As a result, when facilitating the formative interventionist workshops in my study, I focused on supporting the research participants to practise the thought processes that Selby describes and discovered how they enabled participants to deal with one another's critical reflections and differences of opinion during the workshops (Lindley, 2014). This allowed for participants to engage with the issues and treat one another with respect, rather than defending their own opinions and positions. The result was an opening of their minds to begin co-constructing solutions that had not been possible beforehand.

**The necessity for deliberating democratically**

From the discussions above it is clear that social learning is seen as a key component supporting society to move towards a more equitable and just world through a deliberative and democratic approach to social change. Therefore, the theory of deliberative democracy is also of interest to educators working with a social-learning orientation and with formative interventionist

research approaches. As Rodela (2012) has shown, some researchers in the natural-resource management literature have recently turned towards deliberative democracy in an effort to challenge established environmental practices and collaboratively develop new and improved ways of knowing and doing. Although there are many interpretations of deliberative democracy – recently Elstub (2010) has written about the third-generation versions of this theory – the understanding of Benhabib (1996), one of the established writers in the field, has been used for this paper. Benhabib (1996) describes her model of deliberative democracy as providing the possibility for the public to freely deliberate matters of mutual interest and concern, and where the agenda is open and not narrowly restricted. Like Wals and Heymann (2004), and Engeström (2000), Benhabib believes that deliberative democracy acknowledges the conflicting values and interests in social life, and that this conflict is a starting point from which deliberative democracy proceeds. Engeström and Sannino (2010) note that such conflicting values and interests also represent *conflicting motives*, and that these often reflect the more deep-seated contradictions that form the focus of Expansive Learning potential. Benhabib (1996) views deliberative democracy as a process of reasoning, rather than as a regulative principle, and sees it as applicable to deliberations and reflections at a personal as well as collective level, not unlike Engeström and Sannino (2010) who view this in terms of Expansive Learning potential. Drawing on the discourse model of ethics and politics, which develops a procedure for public deliberations that are free, Benhabib suggests that deliberative democracy processes allow for the emergence of information that is required to overcome problems, because they 'allow the expression of arguments in the light of which opinions and beliefs need to be revised, and because they lead to the formation of conclusions that can be challenged [publicly] for good reasons. Furthermore, such procedures allow self-referential critique of their own uses and abuses' (Benhabib, 1996:87). These broad principles of deliberative democracy are similar to those espoused by the type of social learning discussed so far, indicating the confluence of the two.

**Structuring deliberations to take into consideration group dynamics**

When engaging in deliberative democracy and dialogical social learning, effective ways of formative intervention research and facilitation will have to strengthen not only the participatory skills of those who struggle to participate equally, but also the skills of facilitators to be able to recognise and cope with these inequities while creating a safe space for dialogue and deliberation. It is in the light of this that Sanders (1997) emphasises that how one structures the group deliberations to take into consideration group dynamics is of vital importance to deliberative democracy if one is to find a way to ensure that everyone participates and their views are considered by all. Kadlec and Friedman (2007) take this further by proposing three important challenges for facilitators to integrate into the deliberation process: (a) the challenges of control, in which the person in control of designing and facilitating the deliberation should not have a large stake in the outcomes of the deliberation process; (b) the challenge of design, in which, for example, marginalised stakeholders are given the voice to enable their participation, and deliberations are begun by first hearing the experiences and viewpoints of these individuals. Instead of seeking consensus, they advise deliberation to rather work towards a confluence of

ideas and possibilities, such as a common problem around which a diversity of opinions can be heard. In this way, participants can learn to cross mental boundaries, explore a diversity of viewpoints, and, through the deliberations, develop mutual respect for each other. The notion of the ideas confluencing therefore induces greater possibilities of participants working together, despite opposing differences in opinion, than attempting to reach static conclusions through consensus and compromise; and (c) the challenge of understanding how deliberative democracy can lead to social change.

The principles of deliberative democracy as outlined above are ones that proved to be important to the expansive social-learning processes I implemented during the formative interventionist workshops for my research project (Lindley, 2014). The methods and *learning actions* that Engeström (2000) outlines to guide the running of these workshops played a critical role in strengthening democratisation of the decision-making of the participants. For example, the process of anonymously presenting the emerging tensions and contradictions during the first interventionist workshops contributed to strengthening the democratisation of decision-making within the racially mixed group that I was working with which was characterised by historical power relations of inequality and marginalisation for the majority of black people under apartheid (Lindley, 2014). This allowed for the ideas of quieter black participants in the group to be noticed and taken up in the discussions by the stronger-voiced participants who were predominantly white, thus helping to address these historical power imbalances.

**Learning with an epistemology that takes account of risk and uncertainty**

Beck (1992) highlights that we live in a risk society. Therefore, many of the environmental issues and risks that we face today, and will face in the future, are unknown, and, if we do know of them, we may not truly understand the magnitude or implications of the risks. A typical and highly topical example of this is the rapidly growing concerns regarding climate change, and the related risks posed to society. When living in this uncertain and ever-changing world, society will not always have the knowledge it needs to deal with these risks. Beck (1992) therefore calls for education that can play an important role in supporting society to work towards a reflexive society. Lotz-Sisitka and Le Grange (2010) suggest that this introduces a new epistemology into education that is anticipatory, rather than one based on certainty or reproduction of existing knowledge only. In discussing an educational response to climate change, increasingly seen as the greatest risk ever posed to humankind, they point out that, if society is to continually adapt to this changing context, then learning needs to be exploratory and open-ended, rather than being based on what is already known, which has often given rise to the risk in the first place. Therefore, what needs to be learnt cannot always be known beforehand, and this requires a society with an ability to be critically reflexive, to be able to work and learn together to understand the root causes of environmental degradation, and to cultivate new adaption practices together with people who have the ability to develop the capacity for change and reorientation. This was exactly the challenge that I was confronted with in the formative interventionist research that I was engaged in. Nobody knew what was inhibiting the integration of wetland and environmental management into the operations of the forestry company at the start of the process, as there was no one easy answer or one single cause.

Therefore, the formative interventionist, open-ended and deliberative approach embedded in the Expansive Learning Cycle methodology of Engeström (2000) was chosen to support diverse research participants in the forestry company to critically reflect and collaboratively understand the structural and cultural context that was inhibiting change, and develop solutions to deal with these barriers.

**The importance of reflexivity**

The notion of reflexivity is seen as a critical aspect of social learning, especially learning that will need to respond to the growing environmental risks. Drawing on critical realism and cultural–historical activity theory, Lotz-Sisitka *et al*. (2012) explain reflexivity as being a social conversation occurring within an individual's mind and between people that is essential to the emergence of agency, enabling people to engage with conflict and a range of different opinions of others in order to shape the collaborative learning that is situated within a social, historical and material context. Bolton (2005:7) also describes reflexivity as being an internal process of 'finding strategies for looking at our own thought processes, values, prejudices and habitual action as if we were onlookers'. This is similar to how Wals (2007b) describes reflexivity, namely as a critical property that encourages people to reflect and question and, if necessary, break away from existing paradigms and ways of doing things. Likewise, Dyball, Brown and Keen (2007) value reflexivity due to its potential for exposing institutional, political, cultural and theoretical contexts that influence the way we learn, the values we develop and our resulting actions. In support of this view, my research highlighted that the ability of research participants to develop the skills enabling them to be reflexive through expansive social-learning processes was an essential personal emergent power allowing them to engage and deal with the inhibiting powers of the contextual social structures and cultural systems (Lindley, 2014).

Wals (2007b) sums up reflexivity in social learning as being important to help people move away from seeing learning as being about expert, derived and predetermined solutions and the right way of doing things, towards a process where learning can help develop knowledge, values, and action competence of an individual or group to participate more fully and effectively in making their own choices and taking responsibility for developing solutions and actions to complex and continually changing problems. In this way, Wals believes that social learning is an approach that does not seek to tell people what they should know or be able to do, but rather encourages an understanding of how people learn, and what they want to learn in order to help them recognise, evaluate and think innovatively around existing ways of doing things, preconceptions, social norms and personal biases. It helps people to build on their existing knowledge and skills, and perhaps develop different ways of looking at the world. When viewed in this way, social learning is seen to be a broader, more open-ended approach to learning that is more responsive to a variety of contextual situations, is reflexive in orientation, and is able to support learning in a risk society.

A critical element of the type of social learning that can support people to deal with risk rather than certainty is that participation with others is obviously required. However, it is crucial that participation is seen as an integral aspect of the learning process, rather than as a tool to be used for specific purposes. This will prevent learning from being manipulated for specific

outcomes, resulting in participation as a political process. For this reason, a better understanding of participation in social learning is required.

**Understanding the meaning of 'participation' in social learning**

Rahnema's (1992) seminal critical review of the concept and practice of participation in the field of social development emphasised how the meaning of participation has a wide variety of understandings for different people. Although his research was in the field of social development, it has significant relevance to participation in social learning. Importantly, he highlighted that there is a history of practice of not meeting the theory of participation, especially when the potential of participatory processes to counter dominant authority is not recognised. After critically examining the literature, Rahnema (1992) points out that the word 'participation' has now morphed into modern jargon and mainstream rhetoric often used for manipulative purposes, especially by politicians and development agencies. Rahnema's (1992) work is useful for developing a more in-depth understanding of the different interpretations of participation in learning and natural-resource management. In a similar vein, Lotz-Sisitka and Burt (2006) also point out the diversity of views on what participation means in their critical review of participatory practice in integrated water resource management in South Africa. This diversity has led to confusion among both the public and the government as to what 'participation' actually means, and has therefore inhibited participatory practices in managing water resources.

**The meaning of 'participation' in environmental education and implications for social-learning research**

In environmental education, participation is seen to be a key objective and approach for learning; hence the interest in social learning. However, the misinterpretation of it has also led to misleading approaches to education and environmental education. Lotz-Sisitka and O'Donoghue (2008) have found that environmental education in South Africa often does not adequately consider the conceptual and practical difficulties that are characteristic of pedagogies of participation. Their research demonstrates that participatory processes in education for social transformation can become individualised and self-referential, despite its supposed democratic principles, constructivist approach to education and purpose of educating for sustainable development. This, they argue, can give a false impression, and the social processes associated with participatory forms of professional development can lead to 'an illusion of change, even as participants engage in activities with a heavily mediated script, for participatory forms of engagement, such that participatory education becomes an idealised process that is not open to critical scrutiny' (Lotz-Sisitka & O'Donoghue, 2008:112). It is this conclusion that has led Lotz-Sisitka and O'Donoghue (2008) to warn us that the rise in usage of participatory processes in education for improving environmental practices has often led to a twisting of participatory social-learning processes that subtly pass on predetermined sustainability ideals to participants to remould to their own context through collaborative capacity-development activities. Therefore, the participation processes are structured for the emancipation of the participants, but the knowledge, ideology, morals, ethics and standards are based on the ideals of others. Contextualised historical knowledge, experiences, opinions, and existing learning materials are

often excluded. A strong parallel is clearly drawn with Eisner's (1985) null or hidden curriculum where he differentiates between what is explicitly taught, and what is neglected and not taught, such as the tacit and covert inherent values, beliefs and ideologies lying behind knowledge, and the reason behind why certain knowledge is privileged above other knowledge.

Lotz-Sisitka and O'Donoghue (2008) further emphasise that the learning in these previously mentioned activities is scaffolded through the careful guidance and mediation of capacity-development trainers or facilitators with their own environment and sustainability ideals, who assume that, once participants are suitably capacitated and empowered, the newly learnt predetermined sustainability ideals will trickle down and become integrated into the participants' contextualised workplace and everyday life. Therefore, in the review of the work that they undertook, they found that principles of participation were instrumentally applied in the name of capacity development. It is with this insight that Lotz-Sisitka and O'Donoghue (2008) critically comment that, in the eager efforts to promote participative democracy in the activities that they were analysing, no opportunity was provided to critique the ideology of the participative practices or their pedagogical assumptions. This twisting of understanding of participatory approaches to learning for capacity development and social change could well be another key factor contributing to what Glasser (2007) terms the 'gap' between people being aware of environmental problems and having the knowledge to deal with them, but not being able to take action to solve them.

In all honesty, my previous ways of working within the forestry plantation context that triggered the PhD research that I undertook were infused with aspects of this misunderstanding of the meaning of 'participation'. This may have contributed to the lack of long-term transformative change that my organisation was working towards at the time. It was therefore important in my research (Lindley, 2014) that I work with orientation and methodology that guarded against the misuse of participation for the transferring of predetermined ideals and solutions. Engeström's (2000) guidance on how to work with formative interventionist research processes as learning actions in an open process of Expansive Learning provided me with a way to engage with research participants in ways that were emergent from the cultural–historical context of activity, and to actively participate in a meaningful way *with them*, strengthening both their capacity and my capacity to deeply understand the contradictions that were infusing our practice around wetland management and the associated inhibiting factors, and to find ways of co-creating and implementing solutions to them together through exercising our collective agency.

## *Conclusion and Recommendation*

This paper has developed a broad-based understanding of transformative social learning in the field of environmental education. It has moved this body of knowledge forward by drawing from existing literature, and through reflecting on the practice of a formative interventionist-based research project, in order to: (a) describe what transformative social learning within a socially critical orientation might look like; (b) highlight the need to differentiate and select literature from the vast body available, originating from many different fields of research, that

is ontologically congruent with this orientation so as to avoid ontological collapse; and (c) distil key elements of social learning as being important to researchers and practitioners who want to support social change through emancipatory oriented interventions. Although it is important to know these elements, it is recommended that researchers use a theoretically sound, ontologically congruent methodology to support their implementation. One such methodology is the formative, interventionist Expansive Learning Cycle of Engeström (2000), which I discovered through my PhD thesis could provide environmental educators with a platform to scaffold and support open-ended environmental learning processes that are designed to catalyse and strengthen reflexivity for bringing about environmental change (Lindley, 2014).

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# Transformative Processes in Environmental Education: A Case Study

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## *Abstract*

*This paper presents a case study on the severely degraded Boksburg Lake's (Gauteng, South Africa) social–ecological system, and on an environmental-education initiative that aimed to support the lake's transformation with a view to its improved social and ecological well-being. In this case study, three key characteristics of the initiative which appeared to support the transformative process are discussed, namely:*

1. *Learning was aligned with the local social–ecological context;*
2. *Human-to-human and human-to-ecological connections were encouraged; and*
3. *The youth played a key role in initiating and effecting transformation.*

*Apparent consequences of this particular environmental-education approach include: local people becoming involved and invested in an environmental-education process that was highly meaningful to them; a deeper connection being nurtured among participating stakeholders, as well as between the youth and Boksburg Lake; a collective identity being adopted to bring about change; knowledge of Boksburg Lake's social–ecological system being strengthened; acknowledgement of personal culpability in the lake's degradation; many of the youths changing their negative environmental practices; and local stakeholders, including the youth, engaging in collective action to reclaim Boksburg Lake. Furthermore, a range of new practices emerged from the Schools for a Sustainable Environment (SSE) initiative. The literature is drawn on to explain the possible consequences of this initiative. Through this paper, it is hoped that environmental-education practitioners will be provided with useful conceptual tools to support their work.*

## *Introduction*

Boksburg Lake is a severely degraded dam situated in the central business district of Boksburg city, a mining and industrial city in the economic heartland of South Africa. The city lies about 25 kilometres from Johannesburg. The 'lake' used to have high recreational and aesthetic value and was closely linked to the city's identity. However, decades of industrial-development processes have resulted in a heavily built-up catchment with a diminished ecological function and extensive point and non-point source pollution. The catchment is a microcosm of the more generalised, global social–ecological system that is on a trajectory of increasing ecological degradation and social risk (Beck, 1992).

From 2008 to 2012, an environmental-education initiative was developed in order to mobilise local people to engage in actions to reclaim Boksburg Lake. The initiative became

known as Schools for a Sustainable Environment (SSE) and was built on the assumption that schools could be used as vehicles for transformation. It had two main aims:

1. To inspire Boksburg's youth to value, care for and connect with the natural environment to the greatest extent possible; and
2. To generate a groundswell of support for, and action around, the improvement of Boksburg Lake.

The initiative was designed for the youth to impact the broader community by providing them with systemic knowledge of the social–ecological complexities of Boksburg Lake and by creating opportunities for them to become agents of change. The structure of the initiative had the following two main components:

1. A resource pack that explored the characteristics of a complex, urban water-catchment system, with such resource pack being specifically tailored to the Boksburg Lake social–ecological system; and
2. An annual Boksburg Lake Day in which 250 to 300 Grade 6 or 7 learners from participating schools took part.

In this case study, three key characteristics that appeared to support the transformative process are discussed, namely:

1. How learning was aligned with the local social–ecological context;
2. Human-to-human and human-to-ecological connections were encouraged; and
3. The youth played a key role in initiating and effecting transformation.

The aim of this discussion is to provide environmental-education practitioners with conceptual tools to support their work.

## *Methodology*

Two methodologies supported insights shared in this paper: a contextual profile and action research, and these are described in turn.

### Contextual profile

A contextual profile of the Boksburg Lake catchment area was developed to inform the design of a contextually appropriate environmental-education project. The particular objectives of this profile were:

- To identify the main social–ecological problems and their causes affecting Boksburg Lake from social, economic, political and biophysical perspectives (This was informed by O'Donoghue (1986), who foregrounded social, economic, political and biophysical aspects to guide a holistic exploration of the causes of a particular social–ecological problem.);
- To identify and develop a profile of relevant stakeholders;
- To document the local vision for Boksburg Lake and the challenges in realising this; and

- To map out possibilities and resources available for a school-based environmental-education initiative focusing on the Boksburg Lake social–ecological system.

The contextual profile consisted of a desktop study and a five-day field trip to Boksburg. During this field trip, three relevant meetings were attended: the Klip River Catchment Management Forum (CMF); a Gauteng Department of Agriculture, Conservation and Environment (GDACE) MEC Stakeholder Engagement meeting; and the Gauteng Wetland Forum. Sixteen stakeholders were interviewed, including users of Boksburg Lake and local residents, a municipal water-quality manager, a local activist and member of the Wildlife and Environment Society of South Africa (WESSA), the regional director of WESSA, and a leader of a local Christian church located next to the lake. Contacts with local councillors, officials, developers, managers and researchers were established and were followed up telephonically and via email. Data obtained from this profile informed the design of the SSE initiative.

**Action research**

'Action research' is defined by Carr and Kemmis (1986:162) as 'a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out'. It is research that participates in solving real-world, locally relevant problems and aims at transformation through improved choices and action (McKernan, 2008). The researcher, who takes up the position of an involved participant, adopts both action and research roles (Malone, 2006). Importantly, research is not done 'on' or 'for' people, but rather 'with' people and addresses locally relevant issues, questions and concerns (Reason & Bradbury, 2007). In many cases, local people are invited to become co-researchers in a process of collective inquiry (Reason & Bradbury, 2007). It is thus a reflexive form of practice that aims at developing contextual knowledge and understanding so as to guide action and choices for positive transformation (McKernan, 2008).

From the outset of the research process, the lead author's responsibility was to initiate and manage an environmental-education process that would contribute to the transformation of the Boksburg Lake system with a view to increased social–ecological resilience. The lead author consequently adopted the role of a reflexive practitioner, as is customary in action research. Regular reflection on the initiative provided opportunities for its improvement. The research process was designed to deepen understanding of the local context, gain insight into the impact of the initiative and obtain feedback for improved practice. Rather than a detached research position, this was a particular role adopted within the community, of which the lead author became a part. The action research process was a collaborative one together with local people in order to realise locally desired actions. For example, two workshops were held with a range of stakeholders, including teachers, non-governmental organisation (NGO) representatives, municipal employees, activists, journalists and business representatives. The aim was to establish networks, to receive input regarding the general initiative and content of the resource pack, to encourage a sense of local responsibility for seeing Boksburg Lake reclaimed, and to facilitate community understanding and ownership of the initiative. Useful

local and expert input was given, and this was an important step in stakeholders beginning to own the initiative.

- Methods adopted to support the action-research process included the following:
- Twenty-eight semi-structured interviews with teachers, members of the Boksburg Lake Forum, a municipal employee, and NGO representatives;
- Nineteen semi-structured focus groups with learners;
- Document analysis of learners' work, including 209 solitaire sheets, nine vision statements, 72 essays, and six statements handed to the municipality; and
- Participant observation, where the researcher adopted a role in the social setting being observed and participated in social activities (Atkinson & Hammersley, 1998).

A rich, qualitative data set on the social–ecological system of Boksburg Lake was generated. This included local people's experiences, perceptions, and intentions for Boksburg Lake, as well as the impact of the environmental-education initiative in terms of patterns of identifying with Boksburg Lake, knowledge about Boksburg Lake, and action with regard to Boksburg Lake.

## *Results*

### Local social–ecological context

(Learning was aligned with the local social–ecological context.)

The design of the SSE initiative, which included a resource pack on a complex, urban water-catchment system and the annual Boksburg Lake Day, was informed by, and adapted to, the local social–ecological as well as the national curriculum context. O'Donoghue's (2001) active-learning framework was used to inform this process. This framework synthesised approaches in environmental education that had developed from having a purely information-sharing and experience emphasis to include more participatory, hands-on, enquiry-based and practice-centred approaches (O'Donoghue & Lotz-Sisitka, 2006; O'Donoghue, 2007). It includes informative, investigative, action and reflection learning opportunities around a local environmental concern and thus promotes social–ecological and contextually relevant environmental education.

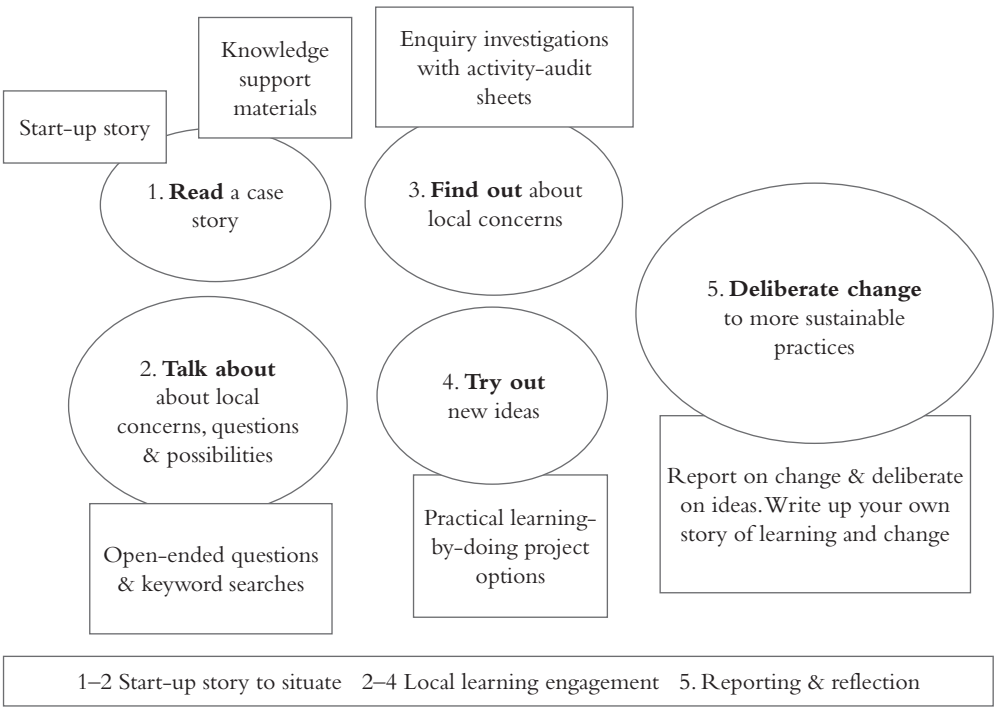
The resource pack represented the Boksburg Lake catchment as a social–ecological system and linked action to consequences in order to increase a sense of local responsibility within it. Based on findings from the contextual profile, the main social–ecological problems and their causes affecting Boksburg Lake from social, economic, political and biophysical perspectives were reflected in the pack. In addition, people were framed as part of, rather than separate from, the system; the consequences of their practices for Boksburg Lake and its catchment were emphasised; and they were encouraged to become agents within it.

Figure 1 represents a revised version of O'Donoghue's (2001) active-learning framework that underpinned the structure of the resource pack. It included:

- A start-up authentic story about environmental learning and action regarding Boksburg Lake that mirrored the possibilities of learning contained in the initiative;

- Locally relevant knowledge-support materials that explained and expanded on the themes expressed in the story (These knowledge-support materials were developed for use within the different learning areas of the Revised National Curriculum Statement and were thus aligned with the participants' educational context, while the story could be used in a language lesson.);
- Questions to guide discussion on local concerns and possibilities;
- Investigation activities to find out about local issues and practices, including auditing water sources, historical investigation, and water-quality testing;
- Guidance for learners in engaging in an action project and critically reflexive activities;
- A Boksburg catchment activity to facilitate: (a) a better comprehension of the Boksburg Lake sub-catchment; (b) the spatial relationships of the different factors influencing the lake; and (c) creative solutions that could inform a school action project (The activity consisted of: an A1-size map of the Boksburg Lake sub-catchment; photographs depicting different issues to be geographically located on the map; a model of Boksburg's sub-catchment made from a Coke bottle; cards depicting the main factors (sewage leaks, industrial effluent, mine dumps, littering, and wetland dumping) negatively impacting Boksburg Lake, to be placed on the model of Boksburg's catchment; and knowledge resources to deepen understanding of the different issues and their possible solutions.

**Figure 1:** Revised active-learning framework (O'Donoghue & Fox, 2009) underpinning the structure of the resource pack and the annual Boksburg Lake Day



The annual Boksburg Lake Day (held from 2009 to 2012) gave participants an opportunity to experience the lake's condition first-hand, and both learners and teachers indicated the value of such learning opportunities. About 250 learners from ten participating schools would spend a day at the lake engaging in a variety of informative (e.g. Boksburg Lake's history), investigative (e.g. water-quality testing) and action (e.g. making banners, clean-ups, tree-planting) activities, based on the structure of the active-learning framework. On the day, learners would also give a presentation that reflected their passion for Boksburg Lake; would hand out statements to the municipality expressing their commitment to seeing the lake restored; would plant indigenous trees in the lake grounds; and would make banners that they waved during a march around the lake. During this march, they had the opportunity to pick up litter. The event would be given a high profile through the attendance of, for example, Miss Earth South Africa (in 2009), municipal representatives and the media. This event solidified learning in the local social–ecological context around an emotionally charged symbol that was highly meaningful to local people, as the following quote indicates:

> As [children] we used to go to Boksburg Lake for picnics, [and] we had Christmas there. My children grew up swimming around the lake, [and] feeding the ducks. So, to see it in the state that it is in now, … is almost as if a piece of your past … is being destroyed. I think it really impacts on you. (Teacher in an interview in 2009)

A consequence of designing an environmental-education initiative firmly rooted in this locally meaningful context was the involvement and investment of a wide variety of role players in the learning and transformative process, including the youth, teachers, the local municipality, local industry and NGOs. A few representative quotes expressing local commitment to Boksburg Lake have been selected and appear below:

> *Question:* What motivated you to be a part of this initiative?
>
> *Answer:* I think it was the whole drive to save the lake … considering that it is beautiful, we should actually take care of it. (Teacher in an interview in 2009)

> I'm still involved because I would like it [the lake] to be a success, and, on a more personal level, ... I would like to take my children to Boksburg Lake to relax and have fun. So I want it to be a success – not just for me and my family but for all the people of Boksburg ... so I'm [in] all the way … until it becomes a success. (Teacher in an interview in 2009)

> I feel that we as people of Boksburg [should] stand together and improve our town and lake in order to sustain the state of our natural resources and [the] lake. (Learner in a solitaire activity in 2009)

> God the Father knows how desperate I am for this lake to [improve] and how … my friends [and I] care about Boksburg Lake. (Learner in an essay in 2010)

**Relationalism**

*(Human-to-human and human-to-ecological connections were encouraged.)*

The development and nurturing of relationships were key to the SSE initiative – relationships between local people and the research practitioner; between different role players and between local people and their environment, particularly Boksburg Lake.

Principles of stakeholder collaboration, participation, and shared responsibility for water resource health informed the design of the SSE initiative, which was developed through a community/municipal-driven partnership. Stakeholder collaboration underpinned the development and continual refinement of the initiative and of the content of the resource pack, as indicated in the discussion on methods. Through this process of stakeholder engagement and input, a community of practice developed around reclaiming Boksburg Lake and participants could identify more closely with the initiative. In particular, this was facilitated through the annual Boksburg Lake Day, the organisation and implementation of which required a considerable team effort involving sponsorship and participation by Unilever, the municipality, participating schools and NGOs.

The final content of the resource pack also emphasised the importance of relationality by reflecting the integrated and systemic nature of water resources. The intention was that learners gain a better grasp of the system as a whole and of the connections within it. The benefit of this approach is reflected in a number of participants' responses where they indicate an understanding of the relational aspects of the system. For example, during a focus group in 2009, a learner showed insight into the system dynamics of littering – both how litter moves through the system as well as its many impacts:

> The one thing I think we should actually start with that is really important is actually [to] stop littering, because all the litter that is on the ground lands in the storm drain and this ends up in Boksburg Lake, and that is how it [the lake] ends up with all sorts of pollution.

Results indicate that the initiative impacted on how local people related to Boksburg Lake, particularly the youth. A notable way in which participants deepened their relationship with the lake was recognising personal responsibility for its degradation. As a learner expressed in an essay (in 2010):

> We have used our precious lake as a junkyard – dumping papers, waste material and everything that we can find to destroy the lake and its ecology. But, in the end, [we as] Homo sapiens are going to be suffering [the consequences of] the actions we are taking, which [are] destroying the lake.

Participants also began to relate to the lake through a sense of their oneness with, and belongingness to, it – as the following three representative quotes indicate:

> By naming the earth we are naming ourselves. (Learner in an essay in 2010)

> I feel at ease here at the lake. [It is as though] I form part of … nature. (Learner in a solitaire activity in 2010)

> [The breeze and coloured leaves] bring back a sense of belonging and [of] nature. It makes you feel as if you're at home and it's where you're supposed to be. (Learner in a solitaire activity in 2009)

Many participants expressed how they wanted to relate to the lake as change agents – through cleaning, saving, improving, helping and serving the lake, making a difference, and educating/influencing others to care for the lake.

A significant number of participants adopted a collective identity in improving Boksburg Lake:

> We as Boksburg should join hands and come *together* as one to fight for the health of the lake in order to ensure the survival of the small ecosystems that live in and around it. So let's come *together* and be part of a team so that we can help save the environment … *Together* everyone achieves more. (Learner in an essay in 2010 – our emphasis)

This is a useful quote that sums up many of the sentiments expressed: that change happens when people work together; the importance of working as a team; and the power of unity in affecting positive change. It is evident that the youth involved in the initiative placed a high value on *working together* to achieve social and ecological change.

**The role of the youth**

*(The youth played a key role in initiating and effecting transformation.)*

The youth were given a central role in the initiative and were regarded as catalysts for change in the transformative process. They were invited to be part of a growing community of practice aimed at bringing about real-world action. Through both the resource pack and the Boksburg Lake Day, the youth were given opportunities to participate in action to improve the lake. In the resource pack, one of the key learning activities was action in a real-world context, and suggestions were offered as to what the youth might do. During the Boksburg Lake Day, the youth participated in actions such as tree-planting, protest marches, handing environmental statements over to the municipality, and picking up litter. The youth were also given room to lead and initiate action, as well as share decision-making, through an open invitation to attend the Boksburg Lake Forum. A number of youths involved in the initiative responded eagerly to these opportunities for high levels of participation.

Data indicate the enthusiasm, initiative and meaningful action on the part of Boksburg's youths when invited to contribute to this positive change in a real-world context. Youths who participated expressed optimism that things could change for the better, as well as the conviction that they (the learners) could be part of the solution of transforming Boksburg Lake. The response to opportunities of being involved in real-world change was enthusiastic, and the youth displayed considerable leadership, passion, initiative and action in relation to transforming

Boksburg Lake. These attitudes may have provided the foundation for the substantial change that occurred in individual and collective behaviour and in school practices. This was particularly the case in relation to littering habits and recycling practices. Many youths spontaneously changed their deeply entrenched habits of littering when they realised its negative impact on Boksburg Lake and on the animals dependent on the lake. These are practices that learners can feasibly engage in, and they provided a realistic space to effect change.

New practices emerged from the initiative. For example, a local teacher at Wit Deep Primary was inspired to create a recycling game involving her whole school; St Michaels started a 'collect a can' campaign; Reiger Park Primary experienced a fundamental shift in littering perspectives and habits, with a positive impact on the cleanliness of the school grounds; and a learner-led clean-up project at Reiger Park High resulted in a '*remarkable improvement*' in the cleanliness of the school grounds and in learners' environmental ethos, as recounted by a teacher. These are examples that highlight the value of inviting youths to participate in real-world actions for positive change. A core group of learners at Reiger Park High were particularly inspirational, showing determination, leadership, enthusiasm and courage in their quest for a cleaner school and a healthier Boksburg Lake. For example, the leader, a Grade 9 learner at the time, was given an opportunity to stand up in assembly and explain the clean-up project, which was the first time that a learner had addressed the school. During a focus-group interview, this moment was recounted as follows: At first, the whole school went 'boo', but she replied, saying, 'Unfortunately, we're not asking you, we're telling you', which led to loud clapping and cheering.

## *Discussion*

The initiative had a number of significant impacts, as highlighted by the results: local people became involved and invested in an environmental-education process that was highly meaningful to them; a deeper connection was nurtured between participating stakeholders, as well as between the youth and Boksburg Lake; a collective identity was adopted to bring about change; knowledge of Boksburg Lake's social–ecological system was strengthened; personal culpability for the lake's degradation was acknowledged; many of the youths indicated that there had been a change in their negative environmental practices; local stakeholders, including the youth, engaged in collective action to reclaim Boksburg Lake; and a range of new practices emerged from the SSE initiative.

The remainder of this discussion draws on the literature in order to provide some explanations as to why the initiative may have had these positive consequences.

A number of authors point to the value and impact of learning in a real-world social–ecological context where abstract concepts can be related to concrete experience (Uzzel, 1994; Rogoff, 1990; Abram, 2010). According to Rogoff (1990), the most important kind of learning is not book learning and propositional knowledge, but rather more experiential learning situated in a real context. This increases learning relevance and, consequently, learners' engagement and attention. This is based on a view of reality that recognises how we are immersed in a relational world, inseparable from others (Ricoeur, 1992), and that all things, including subjects and objects on the social, biological, ethical, political, economic and ecological levels, are

relationally connected and bound to their context (Slife, 2004; Donati, 2011). This is in contrast to conventional education, which Uzzel (1994) describes as a system removed from authentic action.

Vygotsky's theory of mediation (1978) is useful in understanding the value of learning in context. He argued that tools such as language and other symbols derived from one's sociocultural and historical context mediate all human psychological and mental processes (Karpov & Haywood, 1998). In the present case study, Boksburg Lake is a symbol of local identity and has a significant place in the city's collective memory. Learning has therefore occurred around a meaningful local symbol that is tightly linked to Boksburg's sociocultural identity. This has facilitated processes of mediation, knowledge internalisation, and how meaning is made.

The benefit of involving the learners in a community of practice can be understood with reference to participatory-learning theory, which holds that the creation of meaning and understanding is relational. Such theory is being given growing credence in environmental-education literature (Lotz-Sisitka, 2004; O'Donoghue & Lotz-Sisitka, 2006).

Participatory learning is seen as a means to deepen democracy and strengthen meaning-making in order to better address social–ecological risk (Lotz-Sisitka & O'Donoghue, 2008). This is supported by Vygotsky (1987) who stated that children's motivation increases when they have opportunities to learn together with others in meaningful ways. Uzzel (1994:7) explains the value of this approach: 'Long-term change and development will only come about through informed community action in which adults and children work together with the guidance of experts.'

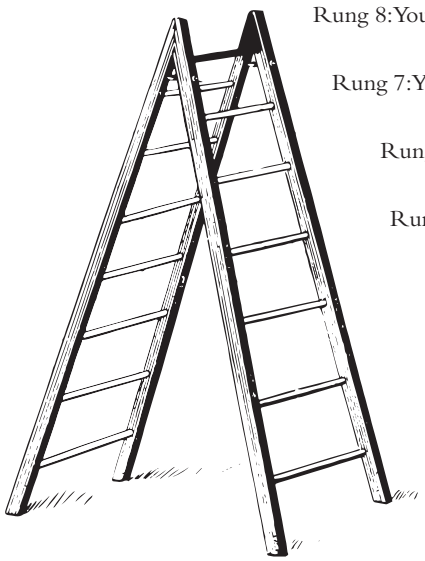
Vygotsky (1978:86) coined the concept 'zone of proximal development', defined as 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers'. This highlights how children and the youth learn by interacting with peers and adults in a meaningful space. Rogoff (1990) also highlighted the value of situating school learning in a community context where children learn by engaging with adults.

The approach in the SSE initiative of working closely with the youth to bring about positive change aligns with a growing body of literature that is disproving the modern day assumption that one must be an adult to effect meaningful change. Hart (1992, 1997) is a strong advocate of empowering children to take an active role in society, and of involving them in participatory environmental action, and has documented the variety of ways that children have participated in bringing about real change in their schools, communities and environments. He produced a ladder (Figure 2) of young people's participation that has eight rungs, with the lowest rung representing young people being merely manipulated to the highest rungs where young people lead and initiate action and share in decision-making with adults (1992).

Other authors also recognise the benefit of involving the youth in active citizenry in order to address social–ecological problems (e.g. Uzzel, 1994; Wals, 1996; Schuslera, Krasny, Peters & Decker, 2009). Uzzel (1994), for example, wrote a lengthy document detailing the value of engaging the youth in environmental-change practices. He noted that children respond

positively when given a sense of ownership of, and responsibility for, processes of social–ecological change and 'can act as important catalysts for change in both the home and the community' (Uzzel, 1994:6). Schuslera *et al.* (2009) highlighted the beneficial feedback loops that can occur as learners engage in environmental action. Two important feedback loops are: the increase in capabilities to engage in further participation in environmental issues, and the potential for 'community level impacts' (Schuslera *et al.*, 2009:121) where children's environmental action has transformative effects on the community.

**Figure 2.** Ladder of young people's participation, with the higher rungs reflecting greater participation (Hart, 1992)



Rung 8: Young people & adults share decision-making

Rung 7: Young people lead & initiate actions

Rung 6: Adult-initiated, shared decisions with young people

Rung 5: Young people consulted and informed

Rung 4: Young people assigned and informed

Rung 3: Young people are tokenized*

Rung 2: Young people are decoration*

Rung 1: Young people are manipulated*

Note: Hart explains that the last three rungs represent *non-participation*

## *Conclusion*

The SSE initiative had some positive effects with regard to the Boksburg Lake social–ecological system. Results indicated a positive effect on individuals' patterns of identifying and knowing about practices relating to the Boksburg Lake system, while there was also evidence of transformative change in some of the participating schools' practices. These positive impacts have been partly attributed to the three key characteristics of the initiative described in this paper, namely:

- Learning was aligned with the local social–ecological context;
- Human-to-human and human-to-ecological connections were encouraged; and
- The youth played a key role in initiating and effecting transformation.

However, the initiative was not enough to effect transformative change to the system as a whole, which was highly resilient and required a longer, more systemic and extensive intervention. A recommendation is to undertake a systems analysis of the drivers and underlying mechanisms of local social–ecological degradation and thereafter design the environmental-education system as part of a broader intervention to effect transformation.

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# 'Teaching and Learning for Climate Change' – the Role of Teacher Materials and Curriculum Design in South Africa

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## *Abstract*

*Climate change and variability are key challenges facing the planet and humanity, particularly in South Africa. The complexity of climate as an interconnected system, including earth and socio-ecological systems and 'deeper' thinking, requires critical enquiry as well as reflexive and transformative education approaches. This paper provides a synoptic overview of three emerging South African cases of teacher education materials development, high school material design, and the design and implementation of a new tertiary-degree offering centred on teaching and learning for climate change. A mixed-methods approach was used in all cases, with a central focus being climate change content knowledge and examples of teaching and curriculum design opportunities that can begin a 'transformative' learning journey for climate change action. Educators and facilitators, in most cases, noted that the approaches used enabled a more expansive understanding of climate change content knowledge, and, in some cases, although not tested in detail, seemed to also inspire action for climate change (deeper levels of learning). The paper is predicated on enabling improved understanding of climate change as a complex 'system' requiring a range of responses. Probing what may be required to begin a much 'deeper' understanding and appreciation of the implications of climate change both now and in the future, is also examined.*

## *Introduction*

Climate change can be described as one of a complex set of wicked challenges confronting humanity (Rittel & Webber, 1973). In this paper, we share some exploratory cases that help to highlight what may be required to bring about 'learning' for flexible and 'deep' thinking around climate change (e.g. Ohman, Ostman & Sandell, 2005; Leiserowitz, Kates & Parris, 2006; Sterling, 2001, 2004; Fazey, 2010; O'Brien *et al*., 2013). There are very few exploratory, evidence-based curricula and materials-based research papers that document what it may take to live with and for climate change (e.g. Mutizwa & Pesanayi, 2014). By using three South African cases ranging across a learning spectrum from children in primary school, to adult learners in university, to trainers of trainers and teacher educators, we aim to close this gap.

In the paper, we explore how one can use learning materials and curriculum development efforts to enable comprehensive, critical learning in respect of climate change from a variety of perspectives. In addition to knowledge-based learning and materials design, this work also includes one of the first attempts in the country to include deeper-learning approaches that

focus on values and belief systems in climate change knowledge and experience which, some (e.g. Wals, 2010) argue, is a key challenge to improved systems understanding and integrative learning for change. We call for a move from simple content-based, silo approaches of addressing climate change education to a more systemic and 'deeper' enquiry that draws together biophysical, socio-economic and socio-psychological understandings.

The reasons for such a multifaceted, focused effort with respect to climate change is clear. Africa is one of the most vulnerable continents when it comes to climate change, based both on exposure to projected changes and low adaptive capacity (IPCC, 2007, 2014). The impacts of climate change and climate variability[1] are a result of complex and interacting processes. They usually intersect with a range of other complex, interacting stresses (e.g. HIV/Aids, environmental degradation, etc.), thus requiring that teaching, learning and curriculum development offer multidisciplinary, interdisciplinary and transdisciplinary approaches in order to adapt to climate change. In South Africa, climate change and the associated impacts are notable challenges, with some modelled climate projections indicating substantial warming (DEA, 2013). In the African case, projections indicate warming that is more than double the global temperature average (see the various IPCC reports). What will it take to develop a citizenry that is enabled and robust, given local vulnerabilities to climate change in South Africa? We argue that a comprehensive and meaningful education, spanning early to adult learning experiences, is key in developing the agency (O'Brien, 2015) required to 'live' effectively with climate change.

Several educational experts (e.g. Wals, Jickling, Lotz-Sisitka, Schudel & O'Donoghue, among others) working on knowledge domains linked to sustainability, including climate change, repeatedly call for a change in the way we 'think' and arguably 'feel' about such issues. Wals (2014), for example, notes that 'addressing climate change … requires a change of mind', adding that, 'at the end of the day, the climate problem is as much in between our ears, as it is between the North and South Poles' (Wals, 2014, press release).

Most environmental education focuses on changing behaviour (Wals, 2011). However, the changes we require to help tackle complex challenges such as climate change involve doing more than just raising awareness and changing attitudes (Wals, 2011:179; O'Brien, 2015). Rather, what may be required is building critical-thinking capacity (which some have argued should be 'radical' (O'Brien *et al.*, 2013)) that will enable citizens to understand what is going on in society, enable critical questions to be asked, and will determine and spur on action (Mayer & Tschapka, 2008; Jickling & Wals, 2008 – cited in Wals, 2011:179).

In her provocative book, *The watchman's rattle: Thinking our way out of extinction*, Costa (2010) illustrates that civilisations which failed to navigate complex stresses have usually collapsed more often because they relied on 'beliefs' (many poorly aligned to problems) as opposed to innovative thinking. She argues that, by focusing on insights and other cognitive abilities, humans can surmount cognitive limitations that may be acting as a gridlock to positive change. However, how does one design a learning journey that can enable knowing core 'scientific' content BUT one that also includes learning that enables critical thinking and can be used to assist in probing some 'deeper' issues (including belief and value systems) that may be mixed up in complex, messy and often entangled sociopolitical contexts? How does one begin to think about learning, teaching

and education (Sterling, 2001, 2004) that can expose us all to more critical and reflexive thinking about climate change? In the unfolding cases below, we provide some guidelines on how one can navigate one's way through a world buffeted by a changing climate.

## *Towards a Theory of Change*

Educating and training the next generation of learners (e.g. university-level graduates; teachers as well as facilitators of learning; young school-going learners; and adult learners), we suggest, will require more than a mere realignment of the curriculum, for example by marrying a 'bit of biophysical science' with a 'bit of social science/development studies'. Educating the next generation of scholars and citizens to both understand knowledge content about the complex climate system and to be 'emancipated' (Wals, 2011), and to begin to think about how and what we can do about climate change (e.g. Folke, 2006; O'Brien, 2015), will require carefully rethinking paradigms and ways in which curricula and knowledge about climate change are currently framed. Such efforts are necessary so that we can create a cohort of flexible, interactive thinkers and doers (Mezirow, 2000; Fazey *et al.*, 2007; Fazey, 2010; Wals, 2010; O'Brien *et al.*, 2013; O'Brien, 2015). These knowledge content domains and curricula will not only require knowledge and skills usually vested in local contexts (e.g. the challenging education system in South Africa) and provided by established 'centres of learning', for instance a school or university, but will also require broader approaches that are mindful, informed, and open to the needs of society and the wider environmental context in which decision-making occurs (e.g. citizen science) (Sterling, 2001, 2004; Jasanoff, 2010; Wals, 2010, 2011, 2014; Muhar, Visser & Van Breda, 2013).

Approaches for thinking about what it may take therefore also need to include ways to embed various inputs, development needs and expectations from a variety of actors, many located outside centres of learning, in the curriculum (a transdisciplinary approach – TD) (Thompson-Klein, 2010). Integration for climate change learning thus entails integrating across 'traditional' school and university disciplinary silos (e.g. biology, physics, economics and law) and developing an educational space that allows for co-engagement of both world and personal views in relation to the world in which we live (Sterling, 2001; Fazey, 2010; O'Brien *et al.*, 2013:49; O'Brien, 2015). Recently, calls have been made both internationally and locally for transforming the current framing of 'climate change' knowledge. The complex environmental and social challenges of the 21st century cannot be addressed with the approaches of the past, and several authors are calling for a different approach to education and capacity-building (O'Brien *et al.*, 2013). 'In fact, it has been argued that nothing less than a "revolution" in education and capacity building is needed to confront the challenges posed by global environmental change' (RESCUE, 2009; O Brien *et al.*, 2013:49). Such an appreciation for a more 'open knowledge system' rather than a 'closed, uniform, linear system' includes a more holistic perspective on the complex environmental challenges facing society (RESCUE, 2011; (Kagawa & Selby, 2012; O'Brien *et al.*, 2013:49; O'Brien, 2015).

A more 'transgressive' process of educational engagement WITH human conduct, emerging matters of concern and the common good is arguably required for meaningful adaptation to

climate change (O'Donoghue, 2014). Such learning journeys will include the importance of 'knowledge-informed learning sequences to enable better-situated knowledge acquisition that enables higher order critical thinking … in [the] context of BOTH schooling and wider multi-stakeholder reflexive learning in a changing world' (O'Donoghue, 2014:22–23). Higher-order thinking, however, requires interrogation of the 'interior' perspectives (religious meaning, aesthetic experience, emotional responses, and ethical and cultural values) (Esbjörn-Hargens, 2010; Hampson & Rich-Tolsma, n.d.) that all shape our constructions of meaning. How these perspectives, and reframing of perspectives, enable personal actions for change thus becomes as important as content knowledge about 'global warming' and about what global average temperature is best for the planet.

Transdisciplinarity (Thompson-Klein, 2010), integral thinking (e.g. Reams, 2007 & O'Brien *et al.*, 2013) and transformative learning (e.g. Mezirow, 1997; Taylor, 2007; Kitchenham, 2008) are some approaches that can be used to provide opportunities for societally relevant climate change learning. World views, including those linked to climate change, are carved out, in part, by schools and universities (Wals, 2010). Increasingly, the messy world we live in also requires that one embraces a range of additional views to one's own personal views from various epistemic communities, including those that enable the 'transformative regeneration of perspectives' (Scharmer, 2009) and transdisciplinary approaches (Funtowicz & Ravetz, 1993). Such approaches can lead one to search 'outside' the confines of traditional sites of formal learning, such as schools and universities, to begin to find out what epistemic knowledge is 'out there' and how to include such knowledge credibly within curriculum and learning contexts (see, for example, Jickling & Wals, 2008 who argue that universities, in particular, have a responsibility for creating and developing sustainability competencies) so that changes in thinking on climate change and other environmental concerns can be enabled:

> The student encountering transformative learning is no longer a mere educational consumer, but rather a transdisciplinary scientist-scholar-practitioner deeply engaged in self-determination and the apt transformation of their world … analogously, the transformative educator is no longer a mere technician charged with administering an educational commodity … [but with] the teacher as catalyst for transformation. (Hampson & Rich-Tolsma, n.d.:12–13)

In almost all cases, as is expanded on below, a participatory and inclusive approach is fundamental, that is, where the 'teacher' acts as a facilitator and co-generator of knowledge and not as a 'font of wisdom', imparting only content knowledge to passive learners.

## *Transformative Education, Integral Thinking and Transdisciplinarity*

The recognition of the need for effective and transformative education for change has grown (e.g. Morin, 1999; Taylor, 2007; Kitchenham, 2008). Internationally, recognition of the need for education as a central component of sustainable development (SD) has been acknowledged (O'Brien *et al.*, 2013; O'Donoghue, 2014). Key elements include being able to learn in

order to *know*, to *do* and to *be able to transform self and society* (Combes, 2006; O'Brien *et al.*, 2013). Renewed commitments to enhanced training and the development of curricula for sustainability were also recently made an outcome of Shaping the Future We Want (UNESCO, 2014).

Alongside the recognition of SD, there has also been a growing acknowledgement that systems that sustain our planet, including complex socio-ecological systems, should include a range of 'knowledges', including those informed from an African perspective – such as local and indigenous knowledge (e.g. Leemans, 2009; Rockström *et al.*, 2009; Reid *et al.*, 2010; O'Brien *et al.*, 2013). In addition to such approaches, one will also have to focus attention on the development of new capabilities, including humility and openness towards other systems of thought and sources of knowledge (Wickson, Carew & Russell, 2006; Jasanoff, 2010; RESCUE, 2012), as well as ensure greater attentiveness to social and self-learning (Esbjörn-Hargens, 2010; Wals, 2010). Expanded notions of education for change, including such reflexive, humble learning approaches, can be framed as a focus on: knowledge information – drawn from systems science and considerations of ethical issues; values – practices giving rise to matters of concern; and actions – assessing change practices (for further details, see: O'Donoghue, 2014; Schudel, 2014).

Most centres of learning, including schools, universities and research institutes, are, however, very limited in their ability to deliver such interdisciplinary and transdisciplinary knowledge needed to address environmental problems (Wals, 2010, 2011). Few have approached knowledge from a transdisciplinary perspective, with some notable exceptions. Internationally (e.g. Arizona State University) and locally (e.g. the University of Stellenbosch), higher education institutions are enabling their learners to grapple with 'real-world realities' in addition to academic and theoretical, 'head-space' knowledge (Wickson, Carew & Russell, 2006). Locally, little substantial evidence is available relating to cases of what 'transdisciplinarity is' in South Africa (Dhansay *et al.*, 2015). Clearly, greater efforts need to be made in order to enable a more expansive shift in thinking in these arenas.

Given these observations and the dearth of any shared, local climate change narratives on more innovative learning and teaching approaches, we felt compelled to begin a discussion on such themes, particularly in respect of learning and teaching about climate change (both about and for climate change – e.g. adaptation) in a range of settings in South Africa. We have been engaged in several such activities that have centred on the heightened relevance of teaching and learning for climate change. Vogel and Misser, for example, have been working on developing teacher materials for some time and have been actively working on the facilitating of both materials development and teacher workshops through EnviroTeach (www.envrioteach.co.za) and Fundisa for Change (www.fundisaforchange.co.za). Vogel and Schwaibold, operating in the tertiary academic space at the University of the Witwatersrand, are engaged in the ACCAI network (http:www.accai.net), funded by the Open Society Foundations. The ACCAI network includes a number of universities (e.g. the University of the Witwatersrand, the University of Nigeria, the University of Ghana, the University of Dar es Salaam and the University of Stellenbosch) that have been supported to enable a postgraduate curriculum to be developed focusing specifically on climate change adaptation.

Through these varied efforts described above, the common aim was to improve both on materials development for climate change and to stimulate conversations and efforts for a transformative learning approach around climate change. The remainder of the paper narrates this journey, examining emerging successes and challenges associated with such efforts.

## *Beginning a 'Change Journey' for Climate Change – Some Cases and Methods*

Mindful of the wealth of research on transformative learning, we adopted some of the ideas underpinning the thinking in transformative learning and tried to provide an enabling environment through both a materials development approach (i.e. through learning materials developed to supplement and to inform teachers of climate change modules in schools) and learning *for* climate change through curriculum change (e.g. through a new course introduced at the postgraduate level for university leaners). We used a mixed set of approaches and methods, explained in more detail below, to begin to examine the challenge of developing interesting curricula for climate change. Such mixed set included transformative learning, integral theory, and transdisciplinary approaches in South Africa.

## *Adapting Transformative Learning Approaches for Climate Change*

The transformative learning approach (e.g. Mezirow, 1997) includes a range of developments in transformative learning that have occurred over time (e.g. Taylor, 2007; Kitchenham, 2008). Transformative learning for social and personal change includes an understanding that learning is 'the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action' (Mezirow, as cited in Taylor, 2007:173). Using such an approach, educators engaged in the facilitation of transformative learning try to assist their learners to become aware and critical of their own assumptions and the assumptions of others, and thus engage in more critical, reflexive ways of learning and thinking (Mezirow, 1997:10). Such learning is complex and multifaceted and has been built on the influences of Freire's (1970) conscientisation work, Habermas's (1971) domains of learning, and Kuhn's (1962) earlier thinking on paradigms (for details, see: Kitchenham, 2010:105).

Various methods can be used to enable transformative learning, but 'the focus is on discovering the context of ideas and the *belief systems* that shape the way we think … and imagining alternative perspectives' (Mezirow, 1997:11). Mindful of the overarching challenge that climate change knowledge alone will be insufficient to develop the change that may be needed to adapt to climate change (see O'Brien *et al.*, 2013), we embarked on a series of materials and curriculum design efforts to develop agency in learners (O'Brien, 2015) to 'live with change' (i.e. mitigate and adapt to climate change). An 'action-research approach' was followed (e.g. by developing a set of materials compiled as EnviroTeach (Figure 1) and then testing these materials with educators). Following this stage, an expanded exemplar, undertaken as part of Fundisa for Change, was also created. These Fundisa materials were then trialled through a series of interactions (see details below), including the use of various participative methods.

## *Developing Teaching and Learning for Climate Change – Background to the Development of Learning Materials*

The Department of Basic Education in South Africa has undertaken a revised-curriculum process known as CAPS (Curriculum and Assessment Policy), with a strong emphasis on content knowledge. Given the dearth of CAPS-relevant materials for teachers and facilitators (for more details, see: Lotz-Sisitka, 2011), ongoing development of a set of materials, including EnviroTeach and the creation of a Teachers' Development Network (TDN), has begun with a range of partners (see www.fundisaforchange.co.za), many from higher learning, with which two of the authors are associated (Vogel & Misser).

The materials development process (see the immediately following two subsections) was thus spearheaded by activities that included those of the Delta Environmental Centre (the drivers of the EnviroTeach work) and encompassed the Training of Trainers programme (Fundisa for Change), linked to Teacher Education Programmes led by Rhodes University. Exemplars, including one for climate change (compiled by Vogel), were designed as part of Fundisa for Change, focusing on content knowledge of climate change and also on developing leadership and deeper learning among teachers and students for the future (CAPS ++ or CAPS plus plus) (Lotz-Sisitka, 2011; Schudel, 2014). Finally, a separate effort that focused more on tertiary-level education is presented below and entails a university-based curriculum effort involving Vogel and Schwaibold. This builds on some of the ideas developed in the wider network.

**Development of EnviroTeach materials**

The first 'co-engaged mode', working with a range of inputs, is the development of teaching materials/guides on climate change for mainly *high school teachers* that have been freely distributed to approximately 50 000 schools in the country as EnviroTeach (www.enviroteach.co.za). The purpose of these materials is to provide critical resources for teachers who have limited access to teaching, training and facilitation materials on climate change. EnviroTeach is sponsored by the Department of Environmental Affairs, South Africa, with support from the Embassy of the Federal Republic of Germany and the British High Commission. The content knowledge that has been produced in two issues of EnviroTeach focuses on the following themes: curriculum knowledge (content on climate change is linked to the Grade 10 curriculum in the secondary school system) (first in the series); aspects of transformative learning relating to energy transformation and the food/water/energy nexus (second EnviroTeach issue); and actions for climate change (final issue currently in preparation). Materials are usually co-generated with educators (e.g. with teachers, some with over 30 years of teaching experience, and many of whom are drawn from local schools).

The EnviroTeach content materials in the two issues in circulation were then trialled, at a workshop held at Delta Environmental Centre, with Department of Education officials supporting Life Sciences and Geography and educators from schools. Educators and officials engaged in deliberative processes for deconstructing their own frames of reference and understanding of climate change through a systems approach.

Tools such as the Iceberg Model and participation in dialogues (e.g. with Vogel – a climate change scientist and facilitator of the workshop – and their peers) were used to begin to test the usefulness of the materials that had been developed by EnviroTeach. The focus in these materials and the trial was on expanding learners' climate science knowledge and exploring assumptions and beliefs about climate change, with a specific section on deliberative learning. Details of these cases are not provided here, for the aim in this paper is to trace an expansive set of approaches that can be tried. See Figure 1 (on the next page) for an overview of the knowledge domains explored.

Materials developed in the EnviroTeach volumes, including inputs from the workshop described above, were then expanded for the development of the Fundisa for Change first exemplar on climate change.

**Development of Fundisa for Change materials**

In the second series of activities, a comprehensive teaching series, one of which focused on climate change and expanding on the EnviroTeach materials development outlined above, was prepared as part of the Fundisa for Change TDN. Partners relevant to the materials development for climate change in the Fundisa network included the Delta Environmental Centre in Johannesburg, the South African National Biodiversity Institute (SANBI) and South African National Parks (SANParks) (see the full set of Fundisa partners at the fundisaforchange.co.za website). The rationale for such effort is that, owing to the vast amount of knowledge content that some subjects in the new curriculum (CAPS) require (e.g. over 50% content that is 'environmental'), a set of exemplars was deemed necessary for educators and for trainers of facilitators focusing on knowledge, methods and assessment practices, particularly for cases with a deficit of learning materials (see: Lotz-Sisitka, 2011; Schudel, 2014). In the case of the climate change exemplar (which was the first to be developed by the network), the approach was to explore aspects of climate change that included an emphasis on basic climate change content knowledge (e.g. with energy transformation used as a unifying theme), as well as move towards aspects of transformative thinking on climate change (e.g. futures thinking as outlined above).

*Trialling and testing the materials developed*

Testing and improving the materials developed for the Fundisa for Change exemplar required working with 'trainers of trainers' or educators. To this end, educators were invited to participate in a series of meetings. Engagement with the Fundisa for Change materials was undertaken in partnership with the Department of Education in Mpumalanga. Educators from remote areas, including Volksrust, Piet Retief, Secunda, Bethal and Standerton in South Africa, were invited to help to engage with the materials developed through a series of interactions that required repeat visits (e.g. on-site and off-site reflection and learning; three days of focused engagements; intervening weeks to reflect and experiment with lessons. etc.; two days reconvening and meeting, followed by further time to reflect on the materials and use them in classrooms; and a final day of consolidation and meeting). The entire process entailed three months of interactions.

Tasks undertaken included the creation of lessons that could build on the materials provided and the keeping of a journal, in which participants could reflect on their learning journey. The average teaching experience of the educators in the group was ten years. All the educators

**Figure 1.** Example of contents page of EnviroTeach guide distributed to schools in South Africa

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Contents




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were senior geography educators in their schools. In the group there was one principal and two deputy principals from the schools represented. The subject advisor for geography for the district also participated as a participant on the course, because she wanted to be in a better position to support the teachers.

Through engagement, in a combination of situated learning experiences, supported by 'reflexive questions' and critical engagement with the content, some educators felt they were able to 'link climate change concepts to real-life situations'. Educators were asked to focus on their contexts of learning, their school setting, etc. In most cases, 'meaning-making' was achieved by the facilitator introducing a task and then, through group work and dialogues between participants, an open 'safe space' was created where ideas were shared. Part of the training was also focused on the improved assessment of learners.

In trying to explore more personal approaches and world views on climate change in keeping with a more transformative learning frame, a series of 'futures scenarios' (e.g. O'Brien *et al.*, 2013) and a form of pre-sensing for climate change (Scharmer, 2009) (Figure 1) were also included in the first EnviroTeach edition (2012, Vol. 20). This 'futures' exercise was then piloted with a range of learners as opportunities presented themselves (e.g. through interactions in formal education settings with learners ranging from ten years of age and older to adult learners, including qualified lawyers enrolled for a university course module and teachers training for higher education components). Futures thinking can be challenging (see: Schreiner, Henriksen & Hansen, 2005) and indeed a 'disorientating dilemma' (Mezirow, expanded on in Kitchenham, 2008, Table 1 – Ten phases of transformative learning). Such exercises can enable learners to think more 'carefully about the present' and deliberate future change.

In these sessions, learners are asked to consider states of the environment they currently 'know' and then to project their thinking forward to what they can imagine their environment may be in 20 years' time. Typical questions include: 'Draw the world as you see it now'. Learners are encouraged to only 'draw' and 'illustrate' their thinking graphically. Discussion then focuses on the causal factors shaping change. Learners are then asked to draw the world as they 'want' it or 'aspire' it to be in 20 years' time. Such efforts usually produce very negative illustrations of the world as it is currently experienced (images of pollution, degradation, crime, poverty, global warming), with more positive imagery for the projected 'future'. Of interest is the discussion that then ensues as to what can be changed to avert a future that may be negative and unsustainable, etc. Irrespective of age and class, the move to a more positive 'world' view in the future is common to all.

**University-based case study – the case from the University of the Witwatersrand, Johannesburg**

Finally, the third case, focusing on curriculum development, was started at the University of the Witwatersrand in 2011 with the aim of creating a new interdisciplinary and transdisciplinary curriculum for global change at masters level. Here, we report on the process undertaken only at the University of the Witwatersrand (for examples elsewhere, also see: Scholes, Crouch, Erasmus, Schwaibold & Voge, 2013). Various other developments among members of the ACCAI network are ongoing (see www.accai.net).

Interdisciplinarity and transdisciplinarity are often acknowledged as being valuable at a tertiary education level, yet universities still tend to teach and work in disciplinary 'silos' without preparing students for the reality of the working world where, in most cases, mixed-discipline teams are needed to tackle issues such as environmental degradation and climate change (Wals, 2010:380) – 'Universities in particular have a responsibility in creating space for alternative thinking and the emergence of new ideas'. Universities continue to remain stubborn in changing their unidirectional, hierarchical and reproductive approach to teaching (Wals, 2010:381). The result is often heightened conflict, disciplinary clashes and science-based solutions (which are often unsustainable or impractical) to global challenges that are by no means solvable only with scientific knowledge and understanding.

The method chosen to try to 'expand' the thinking on climate change and knowledge as presented in the University involved a transdisciplinary design process where one member of the team spent time engaging with other educators across the world and with local actors to gain some ideas on learning for sustainability given change. Following an in-depth assessment of various curricula offered at postgraduate level around the world (consisting of analyses of curricula and interviews with programme coordinators), both the strengths and shortfalls of these programmes were identified with a view to informing local curriculum design at the University.

Several educators in the University then met in a series of meetings to discuss, share concerns and challenges, and begin to plan the curriculum (for more details, see: Taylor, Schwaibold & Watson, 2015). Participants involved in curriculum development at the postgraduate level were also exposed to a co-design process at the University that tried to avoid merely 'clipping together' a number of courses. Several additional meetings and workshops spanning the period 2011 to 2013 were held with the staff of various departments and faculties to co-design an integrated curriculum and to start brainstorming some ideas for a 'sustainability' curriculum at the University, with a strong focus on climate change. One exposure in particular was working on the educators' 'own' personal belief systems and how these may prevent the creation of a more 'transgressive' curriculum (Wals, 2010; O'Donoghue, 2014; Taylor *et al.*, 2015. Working with two international colleagues who are experts in transgressive, educational-learning approaches, including integral theory approaches to climate, a workshop/retreat was co-designed. This workshop/retreat was offered to University staff engaged in climate change teaching and was held off the main campus.

Participants were tasked to focus on their own disciplinary, cultural and personal beliefs and values to enable them to see how these affected their work on the curriculum (with regard to bias towards certain disciplines, right as opposed to wrong, becoming defensive, feeling criticised rather than seeing the value of other contributions, etc.). Participants were exposed to several issues at a very personal level that enabled them to see how these beliefs were either hindering or 'sabotaging' interdisciplinary/transdisciplinary work (Taylor *et al.*, 2015).

To be able to successfully develop a truly interdisciplinary curriculum required a multidisciplinary team of academics to ensure: (a) that the various discipline perspectives are represented in the curriculum; and (b) to ensure support from the various schools and faculties represented on the team. A significant paradigm shift was, however, necessary to create the space

for innovation and for the team to experience what it would like its new cohort of students to experience (see Taylor *et al.*, 2015).

The product of these various interactions is a University-endorsed Masters in Interdisciplinary Global Change Studies that consists of a core interdisciplinary global change course and four additional courses to be chosen from a range of global change-related courses offered by various faculties. While the additional courses are aimed at strengthening the students' knowledge in selected areas (such as business and climate change, environmental sociology, sustainable cities, biodiversity and climate change, etc.), the focus of the core course is less on knowledge-building and more on students developing their own personal competencies that are considered important for the development of sustainable, long-term adaptation strategies (competencies of good sustainability leaders – Brown, 2011; O'Donoghue, 2014; O'Brien, 2015). Key competencies include: Working in mixed-discipline groups; understanding the importance of mixed-discipline approaches to climate change adaptation by analysing selected case studies (related to, for example, sustainable cities, food security, finance and economics) informed from the perspective of a variety of disciplines/viewpoints to gain a more holistic understanding of the issues at hand (using tools such as systems thinking and the integral framework); and, most importantly, learning more about their own disciplinary, cultural and personal beliefs and values in different situations to enable them to better understand how adaptation strategies may or may not succeed in a given stakeholder group (using approaches such as spiral dynamics together with group and one-on-one coaching sessions). The core course is run over five four-day sessions. This allows for gradual reflection, between sessions, on newly gained insights.

## *Emerging Findings and Challenges*

Results from the emerging efforts described above to effectively mainstream climate change education across a range of learning 'levels', are presented below. The findings, where applicable, are centred on an integrative learning and curriculum design approach.

The responses to the materials development efforts captured through the EnviroTeach and the Fundisa climate change exemplar include several positive responses. Educators and education department officials interviewed noted that the concepts in the arena of climate change (e.g. adaptation, resilience and mitigation) were relatively new to them, as this was not part of the training they had undergone to be an educator. Through engaging with the materials, the educators and officials felt more 'confident' because the climate change knowledge was made more accessible to them.

Stimulated by their experience, educators also embarked on change projects in their schools by engaging learners in understanding challenges (including those relating to energy and water) in their own schools and in innovating alternative options for energy and water management. Schools also developed a water and energy policy to guide their practices as a school.

Further realisations of the integrated nature and framing of 'systems' knowledge required for climate change were also noted (Jickling and Wals, 2008). One subject advisor from the Department of Education, for example, observed that 'climate change is not separated from the content we teach. It is an integral part of the content we teach'.

Other observations included, firstly, those from the EnviroTeach and Fundisa materials development projects, and, secondly, reflections on the University curriculum effort. These include better understanding of content knowledge and the beginnings of a transformative awakening that there is more to climate change than just a focus on 'temperature' and 'greenhouse gases':

1. The **training of teachers in both the use of EnviroTeach and the Fundisa for Change exemplar materials on climate change** was very well received, but a number of challenges also emerged. Teachers welcomed the content and found working with various texts and a comprehensive assessment of climate change exciting, including some very basic explorations into scenarios thinking, challenging personal belief systems, and hopes and aspirations for a 'sustainable planet'. Such engagements between teachers and scientists have also been found to be rewarding in other contexts, for instance Europe (Léna, 2009).
   - *Reading and comprehension:* Teachers struggled with the reading provided, of which there was a fair amount during the Delta Environmental Centre course. They seemed to struggle with larger comprehensive documents, and with working through complete documents.
   - *Language barriers:* Because some high school teachers came from rural areas, language was an issue in accessing both content materials and open debates on values and cultural views on climate change.
   - *Creating active agency:* The exemplar and Delta Centre training course seemed to make the teachers feel like professionals by providing them with agency (O'Brien, 2015), which contributed to their intrinsic motivation. Examples of responses from teachers' learning journals included the following:

     'I would like to make a difference in my community [regarding] climate change.'

     'I think I can work with developing individual strategies to fight [for] climate change.'

     'I have observed as a teacher [that] it is important to venture [out using] a variety of teaching methods.'

     'I would like to arouse awareness of individual contributions to climate change.'

     While difficult to measure, evidence of some 'deeper' transformative thinking that may have emerged includes the following responses, captured in educators' journals, that suggest some progression to more critical and deeper-level thinking:

     'Sustainability – for the first time I could relate it to [the] environment in a good way.'

> 'Superb – it touched my intellect, heart and hands. I got knowledge, my attitude towards the environment changed and I practised skills that can be used in my class.'
>
> 'The methodology, activities and flexibility of the facilitator [were] so good.'
>
> 'Sustainability – whatever I do has consequences either positive or negative and will affect my life and the way I live. I have to conserve the little that I have and educate my learners to do the same.'
>
> 'I still have a lot to learn about the environment, as I was talking [about the] environment in a different way before. I [did] not [know] about integrating the environment with the curriculum.'

2. At the **University level,** the curriculum development and teaching team gained insights, through the retreat/workshop, into their own limited perspectives, blind spots, judgements concerning others and the project, the motivations of others in the team and the University as a whole, as well as their own and others' resistance to change. There were initial reservations on the part of some team members to a more personal and deeper learning approach (e.g. using integral theory approaches). However, the progress made within just a few days at the retreat allowed the team to inform its approach to the project, for example by accepting comments made as 'contributions to rather than contradictions of' their own ideas, valuing different viewpoints, and understanding own beliefs that may impede the process.

The intervention provided various tools to envisage a *new curriculum* that is now being offered by the University. Faculty members from various departments now teach willingly regarding this new course. After two years of running this curriculum, it is still being further developed with broader engagement across faculties based on our experiences as well as student feedback. Overall, the first two years have already generated very positive student responses, and most students agree that they have gained valuable insights into their own beliefs and values which will allow them to better understand and accept the viewpoints and opinions of stakeholders and team members, and to identify, and adjust to, different value systems when discussing issues such as climate change in mixed-stakeholder settings. Statements made by students include the following:

> 'I felt like a whole new world was opening in front of me and everything I thought I knew was being challenged, and it was wonderful.'
>
> 'This course generally affected all of my research and my way of thinking in the other courses I did, and it tied in perfectly. I didn't realise it as it was happening, but now as I look back I can see a transgression in myself, in my way of thinking about everything – problems, research, the world.'

> 'This course made me question things in a way I never had before, not just by asking questions but [by] really thinking about why things are the way they are and how things are interrelated.'
>
> 'I feel like I've really grown as a person, and matured somehow on a different level, but it's hard to put into words.'
>
> 'I learnt that group work really [takes] me out of my comfort zone but allows me to learn so much more than when I do things solo. This is especially what I realised when doing the integral theory assignment – I learnt so much from my classmates; they came up with so many things I would never have thought about on my own and also acted as a catalyst for me to come up with different ideas.'

Having seen students grapple with working 'outside their comfort zone', it became very evident that the transformative learning we were trying to achieve would not have happened without challenging the students' way of thinking. While this in itself presented some challenges and resistance, a skilled team, comprising individuals who themselves have gone through a 'learning journey', has been able to create a safe space for students to challenge their own and one another's views of the world and of science and successfully guide the class through a transformative process (Taylor *et al.*, 2015).

## *Discussion and Conclusions*

A 'transformative' approach to understanding and 'living' with and for a more sustainable planet, including enabling more robust living with a climate-changed world, is challenging. Creating exciting knowledge-based teaching materials and an interdisciplinary and transdisciplinary curriculum in various contexts so that civic society can meet and face the challenges of climate change is also difficult and will require a variety of learning approaches and contextual adaptations. Barriers to engagement as well as limitations on time and what is possible, given some major existing challenges in a country such as South Africa, including challenges concerning education, are constraints and persistent obstacles.

The systems one is describing when learning *for and about* climate change are very interconnected and have complex components (Reid *et al.*, 2010; O'Donoghue, 2014; Schudel, 2014). At the same time, the need for the 'transformative' dimension, that, in turn, adds an additional set of complexities, is also key. Social and emotional intelligence, glimpses of which we outlined above in the teachers' and educators' reflections and in the process the academics undertook at the University, is now emerging among students and is, for example, as important as the intellectual abilities to solve problems (Wals, 2010).

Being able to include both a set of skills and knowledge and, at the same time, enabling a critical dialogue and reflection from various perspectives (e.g. transformative learning and not just transmission of knowledge) that may lead to 'new' behaviours and the framing of alternative expressions of meaning remain pivotal in the work being undertaken (e.g. Mezirow, 2000;

Wals, 2010; Hampson & Rich-Talmsa, n.d.). While this has not been fully examined in each of the cases, we believe that a meaningful learning journey has begun, enabled by these processes. Several similar approaches have been, and are being, piloted and tested in South Africa, informed by some of our experiences (Lotz-Sisitka, 2011; Schudel, 2014; O'Donoghue, 2014).

Emerging from this journey are the following critical elements. On the one hand, one needs to avoid a single focus on a 'mind-centred' approach. More integrative and participatory approaches also need to be explored and trialled (e.g. Ferrer, Romero & Albareda, 2010) to enable *learning for change.* A focus on knowledge and content delivery can lead to cognicentrism and the inhibiting of approaches that allow for deep-level thinking, multiple enquiry and collaborative constructions of knowledge. The learners' (both students' and educators') reflections point to such an emerging knowledge concerning climate change, as well as to the understanding that values and beliefs also matter (Brown, 2011; Schreiner *et al.*, 2005; O'Donoghue, 2014; O'Brien, 2015).

Finding the balance between content knowledge and other approaches to self-exploration and learning remains a delicate endeavour. More detail on the work we have shared in this paper needs to be provided and more interrogation awaits to be done as new cohorts of learners are taken into programmes (e.g. in the ACCAI network) and experiences are shared in the various networks (e.g. Fundisa for Change and various EnviroTeach materials packages).

A call for a much more inclusive approach that focuses on understanding science content as well the assumptions held by educators and students, their reasoning, and also a range of moral developments (Schreiner *et al.*, 2005; Wals, 2010; O'Donoghue, 2014) is critical and will, however, take time – it will be a journey of reflection, growth and learning). As we have suggested, some radical reorientation and bravery on the part of educators may be called for – and in a space where one feels safe to enhance one's beliefs and biases. Being able to depart from just a 'content'-dispensing mode is also a challenge – 'Leaving the safe domain of school science culture requires a great effort from a teacher' and arguably in strongly aligned, silo-based domains in universities as well (Schreiner *et al.*, 2005:12).

We acknowledge that much still needs to be done concerning the work that has been started here, particularly around monitoring and evaluation both of the university curriculum and the CAPS curriculum process. Issues that remain as 'works in progress' for further investigation include exploring more deeply the links between content and the ability to innovate and make reasoned choices about teaching approaches, action competence and transformative learning, and moving towards 'learning to know (knowledge), learning to be (identity), learning to live together (social), and learning to do (action) (O'Donoghue, 2014:12). Understanding how and in what contexts such complex epistemological and ontological shifts occur is key for creating the type of change that may be needed to navigate a climate-changed world.

Formal education is one avenue available for possible transformation. Other ways will require incorporating transformative design (e.g. possibly via transdisciplinary efforts – Thompson-Klein, 2010). However, a remaining tension, we argue, is the overwhelming and growing body of knowledge; the needs arising from each discipline; and the tendency for 'quick'-solution roll-outs in, for example, the field of climate change (e.g. 'climate change guidelines'; 'toolkits'; mixing disciplines) that can work against a slower but steadier approach as outlined above that

may, in the end, lead to real transformation. As Scott (2009:158) notes: 'Our methodological portfolios are bulging, and our methods' toolboxes overflow.' We do need to expand outwards from our scientific-realistic perspectives and include other perspectives (e.g. ontological and epistemological), BUT how to be more incisive in our approach, as Scott (2009) notes, remains a fundamental challenge.

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## *Endnote*

1. Note that climate change and climate variability are treated together in this paper and not as separate phenomena.

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# Viewpoint
## Working with Environmental Education Pedagogies in Life Orientation to Enhance Social and Environmental Responsibility

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### *Abstract*

*The aim of this viewpoint paper is to generate interest in working with environmental education pedagogies in order to enhance the quality imperative of social and environmental responsibility for South African learners through the fundamental subject, Life Orientation. Drawing on our own experiences as Life Orientation and environmental education lecturers at a tertiary institution, we build, in this paper, on the initiative of the Department of Basic Education to include social and environmental concerns in the Life Orientation curriculum for the Further Education and Training Phase. As researchers, we therefore highlight, for South African Life Orientation teachers, the parallels that exist between environmental education and Life Orientation, and propose a guiding theoretical framework on how teachers can purposefully and effectively integrate environmental education pedagogies with Life Orientation so as to enhance the quality of their teaching practices and lesson objectives around specific contextual social and environmental concerns for their learners.*

### *Introduction*

South Africa, like most developing countries in Africa, faces numerous social and environmental challenges. HIV/Aids, the breakdown of social values, violence, crime, poverty, unemployment, safety concerns, environmental neglect, lack of basic services (safe drinking water and proper sanitation), climate change and food insecurity are but a few of the pressing problems that confront South Africans daily. It can be argued that these disheartening social and environmental concerns put sustainability under threat and therefore drive the need to develop contextually relevant environmental knowledge, skills and values to respond to these challenges. In this regard, Hornberg (2002:188) considers the inclusion of environmental realities in school subjects as a helpful framework to narrow the gap between learning and action, especially around social and environmental issues that touch people's daily lives. Interestingly, Dewing (2010:24) and Jickling and Wals (2008:7) also argue that the inclusion of the environment in classrooms creates a means for learners to investigate their own values, beliefs, routines and rituals. Furthermore, Jickling, Lotz-Sisitka, O'Donoghue and Ogbuigwe (2006:1) are of the opinion and argue that, when learners ask ethical questions on environmental issues, they can acquire knowledge, skills and values that will enable them to participate as active and informed citizens who are conscious and motivated to develop and manage their environment in a sustainable manner that maintains an

ecological balance. For this reason, the opinion of Lotz-Sisitka (2004:10) that the environment should be considered a relevant topic to which learners at school should react, is worth noting.

In South Africa, where there is a noticeable curriculum emphasis on the acquisition and application of knowledge, values and skills which are meaningful to the lives of learners (SA. DBE, 2011:4), it is important to educate and empower learners with regard to local, contextual environmental issues (Theron & Danzell, 2006:397). For this very reason, education, and, in particular, education with a humanistic and holistic approach (see, for example, UNESCO, 2015:10) can contribute to the enhancement of meaningful (environmental) knowledge, values and skills among learners. This relationship between knowledge, values and skills, especially within the local context, is captured by Lotz-Sisitka's (2012/2013:30) idea of 'learning as connection', an idea that connects perfectly with environmental education curricula as contextual bound (Ferreira, 2013:263). Given this connection, it is possible to equip learners with inseparable environmental knowledge, values and skills concerning real-life settings as outlined in the curriculum (SA. DBE, 2011:10). This can help learners to understand the root causes of current unsustainable socio-environmental behaviours in a particular context (see, for example, Ontong & Le Grange, 2014:29) and may prepare them to take concrete steps towards discovering their own sustainable life patterns (Pace, 2010:321).

## *Social and Environmental Issues as Curriculum Concerns*

Social and environmental concerns have been accorded a high degree of prominence in post-apartheid South African education policy statements. Addressing these social and environmental concerns through the curriculum will undoubtedly require teachers to give expression to specific knowledge, skills and values that are embedded in the environment so as to prepare the modern-day learner to become a more environmentally competent and responsible person (Nsubuga, 2011:106). More encouraging is that Life Orientation (LO) is seen as an appropriate and useful 'vehicle' to take on this challenge of preparing learners to make informed decisions and choices and to take appropriate actions to live a meaningful and successful life in a rapidly changing South African society (SA. DBE, 2011:9; Theron & Dalzell, 2006:399). This implies that LO teachers should not just pay lip service to social and environmental concerns that threaten the health and well-being of learners. A starting point should be that LO teachers do not just think about the subject matter/facts to be covered (see, for example, Gravett & De Beer, 2015:3; Cooper, 2011:6) on social and environmental issues for departmental assessment purposes (SA. DBE, 2011:25–28), but should identify and integrate relevant contextual concerns with meaningful learning activities. The objective should be to actively involve learners and to guide them in developing a deep understanding with regard to the interrelatedness of social and environmental concerns and their implications for the health and well-being of the individual. The only way to ensure that this becomes a reality in LO classrooms is to stimulate teachers to deliver enriched, critical and productive knowledge, values and skills that will contribute to generating young and active citizens.

However, the notion of delivering enriched, critical and productive knowledge, values and skills around social and environmental concerns on the micro-level (classroom level) with a renewed interest in sustainable development, may not be so straightforward. Reasons for this are

that LO was, and still is, not well received by learners or by those teachers who are entrusted with the responsibility of teaching it. Teachers, today, still grapple with how best to educate the adults of the future with appropriate life skills knowledge, values and attitudes with regard to real-life concerns. Jacobs (2011) reveals that learners' interest in LO is dampened by the teacher's attitude to this subject. Researchers like Rooth (2005), Christiaans (2006) and Van Deventer (2009) trace the roots of this situation to a lack of appropriate epistemology and skills, which prevents teachers from successfully teaching curriculum content. As such, teachers are not able to capitalise on the opportunity which LO policy statements provide to include real-life contextual environmental and related sustainable concerns in the explicit curriculum. Neither will teachers be competent to provide learners with an opportunity to become critically aware of social and environmental concerns, or to address these concerns that confront them in their lives on a daily basis. It is thus clear that the effectiveness of LO as outlined in the curriculum seems to be doubtful (Jacobs, 2011:212; Prinsloo, 2007:155; Van der Walt & De Klerk, 2006:175).

Our concern is that LO teachers with inadequate professional knowledge and training within the field of environmental education might neglect addressing social and environmental concerns through the intersections of their teaching-and-learning practices. The renewed focus on content knowledge as stipulated in the Curriculum and Assessment Policy Statement (CAPS) may become the biggest obstacle in that it can restrict LO teachers' perceptions, experiences and emotions with regard to social and environmental concerns when it comes to raising the cognitive awareness of learners. To transfer knowledge regarding complex social and environmental concerns through prescribed textbook activities, to passive learners who then absorb it, has the potential of isolating them from their local societal context. Not only can such an approach be seen as 'learner-centred emptiness' (Lotz-Sisitka, 2002:114), but it can also, according to Le Grange (2007:11), be labelled as a lesson in hypocrisy, for it highlights awareness of environmental concerns above active involvement. For LO, such approaches can restrain learners from benefiting from environmental learning opportunities by means of which they could have acquired knowledge, values, decision-making skills and critical thinking that are worth learning.

Two questions arise from the above: (a) How is environmental learning embedded in LO?; and (b) How best can teachers integrate environmental education and LO with their teaching and learning strategies to enhance meaningful and transformative real-life learning experiences with contextual social and environmental concerns? These are addressed in the following sections.

## *Parallels between Environmental Education and LO*

If teachers want to successfully present themes relating to social and environmental responsibility, it is vital that environmental education should be considered in all teaching and learning activities. The reason for this is that environmental education, like LO, adheres to an integrated and holistic educational approach (Luke, 2001:195). It is linked to the quality imperative of education as encapsulated by the Global Education for All Monitoring Report of 2005 which states that not only cognitive understanding, but also the promotion of values and attitudes/skills are central to responsible behaviour (2005:17). Among scholars of environmental education and LO, there is widespread agreement that responsible behaviour is an important

feature of an individual's health and well-being. Moreover, there is much support in the literature for the belief that the parallels (see Table 1) between environmental education and LO can contribute successfully to the promotion of socially and environmentally responsible behaviour among learners. This means that learners will have to consider how their actions affect those around them, including the environment in which they live.

**Table 1.** Parallels between environmental education and LO

| **Parallels between environmental education and LO** | **Support references from an environmental education perspective** | **Support references from an LO perspective** |
|---|---|---|
| *Holistic and empowering (focus on knowledge, values and skills)* | Gough & Gough (2010:342); Sauvé (2005:13); White (2004:81); Fien (2003:3); Luke (2001:195); Scoffham (2000:210); UNESCO-UNEP (1997:12) | Magano (2011:121); CAPS (SA. DBE, 2011:9); Theron & Dalzell (2006:399) |
| *See the world as a set of related systems, thereby recognising that problem-solving contexts do not exist in isolation* | Van Rooyen (2006:160); Rosenberg (2004:153); Sauvé (1999:11) | Magano (2011:121); CAPS (SA. DBE, 2011:5); Donald, Lazarus & Lolwana (2006:2) |
| *Context-relevant (knowledge/ideas are not constructed in isolation, which makes the context of learning important)* | Tbilisi Declaration (1978) | Mahmoudi & Moshayedi (2012:1155); CAPS (SA. DBE, 2011:4); Donald *et al*. (2006:180); Boler & Aggleton (2005:9) |
| *Socially and environmentally responsible citizens as the goal* | Sauvé (1999:29) | CAPS (SA. DBE, 2011:5) |
| *Problem-solving* | Van Rooyen (2006) | CAPS (SA. DBE, 2011:5) |
| *Learner-centred, with the emphasis on participation* | UNESCO (2014:22); Goralnik, Millenbah, Nelson & Thorp (2012:412); Stevenson & Stirling (2010:3) | UNICEF (2012:7); Helaiya & Goel (2011:19–21); Rooth (1997:75); WHO (1993:6; 1997:5) |
| *Concentrate on recent and future social and environmental concerns that are relevant to children's lives* | Stevenson (1997:193) | CAPS (SA. DBE, 2011:15) |
| *Human rights* | Sauvé (1999:10) | CAPS (SA. DBE, 2011:5) |
| *Dialogue: Acknowledge learners' opinions for the purpose of developing critical thinking* | Sauvé (1999:14); Mortari (2003:121); Pillay (2004:121) | Magano, Mostert & Van der Westhuizen (2010:22); Theron & Dalzell (2006:399) |
| *Value-oriented (recognition of values and skills development while not marginalising knowledge)* | UNESCO (1975:3) | CAPS (SA. DBE, 2011:8) |
| *Lifelong learning* | Blum (2012:8); Stevenson & Stirling (2010:232); Le Grange (2002:83) | CAPS (SA. DBE, 2011:8) |
| *Focus on the local environment* | Pillay (2004:121); McKeown & Hopkins (2003:119), Fien & Maclean (2000:101) | CAPS (SA. DBE, 2011:4); Theron & Danzell (2006:110) |

The parallels between environmental education and LO emphasise the development of the whole person. The integration of knowledge, skills and values are, therefore, highly valued. Critical thinking, with an emphasis on lifelong learning, is also a central feature of both environmental education and LO, which highlights learner-centeredness, with a focus on the local environment. Although, in theory, the core elements that exist with regard to environmental education and LO are clear, the greatest challenge remains whether teachers will be able to integrate these two approaches in their teaching and learning practices in order to do justice to enhancing social and environmental responsibility among their learners. We contend that integrating environmental education with LO will be difficult, for the following four reasons:

1. CAPS introduces a content reference approach to social and environmental concerns as the foundation for learning;
2. There are given time frames in which to cover the course material on social and environmental concerns;
3. Adherence to departmental regulations regarding summative assessment is required (SA. DBE, 2011:33), which favours a teaching-to-the-test-or-examination paradigm; and
4. The role of the LO teacher in developing learning activities is not clearly spelled out.

The danger is that the teacher's role can be reduced to that of a mere implementer of predetermined learning programmes as set out in the curriculum policy statement (Grussedorff, Booyse & Burroughs, 2014:58). Our response in what follows is to explore possible opportunities within the curriculum which teachers can use to effectively integrate environmental education with LO on the topic of social and environmental responsibility within the context of the new CAPS policy framework.

## *Lenses in LO: Implications That Call for an Alternative Teaching and Learning Strategy towards Social and Environmental Responsibility*

Four different lenses for teaching social and environmental responsibility through LO can be distinguished:

1. An *integrated lens* (taking a holistic approach to knowledge, skills and values);
2. A *critical lens* (identifying and solving problems and making decisions using critical and creative thinking);
3. A *transformative lens* (moving away from awareness to the application of knowledge, skills and values in real-life situations); and
4. A *contextual lens* (promoting knowledge in local contexts).
   (SA. DBE, 2011:4, 5 & 8).

What emerged from these four lenses is the relationship that exists between the three environmental education approaches (about, in/through, for) and the embodiment of the mind (knowledge) and the implementation of knowledge (praxis). This focus affirmed Le Grange's (2004:388) argument that human bodies are not passively located in the world, but, rather, are productive agents that are able to change socio-environmental scenarios and/or conditions (in

the environment) through 'thought in action'. The curriculum policy statement is also clear on how LO teachers can direct learners on a journey towards becoming thoughtful socially and environmentally responsible citizens. It is evident from this statement that learning activities need to be practical and should afford learners the opportunity to experience life skills in a hands-on manner (SA. DBE, 2011:25). The claim can then be made that, when environmental education is integrated with LO, it is possible to generate active, thoughtful citizens who are environmentally conscious and who are able to exhibit socially and environmentally responsible behaviour.

## *Making Social and Environmental Responsibility Relevant to Learners through Environmental Education*

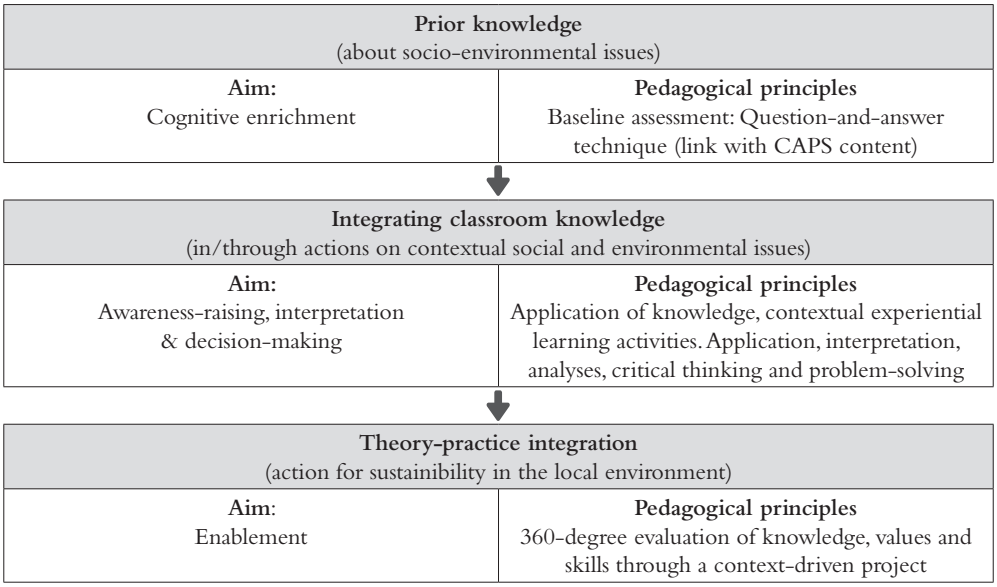
Except for the obvious parallels that exist between key elements of environmental education and LO (see Table 1), the major question that can be raised is: How will teachers in the FET (further education and training) schooling phase who are entrusted with the responsibility of teaching LO recognise whether the particular knowledge, skills and values embodied in this subject are realised in order to confirm learner growth and development? Undoubtedly, the answer to this question would encompass the concept 'teaching strategy', which, in itself, should be narrowed down to the specific aim that guides teachers in terms of social and environmental responsibility. Within this context, the curriculum policy statement highlights that the specific aim in managing the learning environment with regard to social and environmental responsibility should be *to guide learners to make informed and responsible decisions about their health and the environment* (SA. DBE, 2011:9). We are, therefore, of the opinion that this humanistic and learner-centred endeavour within LO can only be achieved through shifting the focus from teaching *about* social and environmental responsibility content through a prescribed textbook-driven approach towards creating meaningful learning opportunities where learners are allowed to learn *in/through* (experience and the application of knowledge in real-life situations) and *for* (striving for change as transformative action). In this way, learners will become 'active participants in their learning, and co-constructors of knowledge' (Meece, 2003:111). The essential implications of this are that teachers will have to carefully plan their learning activities with regard to key aspects of environmental concerns about the resolution of real-life challenges, and in such a way that opportunities will be created for learners to interact collaboratively with their environment.

## *A Proposed Enabling Framework for LO Teachers to Integrate Environmental Education into LO to Enhance Social and Environmental Responsibility*

The most striking feature of environmental education, as articulated by Mlipha and Manyatsi (2005:140), is that of a planned process enabling participants to explore the environment, to investigate recognised environmental concerns, and to take action to address the concerns for the benefit of the environment and life. This comprehensive explanation of environmental education makes it possible to include the three prominent approaches (*about*, *in/through* and *for*) to the environment in teaching and learning, approaches that were first formulated by Lucas (1972:98) and have frequently been adopted in South African environmental practices, as noted

by Le Grange (2004:390). Rather than opting for something new, the present authors find it sensible to use these three approaches, together with additional recommendations, as a basis to indicate to LO teachers how to purposefully and effectively integrate environmental education with the specially selected topic of social and environmental responsibility.

**Figure 1.** Integrating environmental education with LO: Enabling framework for learning as connection in the context of social and environmental responsibility




This framework serves as an active curriculum force (Wallin, 2010:2) because it enables learners to acquire interrelated knowledge, skills and values with respect to contextual social and environmental issues. It is therefore possible for learners to become consciously informed and environmentally responsible citizens through this framework, because it does not reduce activities to a mere transmission of knowledge (teaching *about*). The goal, therefore, is that education concerning social and environmental issues should be transformative. With the focus on education *in/through* and *for* the environment, knowledge becomes embedded in practice through learners' experiences with everyday (real-life) social and environmental concerns. The emphasis on education *in/through* and *for* the environment is also geared towards meaning and post-meaning, with the emphasis on changing the learners' mindset to that of becoming 'thoughtful citizens' (Singh, 2011:115). Education *in/through* and *for* the environment also underscores the value and importance of practising life skills (in the contexts of social and environmental responsibility) through a language of environmental education (Le Grange, 2010:22), which strengthen the idea that learners will experience LO as a useful subject that deals with the interactions that occur between society and the environment. The implication here is that learners will be holistically empowered with knowledge, values and skills which might ensure that the objectives related to social and environmental responsibility as positive human actions are easily attained.

Now that we have reflected on the above framework, we turn our attention to a few integrated, guiding principles on how LO teachers should go about developing and (re)designing lesson content on social and environmental responsibility that is context-relevant for their learners.

- *Identify* current and potential contextual social and environmental concerns together with your learners;
- *Consider* the best instruction method within each strategy of the framework that will enhance instruction and motivate your learners to learn more about the particular social and environmental concern;
- *Review/revisit* the learning objectives of your lessons;
- *Assess* your instruction methods by asking the question: Will my instruction methods (about, in/through and for) for the specific lesson topic encourage my learners to apply their knowledge, values and skills so as to become agents of change within their environment?;
- *Select and implement* your instruction method; and
- *Reflect* on your lesson.

These recommended guiding principles serve as a helpful stepping stone to promote reflective teaching and learning practices that are locally relevant for the topic of social and environmental responsibility.

## *Conclusion*

We wish to convey the message that environmental education can make an active contribution in the teaching of social and environmental responsibility within LO. This is a timely opportunity for teachers to rethink their teaching and learning strategies with regard to environmental concerns through LO so as 'to avoid this predominantly skills-based subject from becoming too theory-driven' (SA. DBE, 2011:25). The intention with this viewpoint paper would then be to provoke an ongoing and critical debate among academics and curriculum developers of the Department of Basic Education on the idea of integrating environmental education and LO with the topic of social and environmental responsibility.

## *Acknowledgements*

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## *General Notes*

1. Since 2011, 'social and environmental responsibility' has replaced the topic 'citizenship education' in previous LO policy statements.
2. The South African schooling system is divided into four phases: the Foundation Phase (Grade R–3), the Intermediate Phase (Grade 4–6), the Senior Phase (Grade 7–9) and the Further Education and Training Phase (Grade 10–12).

3. The most recent version of the South African school curriculum is referred to as the Curriculum and Assessment Policy Statement (CAPS).
4. A key feature of CAPS is the differentiation between the subjects Life Orientation and Life Skills. Since 2012, Life Orientation became a Senior Phase (Grades 7–9) and FET Phase (Grades 10–12) subject. In the Foundation Phase (Grades R–3) and the Intermediate Phase (Grades 4–6), the subject called 'Life Skills' is taught.

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# Book Review

## *Intergenerational Learning and Transformative Leadership for Sustainable Futures.*

2014. Eds. Peter Blaze Corcoran, Brandon P. Hollingshead.
Wageningen: Wageningen Academic Press
ISBN: 978-90-8686-252-8

Reviewed by Lynette Sibongile Masuku

*'The story and the story teller both serve to connect the past with the future, one generation with the other, the land with the people and the people with the story'.* (Smith, 1999:145)

'A good leader can engage in a debate frankly and thoroughly knowing that at the end he *and the other side must be closer and thus emerge stronger. You don't have that when you are arrogant, superficial and uninformed'.* (Nelson Mandela)

### *A brave book in turbulent times*

Emerging from a revolutionary two weeks (19–30 October 2015) that rattled the very foundations of tertiary institutions in South Africa has awakened my engagement with this book. The call for #feesmustfall revolt was an intergenerational lesson in action forced upon the elders of institutes of higher learning and the government of South Africa, mainly the Department of Higher Education and Training. My commentary in this review is coloured by this context and experience.

Intergenerational learning is usually conceived of as a top-down learning process, and an education that is loaded with experience tested over time that is shared to the young by elders (see Spannring, 2008). Lessons derived from the young by elders, most particularly in the community context have not been documented extensively except in the fields of computer science and electronics and hence the relevance of this book. The two quotations of Smith (2004) and Mandela (undated) above, embody my conceptions of intergenerational learning and transformative leadership and some of the ultimate destinations we have to arrive at if we are determined to weave the story of the land with people while connecting the past with the future. I am of the view that we do have to be frank in our reflections and analysis of that past if we are to emerge stronger and reach sustainable futures. The authors of the book under review edited by Peter Blaze Corcoran and Brandon P. Hollingshead carefully negotiate the past, storied lands and the people. They pose difficult, engaging questions to be debated on if we are to emerge stronger. Most of the chapters have left me with a constant niggling feeling and deliberation on whether the context I am working in has the attributes necessary to achieve positive results or how possible it is to assemble all the necessary components to yield sustainable results for the youth where others have been less successful. The Million Belay Ali project in Ethiopia reported on in the book resonated closely with the work I do and gives me hope.

*Intergenerational Learning and Transformative Leadership for Sustainable Futures* is a groundbreaking and brave book because it is the first to tackle the involved relationship between intergenerational learning and its potential for composting transformative leadership and successfully does that best.

## *Difficult Concepts for Important Topics*

*Intergenerational learning* is not an easily definable concept and is loaded with mammoth complexities, some of which are located in the debates on/for indigenous knowledges (Masuku Van Damme & Neluvhalani, 2004; Smith, 1999; Santos De Sousa, 2009; O'Donoghue, Shava & Zazu, 2014; Spivak, 1988; Paraskeva, 2012) and interweaves into areas concerned with socio-cultural learning (Rogoff, 2003) and postcoloniality (Andreotti, 2011) etc., and can be taken for granted yet has its tentacles in many areas of learning in home and school contexts and in oral histories. These interrelations came out very clearly in the Maclean, Kocherthaler & Hoogesteger and Belay Ali chapters. Hollingshead, Corcoran and Weakland in the introductory section point out that they purposely did not define intergenerational learning in the brief given to the authors, a wise decision as this comfortably allowed the writers to define it through the work and projects they are involved in, which brought in the richness of the concept which a definition could not have captured. The long reach of the concept and the diversity of its definition is audible throughout the book. There is strength in that, particularly for those who have engaged with its processes.

The concept of *Transformative Leadership* is equally complex and leads many to very broad uncomfortable and marshy terrains, which Fien in his chapter alludes to. For me it goes as far back as the transformation of the Zulu empire by Shaka, to Foucauldian debates of power and knowledge (Shava, 2008), the financially poorest President of the world Jose Mujica of Uruguay to Archer's morphogenesis (see Shava, 2008). My take is that there is also no convergence in thought and in reality within the different disciplines in the conceptualisation of what is termed '*sustainable futures'* (see Hattingh, 2003). The debates in the chapters of this book inflate hope into our deflated prospects of the future we see with dwindling possibilities and escalating unemployment. Intergenerational learning has the ability of narrowing the boundaries or blurring them between what was conceptualised as domains of knowledge generation and recipient fields of application. It would be interesting to more into the complexities of knowledge sharing in the book's case studies, particularly those delving within the complexities of the sharing of knowledge solidified in time as that is held by elders and the fluid and changing knowledge by the youth for what Bhabha (1994) considers the 'cutting age of translation and negotiation' of knowledge centred within the boundaries of difference (young and old), which he called the hybrid third space. Transformative leadership suggests what Bhabha (1994) calls the shifting of fixities and what Paraskeva (2011:173) refers to as an 'act of becoming' that is achievable through teaching and learning strategies likely to yield better results for the youth. This is no less than an act of arriving at a deterritorialized state and 'a posture that constantly slides amongst several epistemological frameworks', according to Paraskeva (2011:151).

## *Many Chapters with Many Voices and Perspectives from Diverse Places*

The book under discussion is an initiative of the International Intergenerational Network of Educational Centres (IINC) and is presented in 32 chapters by 82 authors from 26 countries and six continents with an aim of fostering intergenerational learning and transformative leadership. It is an assemblage of academic and practitioners' initiatives, institutional voices, advice and visions of globally organised views of state parties who are signatories to conventions under the United Nations agencies such as, UNESCO, UNEP and the IUCN. It also compliments the work of the Wangari Maathai Institute of Peace and Environmental Studies and Obguigwe's work on Mainstreaming Environment and Sustainability in African Universities. In the opening pages Hollingshead, Corcoran and Weakland maintain that transformative leadership is a task that we must all work towards. They call upon us not only to recognise ourselves as agents of change but that we play a determined and particular practical role to enhance transformative leadership skills. Their call is strengthened by invoking the voices of Africa's departed Nobel Prize recipients. They cite Wangari Maathai who said in 2004 that; 'Those of us who have been privileged to receive education, skills, and experiences and even power must be role models for the next generation of leadership' and this is possible if 'we start with our own children' says Lotz-Sisitka through the words of Nelson Mandela in her chapter. The introduction generated an excitement and expectation of a more engaged and detailed discussion on the work of Wangari Maathai, but I felt let down with such an absence. It would have been good to hear more about the work of the Wangari Maathai Centre and how her efforts are being sustained into the future.

What seeded this book was a concern by practitioners in the field of environmental education and sustainability education about environmental leadership and the role/extent that institutions of higher learning play in creating transformative leadership. The other concern was the plight of the youth and the seeming inability within the fields of environmental education, and sustainability education to identify the necessary experiences, skills and research areas to pass on as well as train transformative leaders who can open up the means and paths that lead to the sustainable employment of the youth and alleviate poverty. The editors asked the diverse authors of the chapters from diverse places around the world to pay particular attention to the following questions, which had the potential to respond to the concerns alluded to.

1. If safe-guarding the continued viability of people, organisms, and natural processes is the central ethical challenge of our time, what role might intergenerational learning and transformative leadership play within education for sustainability?
2. What are the methodologies, curricula, and tools necessary for advancing and strengthening education for intergenerational sustainability learning and leadership?
3. What are the roles of centres, networks and innovative programs in main streaming sustainability in universities and communities?

## *Is Higher Education Leading with Transformative Leadership?*

Sterling's chapter in the book provides an assessment of the times we are at 'as a decisive fork on the road'. This is not rhetorical as our leading scholars in Africa have noted that there is little deliberation on why we are engaging with educational discourse, the manner in which we teach and learn; and there is little clarity on what the purpose of our learning is and what it seeks to achieve. This relates to defining clarity on how we envision the future and what our preparedness strategies are (Mamdani, 1993; Hoopers, 2005). Sterling's discussion focuses on the facilitation of change in Plymouth University and the struggles to cross the structural and systematic barricades of institutions of higher learning. His approach to learning about learning within higher education is insightful – he considers three phases at which institutions are dealing with interventions aimed at addressing learning relevance within the changing times. The depths of learning which may be encountered are: a) accommodative; b) reformative; and c) transformative. The accommodative approach considers a conservative adding on of new courses or modules which do not upset the tempo of the institution nor challenge the values and are thus accommodated. The second one is the reformative approach which questions the values, assumptions attached to learning and practices, policies and the curriculum and this is a process that is carefully built in. The transformative approach is, 'a shift in culture and a mindful redesign of organisational purposes, and practices towards sustainability, involving whole institutional change over time' (Sterling, 2014:140). These resonate with the South African post-apartheid experience where institutions of higher learning have been using an accommodative approach for 20 years. Contemporary anxieties and impatience have ushered the youth into the reformative approach which was either too slow or was met with resistance from higher education institutions. In the past few weeks, the impatience has resulted in a revolt of mammoth proportions captured in the #feesmustfall protests which erupted around the country, and students are demanding that the transformation of universities be sped up at lightning speed. Such urgency within times of looming elections and to effect the careful and necessary transformative response as articulated by Sterling is not possible. Since 1994 state subsidies have greatly dwindled and were not pacing the increasing demand by those who have been locked out of the doors of learning by the apartheid system. Lecturers have been reduced to fundraisers and left at the mercy of industrial cooperates whose concerns are maximising profits rather than creating transformative leaders who can address the issues of poverty they are familiar with and grew up with.

Mamdani's (1993) prophetic guidance and cautioning in his lecture on *Universities in Crisis: Reflections on the African Experience* challenges Holmberg's view (one of the authors in this book), and a generalisation on the high degree of autonomy in universities. Holmberg's view that 'Universities have strong traditions and a high degree of autonomy' (p91) is in contrast and contradictory most particularly to African universities which are struggling to assert themselves and rooting themselves in African soil as African universities. His view might hold truth for universities in Sweden or the West.

## *Transformational Leadership and Intergenerational Leadership*

We move on to explore transformative leadership and its relation to intergenerational leadership as dealt by Fien in the book. Fien's discussion on leadership is illuminatory of the vastness of definitions and approaches to leadership. He points out that the usual missing link in most definitions, applications and approaches to leadership is 'responsibility and integrity', particularly leadership with an educational purpose aimed at sustainability. Such leadership is an ethical purpose to achieve a commonly shared goal. In his examples of leadership he uses the metaphors of the bee and the locust and he compares how they are likely to approach leadership. He gives credence to 'bee' leadership, as critical if we are to reap the fruits of education for sustainability. Bee leaders should be critically reflexive individuals and change agents who consider social and psychological processes and explore issues in their totality with a set of illuminatory lenses, he asserts. Holmberg's discussion on Challenge Labs is in synch with the processes of leadership that Fien advocates. On the subject of Challenge Labs, Holmberg looks at how education, research and innovation are integrated, through a collaborative mechanism with particular stakeholders to address complex challenges in a context of Swedish universities that have strong and almost unshakable traditions and values. The Challenge Labs are complex and need commitment from other structures of the university. The most important aspect of Challenge Labs, according to Holmberg, is that it centres the student and brings out leadership traits they feel comfortable with to bring into group work and add value to achieving the goal set out by all. Another insightful component is the interest by stakeholders, even those in the business sector in interacting with the students and learning from them. Fien and Holmberg both advocate that practitioners consider double loop learning processes and an evaluation of the learning processes and results. In the context of Sweden such loops in Challenge Labs are considered by Holmberg as critical in the struggles to integrate education, research and innovation, most particularly because universities have traditions that are almost immovable.

Sterling, in his chapter, draws generously on Parkin's 2010 and 2013 work, and Barrineau and Kronlid also reflect on useful insights on the subject of sustainable leadership in institutions of higher learning. Sterling posits Parkin's critical question (2013:xviii):

> Will universities offer the intellectual leadership needed to shift our civilization off its self-destructive course and on track for a sustainable future? Obviously they can if they so choose.

This is a question that is highly critical in southern Africa where the call for curriculum transformation and a discourse on the use of our public spaces, littered with colonial public sculptures in academic institutions, is rife. As stated in my introductory paragraph these granite-solid questions seem impenetrable and niggling and require a revisit as the complexities of our lifestyles become more and more tangled and confused, the sale of education and mind-crippling matters such as climate change and wars that rob people of their human rights.

## *Calls for Participation, Hope and Ways Forward*

Lotz–Sisikta in her chapter advocates that the status quo of a dominant socio-economic system in the neo-liberal capitalist trajectory that values fragmentation and frowns on collective actions in its search for profits is challenged. She calls for collective aspirations and action towards a politics of hope and possibilities rather than allowing the forces of commodification to push us into a corner of hopelessness. Lotz-Sisitka poses a question on what an agenda that considers children first should look like, a question that many in society are grappling with. In southern Africa teachers and lecturers continue to dish out content from colonially inherited curricula and a number of historical practices which are regarded as the current norm. She recommends that we search beyond the barriers that makes us see and accept the 'normal' which shadows the positive possibilities in education for sustainability and also recommends that we deliberate with the arguments advanced by leading African philosophers such as Mbembe, Mamdani and other critical scholars such as Badiou, Zizek, Barad, Bhaskar and Spivak as they speak out strongly on matters of integrating the social sciences with the natural sciences and matters of of an interdisciplinary nature.

Tassome and Wals in their chapter, discuss the *Educate Yourself in Empowerment* (EYE) tools that are aimed at moving debates from the rhetoric of participation, to agency and empowerment. For the EYE tools to succeed they are to be used in a learning environment that allows dialogue that is reflexive and is safe and trustworthy. Lotz-Sisitka in her chapter draws on research that reports that in South Africa it has been reported that teachers are responsible for 33% of rapes of minors in schools, which makes such schools disabling and violent environments for children to learn in. Aggression can also be meted out by the state as Mamdani (1993) points out, referring to the force and aggression that the state unleashed in Uganda in the 80s when student protests arose with demands for transformation in institutions of higher education. In their chapter Kocherthaler and Hoogesterger (p236) also maintain that protective intergenerational relationships are critical in an environment of learning so that 'perceptions, feelings, and values can be shared freely in an emotionally protected environment, where persons are respected and accepted'. I found the Kocherthaler and Hoogesteger project very interesting, complex and brave, yet very clear and detailed on the learnings that happen between the elders and the children as a two-way learning process.

Maclean and Million Belay Ali's work shows the importance of the use of participatory research methodologies. Million Belay Ali's work is on participatory mapping to restore environmental knowledge and awaken memories of relationships with the land between the youth, elders – male and female. Maclean employs participatory research techniques to facilitate approaches that improve the management of the biophysical environment through the interpretation of images and artwork with the Aboriginal people of Australia. What comes out clearly from the Maclean chapter is the intergenerational and intergenerational learning that takes place in the research she was involved in. Maclean and Million Belay Ali both agree that researchers need to engage with participatory methodologies if they want to support intergenerational learning and that this can mainly happen when according to Maclean, (p167) 'we listen to the diverse stories of place and culture that were silenced in the writing of

colonial histories'. To achieve this would demand an engagement with post-colonial feminist critique, Maclean maintains. She argues further that the necessity of employing such critique results in capacity building between generations and in the co-production of knowledge. Million Belay Ali concedes that such methodologies when employed on awakening traditional ecological knowledge allow for the negotiation and renegotiation of identities, which 'includes adaptability, mobility, transformation, innovation, hybridisation, incorporation of non-formal fragments, sensitivity to surrounding factors, and fragility in the face of globalisation and revitalisation efforts = contributing to socio-ecological resilience'(p219). This would include collective forms of agency. The photographic representations of the Ethiopian project featured on the cover of the book captures the concentrated, and involved ownership of the meaning making of their knowledge of the landscapes they are layering and transforming with paint and brush, bringing out their experiences of the landscape. It would be interesting to know whether their interpretation was gender informed in a society that operates and lives within defined gender spaces.

## *Call to Engage with Policy, Practices and Innovation*

Leicht examines the Global Action Programme an initiative by the UN's Open Working Group on Sustainable Development Goals. In the face of all these well-articulated UN theorised strategies and ideas, my question was – who will implement them and monitor their implementation if state parties divert their budgets towards imperatives that are non-educational? Some of the stories in the book address this question. For example, Schudel, explores a relational perspective from the local to the global, school and community, time and space contexts using access to nutrition and food, a basic human right. This relational perspective mobilises local community knowledge collapsing the barriers that exist between school and home as learning contexts that illuminate intergenerational learning. Schudel's conclusions are consistent with the discussions by Million Belay Ali, Osano and Adam as well as Maclean in their focus on local and traditional knowledge. The chapter by Osano and Adam is concerned with the low use of modern technology in farming, the loss of interaction between youth and elders and the growing lack of interest by the youth in sub-Saharan Africa on African farming. They mention a strong disconnect between formal education and rural farming which does not allow for the transfer of values, aspirations and narratives which should ideally cover all aspects of rural life and traditional institutions, systems of farming and land as well as filter into policy. Formal education and rural farming should have a symbiotic and mutually benefiting relationship as they address sustainable livelihood strategies, they maintain.

There is rapport between the chapter by Fien on transformative leadership and on the chapter by Kafka, Sehgezzi, Villaronga, Blome and Althoff as they engage with the character of leadership that is critical if we are to achieve global sustainability in the management of biodiversity aided by equitable economies. They point out that such leadership should recognise that 'not all environments are conducive to innovation, and not all innovations are conducive to the environment' (p203). I am of the view that there is no environment that is not conducive to innovation as there currently is no environment that one can claim is being

managed optimally to respond to all environmental challenges. There is need to delve deeper into the kind of innovation that is of congruence to particular contexts and there is no one size fits all. Which goes back to the point made by Maclean that we need to explore feminist and postcolonial critique and its methodologies in search of innovations that are congruent. The team Kafka, Sehgezzi, Villaronga, Blome and Althoff propose that there must be 'readiness to reflect, deconstruct, and let go of established ways of doing things' (p203) in their chapter, which resonates with the Mandela quote at the beginning of this review. The team further argue that innovation cannot be planned, a point that I do not agree with as I consider that innovation needs planning, within community members in their community and that it is about creating enabling environments for the necessary innovations. All the techniques that the authors allude to, such as dialogue and co-learning, point to the fact that not all innovation sprouts from nowhere but is a planned and potentially educative process.

## *An Invitation to Read Further*

Considering the fact that the book has at least 32 chapters it was extremely difficult to present all the views shared by the authors and I therefore leave it to other readers to explore in detail. My final comment is that engaging with this book was a rewarding experience and I am left richer.

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