Writing Our Lived Experience: Beyond the (Pale) Hermeneutic?

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I am not just a researcher who observes life, I am also a parent and teacher who stands pedagogically in life. Indeed, is it not odd that educational researchers often seem to need to overlook the children’s interests (including their own children’s interests) in order to pursue their research careers which are supposed to be in the interests of those very children? (Max van Manen, 1991, p.90)

Being in the World?

The camera takes in a broad landscape of low, smoky-blue hills, with a perfectly clear, bright blue sky above. Here and there a window obliquely flashes back the sun, as the point-of-view zooms forward and down, into a new suburb of an Australian city. The houses here are all recent, as the swamps and fields are filled and turned into housing estates, and the camera sees that many of them still have no lawns or fences. Dogs and children play in the streets and yards. In a continuing long zoom - the viewer is made vertiginously conscious of the unnatural changes of perspective - the camera slides up a short street, to a limestone-brick house with green-framed windows and a shiny corrugated steel roof. One window is open, and the viewer is carried through it into an untidy study, dominated by a computer surrounded by stacks of CD-ROMs and floppy disks.

A copy of 'School Stories' is sitting on David's desk, open at the beginning. A breeze catches the pages and flips them rapidly until, somewhere near the middle of the book, they slow and stop. The new page is suddenly no longer flat in the centre, but has begun mounding up into a small hill. The process continues, accelerating, so that the shape is soon a print-covered paper ovoid on a stem, which quickly expands out into broad shoulders. Features form on the front of what looks increasingly like a head, and a blocky body rises from the page, followed by two sturdy legs. In a few moments, a creature that looks like David, but composed of paper and print and much smaller, stands on the pages of 'School Stories' and looks around.

After a moment, the David-creature looks down at the page on which he is standing, and extends a hand to it. A tiny hand of paper rises from the page. He grasps it, and pulls a paper Peter from the pages of 'School Stories'. Together, they reach down and bring forth Carolyn then, in a paper-doll chain, Therese. They are born from the pages of text, into...the real world?

In this way, the fictive characters (David and the teachers and students with whom he worked, and Peter, his colleague and research supervisor) from the impressionistic novel 'School Stories' (Geelan, 1998) are evoked - and invoked - in a subsequent chapter of David's dissertation. There they consider the implications of various interview and paper-and-pencil survey data which David had generated (objectively?) from teachers and students in the 'real world'.

But, surely, this is the wrong way round! Shouldn't the 'real world' data take precedence over 'imaginary' data? Is not the point of classroom research to convey a trustworthy impression of teaching and learning?

Well, the novel is based on data that David generated from his lived experiences of/within the 'real world', not while locked away in a quiet room. The point of this particular piece of research writing, however, rather than to convince the reader of its trustworthiness through strategies of verisimilitude (Denzin & Lincoln, 1994, pp. 579-580), is to evoke in the reader a pedagogically thoughtful response.

For many interpretive researchers in science education, it would be preferable for the fictive characters to remain within the novel and for 'extra-novel' interpretations to be framed by the more 'trustworthy' data; that is, data which
can be relied upon to be highly credible and dependable. Such is the neo-hegemony of Guba and Lincoln's (1989) standards of hermeneutic inquiry. To have the reverse occur - for the subjective to 'refuse' to be subjugated and subsumed by the objective - might seem like a heresy for science educators.

But is not heresy really a matter of perception; a perception of radical unconventionality? And are not perceptions underpinned by (often invisible) standards of rationality against which we judge the meaningfulness of our experiences? So if, in science education research, we are to accept as legitimate unconventional accounts in which the subjective has a primary role then we need new standards of judgement (or conventions). In particular, we need new guidelines for reconceptualising our epistemological predispositions which lead us to interrogate in seemingly natural ways the text of interpretive research accounts while shutting out unfamiliar possibilities.

This text is part of our on-going collaborative project of paying thoughtful attention to our own and one another's teaching practices, theoretical perspectives and personal and professional values. As the epigram with which we have chosen to begin this paper suggests, we are not 'in the world' only as academic researchers. We live with loving partners and are proud fathers. We are colleagues and collaborators, and friends to one another and many others. David reads dozens of novels and is a member of a Christian church. Peter's spiritual quest is more mystical and less canonical, and includes commitments to yoga and meditation. David has recently completed his PhD and returned to the secondary school classroom, while Peter continues to work in postgraduate teacher education. We share an interest in the use of the Internet for promoting epistemological pluralism among our distance education students. These facts and facets are important because our research activity is explicitly value-laden, in stark contrast to modernism's project of rendering research value-free (or at least, value-hidden). We value certain knowledges, certain ways of teaching, certain ways of relating to family, colleagues and students. Our research is essentially the on-going story of our striving to embody these values more fully in our practice, and concurrently to maintain a critical orientation toward our own values and assumptions.

In this paper, we make a case for an alternative epistemology of research based on the hermeneutic-phenomenology of Max van Manen (1990). This interpretive approach to understanding the nature of a social phenomenon involves the researcher in making explicit the meaning of a particular lived experience, and generating a pedagogical thoughtfulness in his or her readers. The aim of hermeneutic-phenomenology is to create a dialogical text which resonates with the experiences of readers while, at the same time, evoking a critical reflexivity about their own pedagogical actions.

We illustrate our theoretical account of hermeneutic-phenomenology with an impressionistic tale (from 'School Stories') of David's lived experience in his school environment.

**Hermeneutic-Phenomenology**

A rigorous human science is prepared to be soft, soulful, subtle, and sensitive in its effort to bring the range of meanings of life's phenomena to our reflective awareness...(but it) is to attempt to accomplish the impossible: to construct a full interpretive description of some aspect of the lifeworld, and yet to remain aware that lived life is always more complex than any explication of meaning can reveal...full or final descriptions are unattainable. (Van Manen, 1990, p.18)

In science education research, the epistemological turn signalled the end of the dominant reign of the canonical epistemology (Bruner, 1986) and ushered in hermeneutic inquiry (Erickson, 1986). However, life was never meant to be as simple as the somewhat harmonious co-existence between these epistemological standpoints suggests. With the dawning of the postmodern era in the study of human experience (Hargreaves, 1994; Lather, 1991), further emergent epistemologies of research practice are vying for our attention, and are making problematic our sense of what constitutes legitimate research in science education.

In our search for a more meaningful way of knowing about and representing our experiences of the practices of teaching and learning science, we 'discovered' Max van Manen's (1990) hermeneutic-phenomenological approach to human science. Drawing on the work of Husserl, Heidegger and Merlau-Ponty, this approach combines, in a dialectical fashion, a phenomenological concern for describing our ways-of-being-in-the-world with a hermeneutic concern for interpreting the social-symbolic world. In science education, hermeneutic inquiry is most often conducted...
with an (epistemological) orientation towards re-constructing co-participants' intended meanings, which are then interpreted in relation to the researcher's strongly pronounced theoretical predisposition. In contrast, phenomenology focuses the researcher (ontologically) on immediate experience without being obstructed by pre-conceptions and theoretical notions, and drives the researcher to an understanding of the essential nature of social phenomena through the pursuit of questions such as 'what does it mean to be a teacher?', 'how does a teacher meaningfully experience the activity of teaching?'.

Van Manen holds the two approaches - hermeneutics and phenomenology - in a dialectical relationship, wanting to 'let things speak for themselves' while recognising that (social) phenomena need to be interpreted (through language) in order to be communicated to others. We were particularly taken with Van Manen's emphasis on the hermeneutic-phenomenologist participating in the research in the interests of acting out a set of pedagogical values:

> When we raise questions, gather data, describe a phenomenon, and construct textual interpretations, we do so as researchers who stand in the world in a pedagogic way...pedagogy requires a phenomenological sensitivity to lived experience...a hermeneutic ability to make interpretive sense of the phenomena of the lifeworld...and play with language in order to allow the research process of textual reflection to contribute to one's pedagogical thoughtfulness and tact. (1990, pp.1-2)

In recent years, we have adopted Van Manen's stance and approach as epistemological and methodological frames for conducting research in which our own lived experiences form a 'canvas' on which we paint portraits of science and mathematics teachers (Taylor, 1997; Geelan, 1997) and science teacher educators (Taylor & Dawson, 1998). We employ the literary/ethnographic methods of 'impressionistic tales' (John van Maanen, 1988, 1995) to illuminate mood, compose the subject, and reveal our 'methodological' brushstrokes. Our tales are not THE truth, but they also are not lies - they are the truest and, more importantly, the richest and most pedagogically valuable accounts that our understandings and reflections, our assumptions and perspectives, and our story-telling skills will permit us to present.

Nevertheless, in some quarters of our field, there is a perception of something 'odd' about interpretive portraits which depart, not so much from the realist tradition of truthful representation of an observer-independent external reality, but from the hermeneutic neo-tradition of trustworthiness (Guba & Lincoln, 1989). A distinctive feature of our work is a diminished regard for the trustworthiness (at least in Guba and Lincoln's sense) of our representations and a heightened sense of the immanent pedagogical consequences of our research texts.

This is not to say, however, that we pay scant respect to the teachers and students with whom we work. Indeed, we have a heightened sensitivity to their subjectivities and observe a strict code of ethics in our relationships with them (Chen, Taylor & Aldridge, 1998). But, in the process of writing our research, we take care to emphasise only those aspects of our textual characters which will serve our chosen pedagogical purposes.

**Bricolage**

In writing this paper, we have chosen to incorporate both our impressionistic genre and a more canonical style. In doing so, we acknowledge our allegiance to the epistemological pluralism of the bricoleur, who adopts a rationality and mode of representation that befits the nature of the context and the (pedagogical) purposes of the research project. Drawing on the work of Geertz (1983), Denzin and Lincoln (1994, p.9) speak of the *third moment* in the history of qualitative research as being characterised by *blurred genres*. This paper can be seen as one way in which this moment continues to be played out in contemporary qualitative research.

Similarly, Denzin and Lincoln's (1994, pp.2-3) images of qualitative research as a work of bricolage, and of the researcher as bricoleur, are strongly influential on the way that this on-going research project is being conducted. This image has much in common with Polkinghorne's (1992) "postmodern epistemology of practice", discussed below. Since this paper is both a representation of and part of an on-going research activity, it has taken on the character of a *bricolage*. In the same sense that the research activity may be described as "a pieced-together, close-knit set of practices that provide solutions to a problem in a concrete situation" (Denzin & Lincoln, 1994, p.2), this account is a pieced-together, close-knit textual product intended to represent certain research experiences, understandings and problem-approaches.
The product of the *bricoleur*'s labour is a bricolage, a complex, dense, reflexive, collage-like creation that represents the researcher's images, understandings, and interpretations of the world or phenomenon under analysis. This bricolage will connect the parts to the whole, stressing the meaningful relationships that operate in the situations and social worlds studied. (Denzin & Lincoln, 1994, p.3)

**A Postmodern Epistemology of Practice**

We value the holding in tension of incommensurable accounts and perspectives. This is a specifically postmodern reaction to monolithic modernist *grand narratives* (Lyotard, 1986) which strive to resolve and subsume all tensions and alternatives. Similarly, Polkinghorne (1992) describes a postmodern epistemology of practice for psychology:

> The psychology of practice is an example of the new pragmatism in action. It has come to understand that the human realm is fragmented and disparate and that knowledge of this realm is a human construction without a sure foundation. Yet this knowledge has not led to a retreat into a disparaging skepticism; rather, it has led to an openness to diverse approaches for serving people in distress. The psychology of practices body of knowledge consists of the aggregate of the professional community's experience of what has been beneficial to clients. The criterion for the acceptability of a knowledge claim is the fruitfulness of its implementation. The critical terminology of the epistemology of practice has shifted from metaphors of correctness to those of utility. (Polkinghorne, 1992, p. 162)

Many of these changes are reflected in the critical practice of education, and this positive, constructive response to the challenges of postmodernism is, in our opinion, to be applauded. The communication of "the aggregate of the professional community's experience of what has been beneficial" (Polkinghorne, 1992, p. 162) occurs verbally in staffrooms and seminars and conferences, but the writing of teacher tales - the weaving of narrative nets to capture classrooms - is another important avenue for the development of a postmodern epistemology of practice in science education.

**The Dialectic Act of Writing**

Rather than focus on the traditional ethnographic practice of 'collecting data' (which we prefer to regard as the 'having of rich experiences'), we focus here on the dialectical art of writing and reading the research text. In so doing, we evoke the spirit of van Manen's hermeneutic-phenomenology.

The activity of writing is, itself, central to the process of hermeneutic-phenomenological research. From a more traditional research perspective, the 'real' research occurs in the field, and the 'writing up' is a separate activity that represents the research. For Max van Manen, though, "Writing is our method" (p.124):

> Writing separates us from what we know and yet it unites us more closely with what we know...distances us from the lifeworld, yet it also draws us more closely to the lifeworld...decontextualises thought from practice and yet it returns thought to praxis (or thoughtful action). (van Manen, 1990, pp.127-128)

Writing thus both abstracts and concretizes our understanding of the world - the dialectical process of putting our lived experience into words places it at one remove from the world, yet our tales have the ability to capture experience in ways that are somehow more concrete - perhaps because they are more explicit - than direct experience.

**An Impressionistic Tale**

The following impressionistic tale arises from David's lived experience in an Australian middle-school classroom where, in 1996, he was team-teaching with 'Carolyn' (names other than our own used in this paper are pseudonyms).

**St Therese and the Nature of Science**

> Therese looks from Carolyn to me, and back again. Most of the other students in the room have missed the inconsistency - frankly, most of them stopped listening ten minutes ago. But Therese is bright, and even though she considers science "a waste of time", she's almost always listening and thinking, even when I
think she's just adding another layer of intricate doodling to the inside of her folder.

"That's not what Mr Geelan says science is about", she murmurs, without bothering to raise her hand. Carolyn has just come out with the statement that "science is true facts about the world", and Therese remembers that a few weeks ago, in one of my fairly frequent digressions into the nature of science, I claimed that science is a way of understanding the world that doesn't necessarily yield truth.

Now Carolyn's looking at me too, and I try to explain again my understanding of the nature of science. My perspective owes something to Paul Feyerabend's 'anything goes' approach, something to postmodernism and constructivism, and something to the sociology of science. It's eclectic and rather complex, and I'm trying to describe it as clearly and simply as I can, without using any of those academic terms.

But even as I'm explaining, I'm thinking "Do the students really need this? Is it appropriate for their age and stage of development to try to grapple with epistemological and ontological questions that I came to much later? Or would it be more comfortable and productive for them to believe in the sacredness of scientific knowledge for a little longer?" I can't decide what is most appropriate, and the situation has arisen in the classroom right now, so I try to make the best of it.

"Well, I think about it this way," I begin.

(...as I'm thinking, 'How do I do this without openly disagreeing with Carolyn?')

"Science is a word that's used to talk about two things, and they're both important. Science is a body of knowledge - ideas and theories. These are really ways that people have found to think about what they see in the world. But science is also an activity - it's something people do, as well as something they know. In our school science lessons, we try to introduce you to some of those scientific ways of thinking about the world, and we also try to let you do what scientists do - explore the world in thoughtful, careful ways."

"I don't want you to think that science is just all about memorising a heap of facts - that, number one, isn't very useful, and number two, doesn't make you a scientist, or even scientifically literate. Science is about learning a special set of ways of working and thinking. They're related to ways we work and think in other learning areas, but also a bit different. For example, in English, we look at a novel or a poem or a story and try to understand what it's about, and how it makes us feel."

Carolyn breaks in, "But in English there's really no one right answer, where in science there is...isn't there?" I don't want to deal with that right now, so I turn from the class to her and say "I'm getting to that, but I want to do this a particular way", then continue.

"What Ms Young was talking about was the first of those two things about science - scientific knowledge..."

I continue with my explanation, in a lecturing mode that's unusual for me, and I'm very aware that, fascinating and important as this stuff is to me, and although I think I'm explaining it pretty clearly, most of the students' eyes have glazed over. Some are staring out the window at the gentle grey drizzle, one or two have their heads down on their desks, and Tony is flicking bent staples at Jules when neither teacher is looking. I've been seeing the staples appear, but I want to try to catch Tony in the act - perhaps then the inevitable visit from his mother will be at least marginally less unpleasant. Unless I have some pretty direct evidence, it'll just be "You're picking on him" again. I'm not, but Carolyn is, and that makes my position morally difficult when I'm talking to Tony's Mum.

Carolyn says, "So, you're saying scientific facts aren't really true?" While I'm trying to get my thoughts together, Therese blessedly breaks in. "No, Ms Young, it's more like they're true at one place and time, but not always. They're sort of like fashion... "Carolyn completely ignores her and keeps looking toward me, and I try to explain the ideas Therese has just put together so cogently. I also try to acknowledge Therese and her contribution, by alluding back to them in my comments, and earn a grudging smile before she
drops her head forward and hides behind her long dark fringe - a frequent refuge.

Carolyn says, "Oh, OK, I think I understand", but her expression makes it clear that she doesn't, and doesn't really believe me anyway. Therese has a better understanding of this stuff than Carolyn ever will - but she still thinks science is a waste of time.

A Dialogic Quality

Van Manen's (1990) hermeneutic-phenomenology foregrounds the educational fieldworker's own lived experiences which are chosen because they are also the possible experiences of others. The writing of the research involves the production of a text that establishes a particular dialogic, or educative, relation with the reader, one that engages, involves and requires a thoughtful response. Dialogical text avoids defining (in a propositional sense) issues such as pedagogy because of an ineffable quality that is not able to be fully captured in a unitary, propositional text. By representing the researcher's lived experience in narrative and poetic form (e.g., story, anecdote) the textuality of the text aims to open up, in an indirectly teachable way, questions of pedagogy.

In education, the purpose of the dialogical text of phenomenological-hermeneutic research is, therefore, to engage readers in vicarious and mimetic experiences, which aim to teach something profound about their pedagogical selves, and in critical self-reflective thought and action (i.e., praxis). Van Manen (1990) presents four evaluative criteria for the dialogical text, criteria that we value for judging the quality of our research writing.

Orientation. The text should be oriented to answering the question of how the researcher as educator stands in relation to life: what are the valued beliefs that shape the educator's lifeworld?

Strength. The text should be committed to a strong pedagogical perspective which addresses the question of how we should be and act with children.

Richness. The text should provide rich and thick descriptions of the exploration of experiential phenomena that cause the reader to be engaged, involved and thoughtfully responsive.

Depth. The text should enable the reader to explore the depthful character of their pedagogical nature beyond what is immediately experienced, to appreciate the inherent complexity, ambiguity and mystery of life.

While remaining aware that much of the judgement of the pedagogical value of our research text remains a task for the reader ('What reflections, emotions and reactions did the tale of Therese arouse in you?'), we also believe there is value in attempting to apply these criteria to our work here. One intention of this process is to 'unpack' a few of the layers of meaning and interpretation that we perceive in this work for our own on-going investigation of our pedagogical practices. Another is to demonstrate some of the richness we have claimed for this form of thoughtful, disciplined educational inquiry. But these interpretations are in no sense final: we hope that the work remains 'open' (Eco, 1989) as a catalyst for each reader's own 'pedagogical thoughtfulness' (van Manen, 1991).

Orientation

Initially, the tale of David, Carolyn and Therese seems to be 'about' the role of philosophical discussion of the nature of science in junior high classrooms. David has a particular set of valued beliefs about both the nature of science itself and its relevance for these students, and is portrayed while putting those beliefs into practice in the classroom. He is also, however, portrayed as reflecting on his own beliefs in this area and challenging them in the course of his teaching. This exemplifies another valued belief and orientation toward the lifeworld - the importance of both holding strongly and continually challenging one's beliefs. Van Manen makes this point very nicely:

To write about pedagogical thoughtfulness and tact courts the dangerous presumption that one claims to know how to behave with moral superiority. By definition pedagogy is always concerned with the ability to distinguish between what is good and what is not good for children. Many educational thinkers are uncomfortable with this assumption, they try to pursue educational problems and questions in a value neutral or relativistic manner. It is wrong, however, to confuse pedagogical discourse with moral diatribe or preaching. Preaching is an act of moral exhortation on the basis of some unquestioned dogma. But pedagogy does not aim to deliver diatribe. Pedagogy is a practical discipline. On the one hand, educators need to show that in order to stand up for the welfare of children, one must be prepared to stand out and
A number of value positions other than those related to the nature of science come through the tale in more implicit (and sometimes more conflicted) terms. David values the voice of the student, Therese, and attempts to acknowledge her contribution in the course of the discussion. He is uncomfortable with (his perception of) the way Carolyn has treated Tony in other lessons, indicating a particular set of beliefs and values about what are and are not appropriate strategies for behaviour management in the classroom, and about power relations between teachers and students. David attempts to avoid open conflict with his colleague in front of the students (thinking 'how do I do this without openly disagreeing with Carolyn?') because he values loyalty and mutual support between team teaching colleagues. At the same time, however, he could be seen as having betrayed Carolyn, through telling a story that does not always show her in a positive light, without giving her a right of reply. And finally, this unorthodox (in the sense of 'member checks' and Guba and Lincoln's (1989) 'trustworthiness' criteria) approach to telling the story of a teacher demonstrates some of the value positions about research in education that we have described in the course of this paper.

**Strength**

While a critically self-reflective approach to pedagogy that avoids pat answers and unexamined assumptions is an important underlying value of the tale, and of our research more generally, so too is a particular orientation to the epistemological and moral questions raised here. The brief narrative of a classroom 'critical incident' presented in the tale of 'St Therese and the Nature of Science', the theoretical discussion and advocacy contained in the rest of the paper, this interpretive text, and our on-going project of reflecting collaboratively on and attempting to improve our pedagogical practice - all of these in different ways testify to the 'strength' of this inquiry in van Manen's (1990) terms. All provide evidence of our commitment to improving, through reflection and experiment and discussion and thoughtful inquiry, the ways we work with children, colleagues, one another and our professional community.

**Richness**

The detailed description of people and events - the grey drizzle outside the window, Therese's doodling in her folder, the bent staples appearing on the floor beside Jules - are included in the tale with the intention of engaging the reader, offering scenes for the mind's eye and points of connection with the reader's own experience. They are chosen specifically as touchstones with common experiences for teachers, in order to make these connections. The narrative is very short yet, if it does its work well, will make connections with readers in ways that support critical reflection on their own experiences as teachers and learners. Similarly, details of characters and actions that seem irrelevant to the main 'issue' at the focus of the narrative - for example, the whole sub-narrative of Tony, Carolyn and Tony's Mum - also add richness and depth to the tale, and to the reader's understanding of the complex web of relationships between the three main protagonists. Details are included of other interactions occurring in the classroom at the same time, and David's discomfort with Carolyn's 'picking on' Tony - and tensions in their working relationship more generally - are suggested by this added narrative. The tale also includes details of David's professional dilemmas and internal monologue in the course of teaching this class - Schon's (1983) 'reflection-in-action'. Dilemmas, about the relevance and appropriateness of the philosophical ideas that David values for himself to the lifeworlds and maturity of the students, are raised quite explicitly, but not dealt with in any final way, leaving readers to ponder their own values and beliefs on this issue, and whether, in the moment, they would have chosen to solve the dilemmas differently.

**Depth**

This narrative is intended to leave the reader with questions and reflections about a whole range of beliefs, values, perceptions and ideas. It is not closed, and in some senses it is not fair or balanced either. For example, we have only David's word for Carolyn's attitudes and actions: presumably she does not regard her actions as 'picking on' Tony, but as appropriate classroom discipline and control for a difficult student. Her perspective on the nature of science and on science's role in society also has its own validity, but within the scope of the tale as told there is no real consideration of the issue from her perspective. It is hoped that the reader is enabled, in part by these imbalances and unfairnesses, to 'question the answers' presented in the narrative. If it has been well written - has 'depth' in van Manen's (1990) sense - then it will engage readers in critical reflection on their own pedagogical beliefs and practices. Do they, for example, identify more strongly in this tale with Carolyn than with David? After all, she is the hard-working classroom teacher who has to suffer the smart-aleck university researcher arriving in her classroom, who then has the temerity to question her approach to teaching science! As noted above, the tale also attempts to indicate that this little discussion between
David, Carolyn and Therese do not occur in isolation - the other students are reacting in various ways, including by interacting with one another in both approved and illicit modes. Classrooms are inherently highly complex places, and a linear account of what the teacher is saying and doing captures very little of that. It is clearly impossible in a very short tale to capture too much more of this complexity, but the use of parallel accounts like the one about Tony, and mentions of the reactions of other students, do go some way toward increasing the depth of the tale.

Since first writing this paper, the field of qualitative educational research has moved on. Denzin and Lincoln (2000, p. 1048) now talk about the emergence of a 'seventh moment' which conceptualises educational inquiry as a moral act intent on transforming the social world. Research 'reports' become 'performance texts', serving as sites for critical conversations about democracy, race, gender, class, nation, freedom, community. The blurring of the Enlightenment boundary between science and religion is giving rise to magical, poetic and sacred epistemologies. With these emergent ways of knowing and being, science education researchers may begin to assist the reconceptualisation of school science as a critical interpretivist project that stresses ethics and moral standards, and (after Bateson) recognizes "the essential ethical unity of mind and nature" (p.1052). Importantly, however, the authority of performance texts remains open; the author's voice may be polemical and provocative, but it also should be vulnerable and transparent, inviting 'the other' (i.e., participants in fieldwork and subsequent readers of journal articles) on a potentially liberatory investigation. A major challenge for qualitative researchers is, therefore, to develop sophisticated literary skills for producing performance texts that are educationally enlightening due in large part to their ability to engage the reader, in the manner of a good novel.

With a muffled bang, 'School Stories' springs open again on the desk, nearly knocking Carolyn over. The open page begins to glow a faint blue, which begins to pulse steadily and shine more brightly. A tiny whirlwind begins to develop above the pages, and the paper teachers start to flap and move. Inexorably they are pulled closer, whirling, and picked up by the miniscule blue tornado. They spiral down into the page, and as David disappears, the whirlwind subsides, the blue glow dissipates, and all that is left is an open book on a desk. The camera pulls back, accelerating away past the dogs and the kids and the unfenced sandy yards, back past the flashing and sparkling windows, to a stationary view of the blue-grey hills and the bright blue sky.

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