Weaving Cloths:
Research Design in Contexts of Transformation

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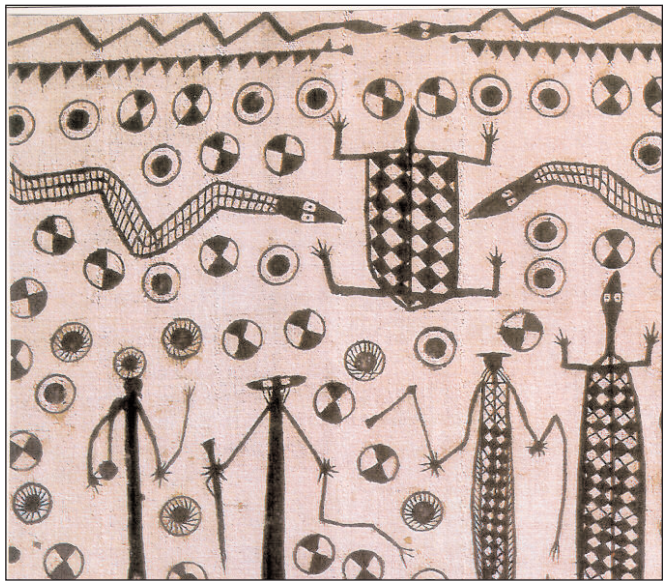
Abstract

Through storytelling, I apply methodological and epistemological reflexivity to ask questions about the way in which environmental education research is framed in transformational settings. I ask questions about the role of research teachers/supervisors in the "weaving enterprise" or the research process. Do we have the dual task of developing contextually relevant frameworks, and of making sure that these frameworks are not adopted on an "industrial scale"—in other words, as new paradigms which have the potential to narrow research possibilities? The paper concerns itself with a broader question, notably the potentially debilitating effects of mass production of research, or the globalizing of knowledge production. The story I use to raise these, and other questions for consideration by teachers/supervisors of research is a research workers story (my own), constructed between 1992 and 1996, in a context of rapid socio-political and educational transformation in South Africa (Lotz, 1996). In addition to the above, the paper opens a debate about reflexivity as research methodological rigour.

Résumé

Par le truchement des récits, j'ai recours à la réflexivité méthodologique et épistémologique pour poser des questions sur la façon dont la recherche en éducation environnementale s'insère dans des contextes transformationnels. Quel rôle les enseignants et les superviseurs qui évoluent dans le domaine de la recherche jouent-ils dans cette « opération de tissage » ou processus de recherche? Nous revient-il la double tâche d'élaborer des structures contextuellement pertinentes et de veiller à ce qu'elles ne soient pas adoptées à une « échelle industrielle », c'est-à-dire qu'elles ne deviennent pas de nouveaux paradigmes susceptibles de restreindre les possibilités de recherche? L'article aborde une question au spectre plus large, soit celle des effets potentiellement débilitants de la production de masse en recherche, ou de ceux de la globalisation de la production du savoir. Le récit auquel j'ai recours pour souligner ces questions parmi d'autres et attirer sur elles l'attention des enseignants et des superviseurs du secteur de la recherche est le mien : l'histoire d'une chercheuse telle qu'elle s'est déroulée, entre 1992 et 1996, dans un contexte de rapides transformations sociopolitiques et éducatives en Afrique du Sud (Lotz, 1996). En plus des éléments précités, l'article lance un débat sur la réflexivité en tant que rigueur méthodologique dans le domaine de la recherche.



In the Northern Part of the Ivory Coast, narrow strips of cloth are woven locally. The lively Senufo Poro society masquerader designs (telling their own story) are painted onto the cloth with a green paint made from boiled leaves (picture above). Fabrics in Africa are frequently locally made and may be restricted to royal or elite use, and often have cultural and social significance. The most well-known and popular African cloth, "Kente Cloth" from Ghana, is known by its Asante name, nsaduaso, which describes the process, meaning "***a cloth hand-woven on a loom***." Both men and women weave and different looms are used. Because they must look after the house and children while they work, women generally sit in front of a fairly wide loom that is fixed in one place. The woven pieces made by women are wide enough to be used just as they come off the loom. Men, on the other hand, are free to take their looms to an area where they may join their friends and weave in a companionable way. By tradition, men work on a narrow, portable loom that produces long strips of cloth, which are combined into a wide range of varied effects. Mechanization of the loom has seen both men and women employed to set up, and manage the weaving process on power looms in large factories. Mass produced cloth often uses stencilled images. However, even when African styles are influenced by European ideas, they depart from the original idea with verve and elegance and, in the process, become uniquely African (Blauer, undated, describing weaving traditions in Africa).

Cloth Woven in Africa

Africa is a place of many beautiful cloths. Bright, textured and varying, most are hand woven. The threads are constructed using a variety of raw materials through the labour of many people. The cloths are woven on many different (usually hand-made) weaving looms, which shape the cloths which often carry cultural and symbolic significance (Blauer, undated). Increasingly this enterprise is becoming highly mechanized in the major textile producing centres in Africa, influenced by the importation of machines and technologies produced elsewhere in the world. Labour processes change to managing the machines instead of spinning, selecting and weaving the thread, a change which affects the texture, quality, historical and cultural significance of the cloth.

I Open with My Story—
I am a Weaver of a Hand Woven, Colourful, Textured Cloth . . .

In this story I apply methodological and epistemological reflexivity to construct new frameworks for doing research in the South African context. For example, I see contextual relevance and contributions to transformation as significant features for judging research. I illuminate the findings of earlier research (through telling my story) in which modernist notions of empowerment in transformational settings appear to be problematic. I recognize that ambivalence and appropriations are part of the messy realities of our epistemological context (see also Masuku's research on indigenous knowledge, 1999).

I ask questions about the role of research teachers/supervisors in this context. Do we have the dual task of developing contextually relevant research frameworks (looms), and of making sure that these frameworks are not adopted on an "industrial scale"—in other words as new paradigms to replace the "old" or "Western"? It seems that our tasks as research supervisors may include reflexive and contextual co-construction of research frameworks (looms) with colleagues and students; teaching weaving, and clarifying to those who will inspect the cloth the contextual criteria that needs to be applied in the judgement of the cloth (Janse van Rensburg, personal communication, May, 2001).

While this story, and the questions, are set in South Africa as a particular context of transformation, the questions may be more widely applicable. Janse van Rensburg (personal communication, May, 2001) suggests that "these same tasks may be at hand wherever environmental educators are concerned about the debilitating effects of mass production of research according to limited and limiting frameworks, or shall we say the globalization of knowledge production?"

Introducing the Context in which I Work and Write

I have an interest in environmental education research practices which may meaningfully contribute to social transformation towards equitable and sustainable living in healthy environments (Lotz, 1996; Janse van Rensburg, 1996). The context in which I work and write is characterized by significant local and global challenges, and the need for deep-seated socio-political and socio-economic transformation in a country (South Africa) which bears many deep-rooted individual, social, and institutional scars of apartheid, an extreme modernist aftermath of colonial imposition. This country, which is my home, is situated at the southern tip of Africa. It forms part of a continent which is reeling from the impacts of colonial imposition, and the effects of neo-colonialist models of inappropriate development, characterized by political and economic agendas of the West, which manifest themselves in the impacts of structural adjustment programmes introduced by global AID agencies, the World Bank and the International Monetary Fund (see for example, Rahnema, 1997; Tegegn, 1997; UNSRID, 1995).

South Africa, and Africa more broadly, is characterized by gross socio-economic inequality and growing poverty which are increasingly being linked to patterns of globalization, trade, global capitalism, and ideologies of progress. In contexts where livelihoods are often dependent on access to, and use of the natural resource base, wide spread environmental degradation takes on life threatening, political dimensions, and environmental education processes become significant as critical processes of re-orientation and change with political, economic, social, cultural, and biophysical dimensions (O'Donoghue, 1993; O'Donoghue & Janse van Rensburg, 1995). In educational contexts generally characterized by a combination of mis-education and poor education, curriculum research to guide, challenge, and shape environmental education processes manifests itself as a socially significant, but complex task (Lotz 1996).

Introducing My Story [The Cloth I Write About]

The woven cloth (my story) I talk about is a few years old already, well worn and somewhat faded by now, as old cloths tend to become (Lotz, 1996). My story tells how I, in a four year project, engaged with teachers in a participatory action research project to explore the potential of participatory materials development for curriculum development, professional development, and educational transformation processes in the lower primary grades. The story is recounted as three phases of a research journey:

- *Phase one*. "A journey '*towards*' socially critical environmental education"—in which I explored dimensions of the research context, contextualized, and located the research methods—epistemologically, ontologically, and

methodologically in the context of transformation in which I was working. I also undertook a first cycle of enquiry—working with a number of teachers to trial and test a set of materials. In this phase I illuminated methodological and epistemological weaknesses in process and orientation.

- *Phase two*. "A journey '*with/in*' socially critical environmental education"—in which I reflexively engaged the weaknesses articulated in phase one of the research through ongoing inquiry with groups of teachers developing materials. This phase further served to engage and clarify dimensions of the research context and process, and deepened the methodological and epistemological critique opened up in phase one of the research.
- *Phase three*. "A journey '*beyond*' socially critical environmental education"—in which I presented a tentative critique of the epistemological assumptions of the critical paradigm, the assumptions of socially critical environmental education and presented a reflexive perspective on emancipatory action research. Through engaging post-structuralist lenses, I was able to illuminate how the socio-historical practices and conventions (including the paradigmatic framework that I had selected) had shaped the research (Lather, 1991; see also Stronach & Maclure, 1997; Usher, 1996), and I ended the research project by articulating a range of multiple endings to the research narrative, in an attempt to disrupt the notion that their might have been any fixed recommendations, and to illuminate the socially constructed (multiple) possibilities within the research.

The story was set between 1992 and 1996 in the Western Cape, a province of South Africa—an historic, exciting, challenging, and difficult time in our history. A time of social and political change, a time of creating new frameworks and processes to enable transformation of society, a time in which the space was created for confronting environmental, social, educational, and political injustice and histories of oppression amongst people in South African society. A time in which the social construction of knowledge was centred in democratic debate, social life, and educational policy-making. A time in which critical intellectual traditions won the space to argue for redress and social transformation in all arenas of society, including formal education and research (see for example Christie, 1991; ANC, 1994; Jansen & Christie, 1999). A time in which environmental education was mooted as a process of social transformation (Janse van Rensburg, 1995) and a time where environmental education processes provided impetus and orientation for educational change and transformation in schools. A time when participatory action research was viewed as socially transformative, emancipatory, socially critical (Savahl, 1993; Robottom & Hart, 1993), and empowering (Lotz, 1996; Robinson, 1992; Davidoff, 1993; Naidoo, Kruger, & Brooks, 1990).

Introducing my [New] Role as a Research Supervisor . . .
My Questions and the Focus of this Paper

While many of the features and ideals of our early democracy remain intact, many have become jaded and tension-laden (Taylor & Vinjevold, 1999; Jansen & Christie, 1999; Janse van Rensburg & Lotz-Sisitka, 2000), and are characterized by ambivalence, ambiguity, and uncertainty (Bauman, 1991, 2001). New, more complex challenges seem to be arising in all dimensions of our lives and work, including environmental education practice and research (see for example, O'Donoghue, 1999 on "Participation, an Under-theorised Icon"; Janse van Rensburg & Hughes, 1998 on "Re-searching Rigour"; Janse van Rensburg (1999) on "Judging Knowledge Claims"; Gough (1999/2000) on "Interrogating Silence;" and Janse van Rensburg & Lotz-Sisitka (2000) on "Ambiguous Steering Ideas."

I now work with many different weavers (my colleagues and students) to design and weave their cloths, five years since my story was told for the first time. I am now, what the academy would see as a "weaving instructor," more commonly known in these circles as a research supervisor. Because I work with students from many different cultures and language groups, I seek help in understanding and working within the power relations and the ambiguities of our epistemological context, as I struggle to clarify some of the challenges of richly textured socio-cultural (environmental) education research in a context of transformation.

I am using this storytelling opportunity to ask questions about how we come to weave our cloths, how we come to make the design decisions that are significant in the social, cultural, educational, and environmental contexts in which we live and work. I also ask questions about how, in Africa, we should undertake this enterprise, so that we may continue to weave cloths that are bright, textured, and varied, cloths that will express and explore our patterns of noise, and our patterns of silence (as a travelling textworker challenges us to do—see Gough, 1999/2000).

And I note the voice of this travelling textworker who, from an academic seat in Australia, remarks challengingly on research and curriculum work in Africa, and illuminates (through his epistemological and methodological textworking lenses) that the research enterprise itself may, in fact, constitute a form of civilizational racism through globalizing acts which naturalize privileged attitudes towards, and beliefs about the nature of reality and the construction of knowledge (Gough, 1999/2000). And I wish to explore further his perspectives and view that "all knowledge systems are sets of local practices" which can be "decentred" (Ibid., drawing on David Turnbull, 1997) through telling my story. Gough (1999/2000) notes, in commenting on the South African/Australian institutional links project in which we worked collaboratively on documenting our research stories, that there are some "small signs" that illuminate a focus on "learning from within" in the collaborative

South African /Australian research work. This involves ". . . basing the text materials we are developing on local stories and instances of textwork rather than developing South African 'versions' of imported paradigms . . ." (p. 116). I wish to explore some of the dimensions of this work further in this story, by probing the significance of what we might mean by a local story.

In this process, I probe some of the many dimensions of the weaving process, and I ask questions about the design decisions we make in environmental education research. And I recognize that research, like weaving has many faces:

> It is a craft, a medium for working directly with fundamental materials to create joyful mixtures of textures and colours, to feel the accomplishment of mastering the tools and learning the steps, and to explore the discipline of fine craftsmanship. It is an art, an expression of our time, which can have the brilliance of a painting, the dimension of sculpture, the shape of invention, and the form of imagination. It is [can become] an industrial product made speedily by the power loom, but unchanged in its basic construction of interlocking threads, and it is [or can be] as individual as the creator will make it. (Regensteiner, 1986, p. 7)

It is within these possibilities that the issues of research design decisions reside.

Finding, Spinning, and Dying the Threads: Considering the Research Context

In this part of the paper I describe the dimensions of context that I considered significant when designing my research.

I refer to these dimensions of context as the threads that were needed for the weaving enterprise. Here I briefly describe the varied colours and textures of some of these threads, as they appeared to me at the time in a complex, uncertain educational context in transformation.

These threads were illuminated through a deepening understanding and clarification of the South African socio-ecological and educational context; my research history (or lack of research experience at the time), my life history and the history of project I was working on. I described these as the "socio-historical context of the research," and illuminated the significance of these threads in relation to the epistemological, ontological and methodological design decisions that I was making at the time (see Lotz, 1996, p. 20).

The Threads in My Story

To clarify the different threads that I brought together in my research, I undertook a series of research tasks. I did this to provide a grounding—a clearly articulated justification for research design decisions I made at the start of the research project. I saw the process of probing for conceptual clarity, and

contextualizing and locating the research question as a way of setting directions for the research journey. I also saw this as a significant way of ensuring the rigour of the research account (and therefore validity; see Mishler, 1990); derived from

> . . . articulation and reasoned justification of [my] educational intentions, . . . intended to reveal the reasons for [my] professional actions and enable those reasons to be subject to critical scrutiny (by myself and others) . . . (Stevenson, 1995, p. 200).

Participatory materials development. At the start of the research project I reviewed, in some depth, the range of documents and materials that provided insight into the development of the *We Care* materials (1987) as I, through my research project, planned to take this materials development initiative further by adapting it for the lower primary grades. Through this review, I was able to identify some of the tensions arising in curriculum and materials development research in South Africa at the time, in which technicist models of change were being questioned through broad-based critique of Research Develop Disseminate Adopt (RDDA) approaches to materials development (Robottom, 1991; O'Donoghue & Taylor, 1988), and curriculum work. I therefore chose to adopt a participatory approach to materials development. This thread provided some of the justification for the participatory nature of the research project.

Environmental education as a site of transformation in formal education. I broadened my enquiry to clarify, through an historical overview, the emergence of environmental education in the context of an educational system at risk or in crisis; clarifying the potential role of environmental education processes as a response to the global environmental crisis, and the educational crisis in South Africa (Schreuder, 1995). To do this, I interrogated the site of my research—the lower primary grades in the formal education system in South Africa, and I explored the history of the contextual realities of education in this sector; and, I highlighted some of the more significant challenges facing educational transformation in this sector. The impacts of apartheid policy in the lower primary grades were, at the time of my research, manifest in inefficiency, unqualified teachers, rigid and outdated curricula, weak and insufficient materials, lack of curriculum development and materials development skills, high teacher:pupil ratios, and severe disempowerment of teachers (King & van den Berg, 1994). The devestating effects of poor quality education, inequality, and disempowerment in the system, and a growing understanding of the nature of *miseducation* brought about through modernist conceptions of knowledge and power, provided the impetus for a choice of emancipatory action research as methodological process in my research. This approach appeared to provide the conceptual and methodological tools for responding to the need for educational transformation in this sector, and it seemed congruent with the participatory turn in South

African environmental education curriculum and materials development (see O'Donoghue & Taylor, 1988; O'Donoghue 1999).

Challenging the cultural productions of the modernization process. This line of enquiry into the contextual roots of my research interest and practice, provided more than one colourful thread for the weaving of my cloth. It also led to a review of perspectives on social change in relation to environmental problems; and, it highlighted many of the cultural productions of the modernization process—such as technicism, scientism, developmentalism, determinism, an obsession with progress, and the socially constructed nature of risk (see, for example, Zohar & Marshall, 1994; Beck, 1992; Docherty, 1993; Orr, 1992; Douglas & Wildavsky, 1983). These insights placed the research design in the realm of social transformation, and I, at the time, was aware of the nature of this challenge, articulated by Zohar and Marshall (1994):

> Real social transformation requires that we change our basic *categories* of thought, that we alter the whole intellectual framework within which we couch our experience and our perceptions. *We must, in effect, change our whole mind set, learn a new language*. (p. 16; my emphasis)

What was the Meaning of This for My Research Design?

At the time, I became more conscious of the need for a critically reflexive orientation to modernist orientations to environmental education and research more broadly. I drew on the positions of Taylor (1995), O'Donoghue (1993), Fien (1993) and Huckle (1991) which highlighted the need for environmental educators to respond to the environmental crisis in ways which actively challenge the assumptions, practices, and cultural productions of modernity. I also drew on the position of Janse van Rensburg (1994, 1995) which recognizes the need to *interpret environmental education and research in the context of social change*, and her view that *environmental education has a key role to play in social transformation*.

Critical theory as a thread. I realized that I would need to make design decisions that would enable the learning of a new language and I turned to critical theory to further guide my research. I reviewed the epistemological, ontological and methodological assumptions of critical theory, particularly as they have been articulated in environmental education literature (Fien, 1993; Robottom & Hart, 1993). I found that the socially critical educational purpose, the critical goal for environmental education (Fien, 1993), the proposed collaborative roles for teachers, the view that learners were active generators of knowledge, and that curriculum supporters were viewed as participants in new problem-solving networks, and that all participants in the research/learning processes were able to challenge power relationships (Robottom & Hart, 1993)—consistent and congruent with the research aims and the contextual threads I had explored at the start of the project—as I understood them at the time.

Robottom and Hart (1993) note that, by consciously perceiving and enacting our professional work in particular ways, we are, in fact, "ideologically prefiguring" (p. 27) our activities on a broader educational front.

My Questions . . . As I Seek Help in My New Role as Research Supervisor

Having explored some of the threads of my own research story, I now draw out some questions about research threads in general. The questions I ask are about the significance of contextually located research design decisions, and the tensions that arise at the interface of context/ideology in research:

- In what way is contextual relevance established in research?
- How significant is the relationship between contextual relevance and the processes of ideological prefiguring in research design?
- What are the methodological processes that might help novice researchers explore these relationships?

Choosing the Loom: Frames that Steer

In this part of the paper, I tell how I chose a loom on which to weave. I reflect on the mechanization of the machinery that shaped the weaving process, and I examine the way in which the loom (framework) I chose steered my research in a particular way.

At the time, I interrogated these steering choices for their ontological, epistemological, and methodological significance and "suitability" in relation to the contextual, textured threads that I had illuminated at the start of my research project—I wanted a loom that would give me the best weave.

Like weavers faced with the choice of working on a Branch loom, a Backstrap loom, a Table loom, a Counterbalanced loom, a Jack Type loom, or an Upright loom (Regensteiner, 1986), I, as researcher, was faced with a range of available choices for framing my research.

These choices, at the time, were provided by the "then powerful" international environmental education research paradigmatic frameworks (see Robottom & Hart, 1993; Mrazek, 1993), guided by wider educational and research discourse (Carr & Kemmis, 1986; Kemmis, Cole, & Suggett, 1993; Lather, 1986; Apple, 1985; Giroux, 1988).

The Power of the Loom

As described above, I located my research design decisions in a deeper understanding of the research context. I made research decisions which were clearly influenced by the critical paradigm in environmental education research (as described by Robottom & Hart, 1993). To guide the design

decisions, I drew on the available frameworks (looms) described in the research literature as research paradigms. (Robottom & Hart, 1993; Mrazek, 1993). These framings are often presented to us by our research advisors as options to guide methodological choices (Robottom & Hart, 1993; Mrazek, 1993; Connole, 1998).

On looking back, I note a telling paragraph in my story, which raises many questions about the power of these framings in the context of novice research:

> For a comprehensive discussion on the paradigms debate in environmental education and environmental education research, refer to Kemmis, Cole and Suggett (1993), Robottom and Hart (1993) and Mrazek (1993). For the purposes of this study, a comparison or argumentation of these paradigms was not deemed necessary. A decision was made to *contextualise the choice to work within a socially critical theoretical framework, and to justify this choice* (Lotz, 1996, p. 79; current emphasis).

Were the methodological decisions I made based on the need to frame the research according to the epistemological, ontological, and methodological framing of the paradigm (and thus little more than a response to the power of this imperative in the academy)—did this shape my interpretation of the context, and thus colour the threads? In going through the intellectual labour of justifying the research design decisions in phase one, I was clearly concerned with designing the research out of context, but it seems that I was, at the same time, also imposing a paradigm on the research design (articulated by the title of the first phase: "A journey *towards* socially critical environmental education" (Lotz, 1996, p. 19). I, at the time, was clearly caught by the power of the intellectual constructions contained in the paradigmatic framing of critical research in environmental education.

I am left with questions about the power of the loom. In the weaving process one obviously needs a loom, and the loom clearly shapes the texture, width and other features of the cloth. As I reflect on the choice I made, I question whether I, as novice researcher, was using a stationary loom, like the women in West Africa (for lack of other options)? Or was I, like many people working in the textile industry, merely finding ways to manage the power looms that are manufactured elsewhere? Are we, by choosing to work within one or other powerful research paradigm, not mechanizing research processes in environmental education?

Janse van Rensburg (personal communication, May, 2001) reflects that in South Africa, there are a number of examples of research studies which illustrate the mechanizing influence of the power looms (paradigms), or ways in which the method, or the paradigm can come to constrict the potential of the research. Problems that she has observed amongst researchers adopting critical/participatory/action research framework (for

example) include rigid "follow the steps" studies, or researchers withholding themselves from engaging in the research situations because they felt it was inappropriate to influence the situations (as facilitators and researchers)—resulting in limited insights and very little transformation.

Assessing the Loom I Chose

In my story (Lotz, 1996) I encountered a number of difficulties with the framework or critical paradigm. During the first and second phases of the research project, I laboured with the many complex implications of first coming to understand the implications of, and then the complex processes of working within this research paradigm (undertaking the journeys *towards* and *with/in* socially critical environmental education). I tried to use the process and ideologically shaped intentions of socially critical action research driven by an emancipatory interest as a ". . . lever to 'unpack' the complexities of thinking about education . . .," and I used the ideologies and ideas of emancipatory action research as a ". . . strategy for the transformation of teaching practice" (Savahl, 1993, p. 47). I saw the commitment of critical social science to collaborative action (Kemmis, 1988) as a process which, through a reflection and evaluation process, could produce further action. I saw this research design as a process which would enable teacher participation in the development of resource materials which would, in turn, transform their practice. As I tried to implement these ideological positions and framed processes (Robottom & Hart, 1993), I became acutely aware of issues and problems in the research process, for example:

- my limited views and understanding of participation—I realized that there were many complex dimensions to participatory processes;
- the ideological and methodological assumptions I was making about the notions of participation, empowerment, facilitation—I assumed that I was able, through establishing a participatory action research project, to empower teachers, through my role as facilitator;
- I started to question and challenge issues of power associated with my role in the research/ materials development process, and with this the role of the researcher in action research;
- I started to question my understanding of knowledge construction;
- I worried about representing the voice of teachers—through processes which were objectifying the research participants;
- I realized that critical research could become little more than social engineering of others.

I questioned the transformative value of the research process and outcomes in the first phase of the research. In later reflections, I noted that the critical paradigm, as explored in my research reflected:

- a deficit approach to change in which the other is cast as someone who is judged as needing improvement, enlightenment, and empowerment (Janse van Rensburg, 1994, p. 13);
- the application of institutional rhetoric, deferring to participatory processes while imposing meaning on situations in the name of emancipation and legitimization (O'Donoghue, 1994; Lather, 1991);
- rationalist assumptions, goals, and pedagogical practices such as empowerment of others and giving others voice (Ellsworth, 1989), and the dependence on the vocabulary of politics and culture which were associated with modernity's most sacred "root metaphors" (Bowers, 1984, p. 99); and
- conceptual overdeterminism (Lather, 1991).

My Questions ...

- In what way can an exploration of context enable novice researchers to better clarify their research design decisions?
- Where do the choices for research framings reside, and how are they presented and made?
- How does one, as research supervisor, enable novice researchers to make research design decisions that do not narrow their choices?
- How does one clarify these choices at the start of a research project, particularly when you are inexperienced, and often lack the depth of clarity in terms of the complex constructions that shape these framings?

In a context where the ideals for democracy, equity, and social and environmental justice are increasingly jaded, ambivalent and uncertain, I find that critical emancipatory zeal and the ideologies shaping much of the transformation rhetoric are a strong social force still motivating many of the researchers that I work with. Like I did, many of the Masters students in our post-graduate research programme are selecting critical orientations from the framings articulated in the research literature (Mrazek, 1993; Robottom & Hart, 1993; Connole, 1998) to frame their research, wanting to empower others through participatory and reflective processes that will (hopefully) enable change in social and educational life (see, for example, Mbanjwa, 2001; Mhoney, 2001; Lupele, 2001; Atiti, 2001).

Others engage interpretive processes to reveal insights into educational processes and practices which may inform the way environmental educators view and conduct their practice (see, for example, Raven, 2000). And some of our research students are engaging post modern sensibilities and post structural lenses through which they hope to unravel and reveal silences, textures, and insights into the hitherto hidden value of indigenous knowing in/as environmental education processes (see, for example, Nehluvhalani, 2001; Masuku, 1999, 2001); or epistemological tensions inherent in contextual practice (see, for example, Masuku 2001; Price, 2001).

All have chosen, or are choosing, their particular looms or frames to steer their methodological choices, grounding them in epistemological and ontological perspectives, available to them through their experience of the context in which they work the literature, and the conventional framings of these processes in research texts.

An Open-Ended Challenge?

This process of making a choice about a loom or framework to guide a research design might seem a fairly conventional process, but:

- How do we avoid the problem of steering ideas which may become mechanized, sedimented, and narrowing?
- How, as research supervisor does one mediate these ideas / frameworks in ways which do not mechanize and narrow options and creativity in research, or blind researchers to aspects of the research context which are not illuminated by the chosen framework?
- How do we confront the power of the framings and how do we avoid the temptation to import frameworks or pick them off the (Western academic) supermarket shelf?
- How do we enable open-ended challenges of these framings?

The act of conducting a research project according to a clear framework is often more than enough of a challenge for researchers in the context of the requirements of formal academic research (particularly at the masters level), the task of tackling the open-ended challenge can be just too much!

At what point does one encourage fellow researchers embarking on journeys of socially transformative work to challenge and deepen their understandings of the complex constructions which constitute the framings they choose, and how do we do this, given the nature of power relations inherent in student-supervisor research relationships and the dangers of ongoing colonization of culture and social life in Africa through the research enterprise (Gough, 1999/2000)? *How do we engage with the increasing mechanization and globalization of educational research, often introduced by these conventional framings, and entrenched by the limiting opportunities of the academy?*

Weaving the Cloth: Steering our Stories in Context

So how did I weave this cloth, using the threads and the loom?

This part of the paper tells the story of the process of weaving the threads onto the warp and weft of the loom. I tell how, in the research, I was judiciously guided by processes of change, reflection and response. My story tells how patterns of the time, and disruptions in context provided ongoing

possibilities for weaving, and for re-designing the patterns in the cloth (Lotz, 1996).

I describe how some of the threads changed colour, and how I was able to critically reflect on the shape and structure of the loom in the weaving process as I confronted dimensions of change and transformation in the context of the research process. I tell how my research design decisions were confronted, changed and re-adjusted in processes of reflexive engagement with transformational challenges in uncertain times.

I use this storytelling to clarify this reflexivity as research methodological rigour, and I consider questions about the significance of this methodological process in change-oriented research. And I ask questions about the research processes and skills needed to weave new patterns that are socially and culturally significant in transformation contexts.

Engaging the Problems

In the second phase of my research (a journey *with/in* socially critical environmental education), I described some of the "shifting boundaries and changing destinations" of the research journey. I was reminded (by Fullan, 1991) that pre-determined pathways in social science research are likely to be re-directed, and that change is not "a fully predictable process" (p. 107). I realized that no pre-determined ends were certain, or in fact, that I would be able to hold these in sight. At the end of the first phase of the research journey I became acutely aware of the need to challenge many of the assumptions and ideas that were informing the research I had chosen to undertake. Rather than critiquing the paradigm from the outside, I chose to continue engaging with/in the participatory action research process I had started in phase one. I tried, in the second phase of the research to respond to unresolved experiences and, through this, I was able to establish an ongoing critical engagement with the research framework (the loom) that I had chosen for the study.

During this phase, clarity beyond technicist notions of action research emerged through consistent engagement with teachers around the issues of learning to engage with emancipatory action research. The multi-dimensional nature of action research became apparent through multiple cycles of enquiry in different, yet interrelated "sites of change" (Lotz, 1996, p. 203). In a reflexive response to the epistemological, methodological, and processural weaknesses that I had identified in the first phase, I made changes to the research design and process, as I began to focus on the development of *enabling conditions* for authentic teacher engagement with curriculum and professional development processes, rather than on gaining teacher input into a set of materials (participatory materials development). I also focussed on working with teachers to engage substantively with local environmental issues rather than on designing activities within a pre-defined conceptual

framework for environmental education in the lower primary grades, as a focus for the materials development work. I realized that it was not possible to experience action research as "neat, controlled or contained cycles of planning, action and reflection" (McTaggart, 1991, p. 2), and I was able to engage the paradox within the research design, in which I treated the action research process in the first phase of the research as an implementation device for externally conceived change ideals, albeit with socially transformative intent. I established a deeper questioning of the assumptions of critical enquiry, and the assumptions of emancipatory orientations to research. I noticed, and noted the dangers of praxis-oriented empirical work, as potentially narrowing impositions and reification on the part of the researcher, in which subjects in the research become objectified and reified by their social conditions (Ellsworth, 1989), and drawing on Lather (1991) I tried to seed a more ". . . collaborative approach to critical inquiry . . ." (p. 69). Through this process, I developed a reflexive perspective on emancipatory action research, in which we (participants in the second phase of the research) began to challenge the social role of the researcher (myself) in participatory, critical research.

In this process I established a different pattern for the cloth I was weaving, different to the pattern I had intended at the start of the research. I started selecting new, different threads to weave with.

Reflexivity as a Significant Methodological Thread

In attempting to reflect on, and reveal some of the assumptions which underpinned my research design decisions to adopt a socially critical and emancipatory orientation to action research, and through this, some of the emerging issues arising from the first phase of the research, I found the concept of *reflexivity* a useful conceptual tool/construct. I drew on Bozalek & Sunde (1993/4) who noted that reflexivity involves "critical self reflection both of the researcher her/himself and the effect that he/she has on the research process" (p. 78) an important dimension of the research design in phase two of the research. I also found Wilkinson's (1988, cited in Bozalek & Sunde, 1993/4) notion of *functional reflexivity* useful. This notion is concerned with the realization that knowledge production and legitimization, research action and methodologies and their use within a research project are historically structured and situated. Janse van Rensburg (1994, citing O'Donoghue, 1993) identified the role of reflexive orientations in environmental education research as being concerned with broad processes of social transformation through ". . . critical and contextual review and action . . ." (p. 10).

These methodological insights enabled me to inform the second phase of the research process, so that I was able to take further the research in phase one, further enabling us (research participants) to engage with issues of change within the research process as it continued to unfold. This enabled us

to clarify and embrace action research processes as critical social processes of change, rather than the management, facilitation, or empowerment of others through action research strategies. I was also, through this ongoing reflexive engagement in phase two of the research, able to critically challenge the participatory orientation of the project, and expose the ideological framing of critical inquiry paradigms in educational research (see above), and I was able to recognize this framing of research (the loom) as a "discourse coalition" (Beck, 1999, p. 24) that holds power in (environmental) educational research.

I was also able to offer an internal and tentative critique of the research design decisions I had made at the start of the research project, and I was able to illuminate my growth in understanding of the paradigms debate in educational discourse. I drew on Lather (1991) who noted that ". . . to still pose one paradigm against the other is to miss the essential character of the moment as an exhaustion with a paradigmatic style of discourse altogether" (p. 108); and I became acutely aware of the tension which arises in educational research—while we need conceptual frames for purposes of understanding and orientation, framing or classifying research and researchers into neatly segregated paradigms or traditions, this does not reflect the untidy realities of real scholars, and it may become an end in itself (Lather, 1991; Atkinson, Delamont, & Hammersley, 1988). I was able to see that emancipatory interests are goals that are struggled for, and defined in specific contexts, under specific historical conditions.

I was able to weave a new pattern for my cloth, in which I could problematize some of the deeply-rooted assumptions of critical pedagogy (for example, the tendencies amongst critical intellectuals to adopt crusading rhetoric in attempts to empower others), in a way that might contribute to the resituating of emancipatory work (Lotz, 1996; Lather, 1991). I was able to do this through recognizing, illuminating and engaging with the ambiguities, the tensions, and the difficulties inscribed in the research design decisions I had made at the start of the project. I was not alone in identifying such ambiguities and tensions, as Davidoff (1993) noted at the time:

> . . . the emancipatory bandwagon, while offering a challenging and exciting journey, has not, I fear, begun to address the issue of how difficult it is to become a "real" emancipatory action researcher in South Africa as . . . most of our structures mitigate against the development of action research practice. Hence the importance, hence the difficulty. (p. 76)

Assessing the Cloth

And I stand back in review of this story, and ask the question: Did this methodological rigour—in the form of reflexivity—enable me to weave a more textured, richer, brighter cloth? Were the patterns on the cloth socially and culturally significant in the community and context in which I was working? Did the cloth hold significance in the context of research in transformational settings?

Through this reflexive stance in the second phase of the research new ways of developing materials with teachers, enabling enhanced approaches to participatory materials development in environmental education were established. The materials became more integral to processes of curriculum development and teacher professional development. Teachers established a range of context-significant environmental education initiatives in schools using the materials. I was also able to articulate a range of opportunities for revisiting our experiences with new perspectives which would enable me (and my fellow travellers) to further our journeys in learning about social transformation.

I realized that while I valued the wide loom, and that the cloth could have been produced more quickly by the power loom, I could also weave on the smaller, portable looms (traditionally only used by men in Africa). Knowing how to work with a range of different looms, I felt more able to manage the power looms, and I knew that I could also construct a different loom, depending on the materials I had available, and the patterns I could try out. I knew I could weave many different cloths that could be textured, richer, and brighter.

I ended my story by noting that:

> I have learned that we need to ask questions about what we have not thought to think, about what is most densely invested in our discourses and practice, and about what has been muted or repressed and gone unheard in representations of our practice (Dudley, 1992). It seems that *it is this growth of questioning and ideas in participation that can energise a perpetual spiral of change, in oneself (as researcher) and in community*. (Lotz, 1996, p. 305)

I ended the story with an understanding that we are able to steer our stories in context (drawing on the different looms that are available, the threads we find, and the patterns we choose); that we can challenge the mechanization of research through steering our stories in context; and that methodological reflexivity is a way of enabling the steering of these stories with rigour.

More Questions . . .

Janse van Rensburg (personal communication, May, 2001) notes that the challenge of this paper lies here, in opening a debate about reflexivity as research methodological rigour. She notes that much of the reflexive rigour we engage in research seems almost intuitive . . . and she asks the question:

- How does one work with students to engage the research situation, consider the emerging findings, change and reflexively adjust the research process with reflexive justification?

Scott and Usher (1996) remark that frameworks of postmodern theory argue for the foregrounding of how we construct what we are researching. In

this context, reflexivity is seen as a *resource*. It helps us to recognize that we ourselves (as researchers) are a part of, rather than apart from, the world constructed through research. They note that, by becoming aware of reflexivity in the practice of research, ". . . the place of power, discourse and text, that which in a sense goes 'beyond' the personal, is revealed" (p. 35). Reflexivity in research can therefore take different forms and can, for example, be personal, epistemic or disciplinary, and this in itself has implications for the very notion of "being reflexive" (p. 38) in research.

But I also note here, that questions about "being reflexive" in research may not be the only questions we should/could be asking.

Gough (1998), for example, recommends disruption of educational inquiry (see also, Stronach and McLure, 1997) when he notes that some modes of fiction (science fiction for example) can ". . . function as a 'diffracting lens' for the storyteller's eye, and in this way can help us generate stories which move educational inquiry beyond mere reflection and reflexivity towards actually making a difference in the world" (p. 119). He cites Haraway (1997):

> Reflexivity has been much recommended as a critical practice, but my suspicion is that reflexivity, like reflection, only displaces the same elsewhere . . . Diffraction is an optical metaphor for the effort to make a difference in the world. (p. 17)

Perhaps we should be asking:

- Should we, in fact, work with students to engage the research situation, consider the emerging findings, change and reflexively adjust the research process with reflexive justification?; and
- Is this an appropriate focus for our labour as research supervisors?

Conclusion

The challenge defined in the story telling is a question/s about (environmental education) research design in transformative contexts. How do we steer our stories?

How do we assemble the threads, what patterns guide our weaving, how do we choose or set the looms, and how do we make these choices in context? Do we, like the women in West Africa, settle for the stationary loom, which weaves a cloth that is wide enough to be used as it comes off the loom? Do we accept this because it appears to be our only choice, given the culture and context we live in? Or do we disrupt these patterns and can we, like the men, work on narrow, portable looms that produce a variety of long strips of cloth which can be combined into a large piece of fabric with varied effects? Or do we choose our job in the factory, where we manage the power looms that weave large rolls of cloth for sale to tourists and others that appropriate the designs that characterize African cloth? Do the mechanized machines

provide the cloths we want, and how do we describe and re-examine the features of the cloth/s that emerge? And where do we focus our labour?

In this paper I ask questions about the role of research teachers/supervisors in contexts of transformation. Do we have the dual task of developing contextually relevant research frameworks (looms), and of making sure that these frameworks are not adopted on an industrial scale (in other words, as new paradigms to replace the old or Western)? As Janse van Rensburg (personal communication, May, 2001) notes, it seems that our tasks as research supervisors may include reflexive and contextual co-construction of research frameworks (looms) with colleagues and students; teaching weaving, and clarifying to those who will inspect the cloth the contextual criteria that needs to be applied in the judgement of the cloth (Janse van Rensburg).

Popkewitz (1984) notes that the value and potency of social science research does not lie in the utility of the knowledge, but rather ". . . in its ability to expand and liberate the consciousness of people considering the possibilities of their human conditions" (p. 7). In this paper I have argued that research design decisions are an integral and significant dimension of this process, particularly in contexts of transformation.

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