

Marrow-Bone Thoughts and Lasting Songs?

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Introduction.

In 1990, I was privileged to be included as one of a group of four South African university mathematics educators travelled to London to participate in the first legitimately-attended international conference as 'ANC-approved' mathematics educators at a time when the academic boycott was still very much in place. The conference was called the Political Dimensions of Mathematics Education. It was an extremely daunting experience in many ways, because all four of us who attended the conference had obviously respected the academic boycott and had not attended any international conferences for almost a decade. So our insecurity levels were extremely high! However, as the conference progressed, we started growing in confidence as we realised that, although we were often intimidated by finally meeting some of the esteemed leading 'names' in the education field and also by realising that our knowledge of the literature was sketchy in places, what we did bring to that conference was a deep lived experiential knowledge of the dynamics of change. Living through the struggle against apartheid had meant that change was not a theory - it was something that lived in our marrow-bones.

My personal task over the next 14 years as a university teacher educator since then has been to try to work towards meeting Yeats's encouragement to sing a lasting song¹. In effect this has meant trying to match this lived experience of change with my theoretical understanding of this process of change, with a view towards understanding some of my own thoughts on educational transformation.

In this article, I have attempted to begin the task of making some sense of this journey. It has not been an easy start, as its richness and chaotic nature fight against a clearly developed linear exposition. In the end I decided to try to capture the essence of the vibrancy of the path and, at the same time tease out the theory, by focusing on four 'stories'. These 'stories' represent a selection of critical moments and attempt to capture major shifts in my teaching approach over the past twenty years.

I have written each story from the first-person perspective of a different participant in the shifting tapestry. I have written each story and have also given myself a role in each of them (as Chris). So while these accounts attempt to capture an essence of the moment, the reader is asked to see them as my own version of a past reality – perhaps as a

¹ "He who sings a lasting song, thinks in a marrow bone" (W.B.Yeats, A Prayer for Old Age).

'realistic fiction'. The stories are also dated to give the reader access to the timeline against which these stories take place.

It seems appropriate that the first story should be the very same one, which formed part of what I attempted to tell at that same mathematics education conference in London where I first became aware of the need to begin the struggle to link theory and practice (see Breen 1990, 1992).

Chris's Story (1986).

I don't know what to do with this class of preservice secondary mathematics teachers that I am supposed to be teaching this year. There are 55 of them sitting in this large lecture theatre taking Maths Method for their secondary teaching diploma. They cover the range of gender and race in an equal balance, and yet it seems that they keep choosing to sit in racially segregated groups. The schools in the townships surrounding us are on fire with police firing teargas onto school grounds and arresting school kids they feel are the ringleaders from their homes. Children are fleeing the country to become freedom fighters. I've just employed a fieldworker to work in these underprivileged schools and he's now been detained in jail because he's also the Chairperson of the left wing teacher's organisation. It's critical that we prepare for a new South Africa and that these students get the skills to be at the forefront of change. I'm committed to this change and do everything I can to promote transformation through my teaching, but I'm growing increasingly disillusioned! I've just given what I think was my most powerful and emotional lecture of the year. I've taken the literature on anti-racist education from the UK and argued the case for the way in which mathematics education is part of the problem in the way that it maintains an elitist approach to education, and also acts as a filter, which keeps the underprivileged from gaining access to a decent education. I've also tried to stress the need for teachers to access the human lives led by their students as failure in mathematics at school can scar pupils for life.

Giovani and Richard spent most of the session reading the newspaper together at the back of the class and looked up and shared what seemed to be a sneering look when I spoke of the problems I had encountered when I was teaching in a poor school. Sarah nodded strongly in agreement when I started talking about the political dimensions of maths education and asked questions and participated fully. But I still remember last week's teaching practice supervision lesson where she behaved like a fascist in the classroom, shouting and berating the pupils for not paying attention to the maths in one of the township schools where a police Casper was parked in the school grounds.

What on earth can I do to change this situation and get them to listen? I'm getting nowhere and am burning myself out with my passion for trying to get them to engage with the torment in the country, and prepare for a new future in education.

Interlude One.

Enactivism is a learning theory, which has emerged from the work people such as Merleau-Ponty (1962) and the Santiago Theory of Cognition² developed by Humberto Maturana and the late Francisco Varela (Maturana and Varela, 1986). One of the basic tenets of this theory is that each of us has a structure (ego), which is formed by our biological constitution as well as our history of interacting with the world. This structure predisposes us to see the world in a certain way and we can only take on board what we are predisposed to understand. Reality

² For an outline of this theory, see Davis (1996) and Capra (1997, pp. 257-264)

is not a given, but perceiver dependent. This does not happen because the perceiver constructs it as s/he pleases, but because what counts as a relevant world is inseparable from the structure of the perceiver. We will fail even to notice details or events that lie beyond our structure³.

Clarke (1988, 181) provides a pithy analysis of my predicament with the members of this student class as she reflects on the similar positions of a therapist and a teacher.

The other person can only resist if you are pushing. You might be working on the concept of prime numbers (B) and Tony is stuck on factors (A), which is a prerequisite understanding, or indeed on something he saw on TV last night, which really grabbed him. If you try to push Tony from A, where he is, to B where you are, he MUST resist! If, however, you go to A and be there with him and accept his worries or his excitement, he is then free to come to B of his own accord.

Patrick's Story (1989).

I'm getting really frustrated being a student in this Maths Method class taught by Chris. I've been out of the country for several years being trained to fight against the apartheid regime, and now that I'm back home, I want to get qualified to teach maths at a College. Before I can do this, I need a teaching diploma. So I joined this class and found myself having to join hands and climb over people to untie the knot we had formed in the very first session of the year. We've done strange things all year like circle dancing and trust walks, and we have also played games such as the one last week where we had to tie a balloon onto our ankles and try to pop each other's balloon. I know in the feedback that something interesting always comes out, such as why we are more comfortable with physical rather than verbal aggression, and how a lot of us maths people aren't comfortable with activities, which take us out of our heads. But come on! The struggle is reaching its peak! People are marching in the streets, and here we are dancing and holding hands. It's strange because Chris is one of the few lecturers that I ever see at struggle meetings and he has a reputation of being one of the pro-active lecturers in the department as far as the struggle goes.

The other day I told the class about an important march that I thought they should all take part in. We were going to march on Parliament and demand the release of Nelson Mandela. The police had banned the march so it was important for us to turn up in large numbers. I was really upset because none of my fellow students turned up for the march. I got cross with Chris and told him that this was because he had been encouraging us to play while the country was burning. He listened seriously and I thought I was getting somewhere, but then he asked me if I had made any effort during the year to make contact with my fellow-students. Had I drunk coffee with them? Told them about my life? Found out about theirs? I didn't see the point of these questions, because I had obviously been too busy organising protest meetings during the year. And then he asked me whether I would take a chance doing something new on the advice of someone who kept to himself and didn't create any opportunities for others to learn to know him or build some trust... You know, he may have a point – I definitely would keep away from such a person!

Interlude Two.

³ For a demonstration of this using a videotape of a music festival, see Breen (2001)

Because each of us constructs unique narrative knowledge based on our individual continuity of experience, infinite ways of knowing are possible...Through interaction, meaning is continually reconstructed as new interactions lead to further understanding. (Olson 1997, 19)

Enactivism is based on Merleau-Ponty's attempt to end the body/mind split. The body is that which engages the person with the world. This means that the focus of enactivism moves away from Descartes' "I think therefore I am", to the enactivist position, "I act therefore I am". Enactivists believe that true learning cannot take place if only the mind is engaged. Activities, which engage both mind and body and allow their interaction, are far more likely to bring about the possibility of a change in action.

Each of us interacts in and affects the world in a similar way to that in which the world affects us. A learning situation is regarded as a complex adaptive process where multiple feedback loops are established between all participants. It is simplistic to reduce a learning situation into a machine-based complicated process, where each part can be observed in isolation from the whole. The enactivist position is that the lesson is co-created by teacher, learner and environment (and this environment includes the differing histories of each of the participants).

The teacher's role in this way of thinking becomes very different. The teacher cannot set outcomes for a lesson because the teacher cannot control the lesson. All that the teacher can do is try to perturb the thinking and acting of the participants by offering activities, which engage more than the mind of the participants. The aim in preparation for change is for the teacher to try to interrupt the usual habitual beliefs and actions of those present. The teacher then focuses on extending her abilities to act as a perturber.

Mike's Story (2001).

I grew up in England and then married a South African lass so I ended up working here in South Africa since 1995. This means I don't know what it was like living under apartheid. I can't understand all this fuss about racism, because growing up in England I didn't experience race as an issue. Social class, yes - but racism, no. This year I decided it was time to get ahead in the workplace so I enrolled for the MBA programme at the Cape Town Business School. In the first module of the year, our lecturer, Karl, showed us a very powerful film called the Colour of Fear, which was an hour long film of a group of American men of different ethnic backgrounds talking about how they experienced racism in their daily lives. They got extremely heated and angry with one of the white Americans who couldn't understand them and kept positioning them as their own worst enemies for making an issue out of nothing. Once the movie was over there was a lot of agitated and fairly angry talk in the class with many of the white male majority taking up defensive positions. One guy, Sibiso, got extremely aggressive and said that it was time for all whites in the country to apologise to the blacks for all the hurt and damage they had done under the apartheid era. John jumped in and asked why he should have to apologise for what others had done and the temperature in the room started rising. Karl quickly ended the lesson as time had run out. However Karl had invited Chris, an old teacher of his from his maths education days, to help teach the course. Chris stopped us leaving and asked if a group of about 10 of us would like to get together for about 3 hours one evening, to tell our own stories about how we had experienced racism in our lives.

A group of us from different backgrounds volunteered and we met one evening soon after the movie. We were all a bit nervous as to what would happen, but Chris set some ground rules based on the work he had already done with us in class. We

were not allowed to make generalised statements, and we were there only to tell our own stories. No-one could challenge anyone else's story because it was their own lived experience. We just had to listen as if it had been us telling the story, although we were allowed to ask for additional details if there were pieces that we did not fully understand.

Sibiso told his story during the evening and by the end most of us had shed a tear or two. As a boy, he had worked himself out of poverty by finding work after school, and then had been adopted by a white family. He had lived at their house and worked for them and played with their children. But at meal times he wasn't allowed to come into the house and eat with the family. His food was left on the back doorstep. His life had continued in that vein as he was forced to face large obstacles placed in his way by apartheid.

I told the group about the lack of racism in my life because there weren't really any Blacks in my part of England as I grew up. However, that night I woke up suddenly trembling and in a cold sweat. I had suddenly remembered Fred, the prefect who used to bully me during my first year at high school. He was a huge Nigerian and was a prefect who used to hit me when I did something wrong and humiliate me by making me cry in front of others who then laughed at me. With horror I realised that, in reality, I had developed ways of avoiding black areas back home in England. I was even more shocked the next day when I caught myself crossing the street to avoid a huge Black man walking towards me.

Fortunately we had a follow-up evening and I was able to thank Sibiso for trusting us with his story. I told the group how Sibiso's story had triggered this memory for me and how it had shown me how much work I obviously had to do to counter the way in which I must have been engaging with my black colleagues at work.

Interlude Three.

Thus it is characteristic of every true conversation that each opens himself up to the other person, truly accepts his point of view as worthy of consideration and gets inside the other. (Gadamer 1975, 45)

Since our lived experiences hamper our development, one of the best ways of gaining new insights and possibilities is to engage with the lived experiences of others. In this way others can provide a way in which our own limited versions of what happens can be subjected to a different reality check.

Hermeneutic listening (Levin 1989) provides us with a way of engaging at a deep level with others. In hermeneutic listening we have to set aside our own judgments and listen as if what the other was saying was true. However we still listen in a way in which we can set the other's story up against the template of our own lives. Where we find a dissonance it is essential for us to ask further questions to get clarity as to what the other person is saying and why they came to that conclusion. We do this not to try to assert our different perspective, but in order to take the opportunity that the dissonance of the other's story provides to hold a mirror up to one's own lived assumptions. A basic position is that it would be highly likely that, if I had been born you, and had lived the same experiences that you had lived, I would be saying and believing the same things as you. So talking to you provides me with an amazing learning opportunity if and only if both of us are prepared to share in the mutual quest for hermeneutic listening.

Arthur's Story (2003).

I got this email in March from Chris asking me if I would agree to be the external examiner for a module he runs at his university called "Re-searching Teaching". I've

known Chris for a while and, because I know that he shares an interest in the developing theory of enactivism, I agreed. The assignments arrived in July together with a course outline, and boy, is this a different sort of course! In the first place the students don't get a full course outline at the beginning. Chris tells them that they will be 'laying down the path while walking', so the course will have to be crafted according to where they choose to go. It seems that the students are offered two readings each week, which deal with the topics covered in the day's session. Students submit a comment on the readings as well as a reflection on each lecture before the start of the next session. This helps Chris with his planning for the new lecture. Students collect critical incidents from their teaching or lived experiences and then share these with each other in groups according to a prescribed set of procedures. So the theory links in with the practice and all the time the teachers are asked to work with what is happening in their daily lives. They then subject these incidents to a group process, which seeks to uncover the way in which each person's different history biases the way that they interpret the event.

I think that this is a tough ask for the group of teachers, but they meet once a week over 12 weeks and it seems as if they are left to make their own sense of the course. I say this because the final assignment was given in a very open way asking them to respond to the course. They were given a framework for a marking rubric for the assignment, but what was unusual was that each student could individually choose their own individual rubric from within a given range.

It was exciting for me to see the many different ways in which the students had responded to the challenge, and, in particular, the way in which they were able to draw on their experiences and re-frame them against the theoretical tools, which they had been given. One student re-connected with a love of the outdoors, which he had enjoyed as a child. He contrasted this growing-up model of learning with the way in which he constrained his own tertiary teaching. A woman who prided herself on her efficient and professional non-emotional approach to her students, during the course found herself re-connecting with the contribution that two loving and individual grandmothers had made to her life. She started drawing on these figures from the past as an inspiration to embrace her students and tackle her noted incidents in a different way. Perhaps the most powerful story came from a teacher working in a primary school in a very rough area where he had to deal with issues of violence and rape. The process of collecting critical incidents drew his attention to the way in which he was attempting to do the impossible – remain in control of everything at all times. This need to control the uncontrollable inevitably ended up in him 'losing it' from time to time, both at school and at home. His distaste for who he became in these situations led him to the realisation that his desire for control came at an enormous cost to both himself and those he cared for most.

One of the additional dimensions of the course was that the students started working on ways of interrupting some of their unthinking habitual responses, and changing them in preferred ways.

I'm really pleased I agreed to examine this course. It's so good to find a course where cutting edge theory is used to engage students in interpreting and understanding their own lives. I wonder what Chris's colleagues make of this. I suspect he stands very much alone in this work.

Interlude Four.

Many teaching practices now include the keeping of reflective journals. The trouble is that these reflections can become self-fulfilling and self-justifying reactions to daily events. This

is what Varela calls first person research (Varela 2000). How can one see outside one's structure? Traditional third person research, where the researcher attempts the impossible to become a neutral observer is of no help, because their subjectivity (and influence on the research) is a silent presence that cannot be challenged. Varela introduces the concept of second person research, where a more experienced other joins the person researching his/her own practice.

However, this in itself is not enough and some agreed on procedure is necessary to guide the participants, especially where they are working in groups. There are several possibilities available. For example, Schratz and Walker (1995) describe the techniques of Memory Work developed by German feminists such as Haug (1987). The aim of this work is to challenge the way in which women participated in their own oppression because of their lived realities. Depraz, Varela and Vermersch (2003) have published a book describing the way in which they have developed a technique, which combines insights from Buddhism into a scientific approach on becoming aware.

The course being described above (see also Breen 2000, 2002) uses Mason's Discipline of Noticing (Mason 2002) as a means of focusing the critical incidents. The challenge is for the participant to write their moment in such a way that their own bias is taken out of the story. Where memory work does this by writing the story in the third person, the Discipline of Noticing asks that the author record a brief-but-vivid account-of a particular moment. The account-of differs from an account-for where the author would include justification, interpretation, etc. The account-of gives a short and neutral description of what happened. In particular it also pays attention to the physical sensations that the author was aware of at the time.

Some people struggle to keep the emotion and bias out of their accounts and this in itself can provide them with something to work on. Once a suitable account-of has been written, others can enter into the picture and give their own personal interpretations of the event and how they might have acted given that specific interpretation. Authors of accounts-of are required to listen to these new stories that are being built on the original account so as to broaden their own potential for interpretation and also to develop different possibilities for future action.

Concluding Thoughts.

As I come to the end of the four stories and their accompanying interludes, many other role players and incidents are knocking at the door of my consciousness and wanting to ensure that their voices are also heard. Many of them have nothing to do with teacher education, and everything to do with my own personal challenges and growth during this period. I can see that the changes to my practice have often been accompanied by changes in my life, and much of what I have offered students has been based on what I have been working on at the time... But I have already taken enough of the reader's time and these other stories will have to be satisfied with an audience of one as I try to begin to listen and make my peace with them over a glass of red wine! It is time to bring this article to a close. I have attempted to describe a journey that has taken place over a period of almost twenty years of involvement in teacher education. It is a journey, which has been located at the heart of a country battling to engage with a transformation process that has, in many ways, been an inspiration to the world. Yet it is a transformation process that is still in its infancy and has much still to learn. I note how my first attempt at teaching for change involved an

outer process where I took responsibility for trying to argue change by appealing to the intellect. My radical move a few years later to a highly interactive and experiential approach allowed issues to arise for the students through mutual engagement and play, and I stood back and allowed the students to make out of it what they would.

The last two stories seem to point towards a developing method of holding the tension between a tightly controlled learning environment of specific tasks and a loosely held invitation to participants to choose what they want to work on. The development of the Santiago Theory of Cognition and the ongoing application of these ideas of enactivism to the teaching profession have provided me with a means to challenge and deepen the potential to transform the educational process. The crucial moves have involved acknowledging the central part played in any learning situation by all the players, including the environment and each person's history, as they all co-create the lesson.

I believe that learning can best happen when the necessary time is taken to engage in a deep form of interaction through what has here been called hermeneutic listening. Teacher development can best contribute to this transformation process if ways are found for teachers to work in a structured second person way in researching their own practice. This process involves a careful scrutiny of their actions as a means of accessing their beliefs and historical experiences. The position taken in this paper is that any transformation demands that those involved be prepared to examine their actions of the present through the lenses of their past. Only by understanding and accepting this past, can one move on to addressing aspects of the present that one would like to change. I believe that future transformation depends on this careful attention to both present and past.

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