

CHAPTER 1

AN EMERGENT SOCIAL, CULTURAL, POLITICAL APPROACH:

Sketching a theoretical landscape

1. MATHEMATICS EDUCATION AFTER APARTHEID?

“Education after Apartheid.”

“Education after Auschwitz.” And what of *“Education after Colonialism”*; or *“Education after Genocides and Ethnic Cleansings”*? Indeed, what about an education for living in a world of terror and of war. In juxtaposing these, a global sketching is made of humanity's continuing inhumanity toward each other. Our joint project must surely be to work toward a world that will never see another Auschwitz, another Apartheid - a world of peace, of fairness, of freedom, respect and dignity for all. We assume that education can and must participate in this larger project. But what of *mathematics education*?

Now, in South Africa, more than a decade since the dismantling of apartheid began, we remember and tell our children of the atrocities of a social engineering that caused huge suffering and that touched the lives of every South African as perpetrator or as victim, as activist or as silent observer. Today, for the children - those in this study and my own, apartheid has to be explained. That explanation can be offered in many ways and from many perspectives. Here is but one:

“... what it means to be born into an apartheid society where there is a ruthless social stratification and caste system. Depending on your pigmentation, you are placed high or low on the social pyramid; and where you are or, rather where your parents are, determines so many things for you. It will decide with a rigidity unknown even in the strictest Calvinistic predestination, where you are born and where you can live. It will determine what sort of health care is available to you; indeed, it will determine your chances of survival or whether you become part of the dismal infant mortality statistic. It will determine the probability that you will succumb to kwashiorkor, be pot-bellied, or suffer from easily preventable deficiency diseases. It will determine what sort of education you are likely to get and how well you are likely to perform at school (assuming you are fortunate enough to get into one, if you are at the bottom end of the scale). It will determine whether you can in fact hope to have a decent, stable home environment where father is not a migrant worker separated for eleven months of the year from his loved ones, who are expected to eke out a miserable existence in poverty-stricken, barren ‘homeland’ resettlement camps. It will determine whether you can ever hope to be treated as a human person of infinite worth because you have been created in the image of God.”

These words were written by Bishop Desmond Tutu in 1986 during some of the most brutal years of apartheid, in the foreword of an aptly titled volume of papers studying the lives of children in South Africa "*Growing up in a Divided Society*" (Burman et al., 1986, p. xv-xvi).

I too have been born and brought up in this divided society.

As a society still struggling with deep inequalities and continuing injustices, a question that must be asked is, could (or should) mathematics education participate in moving us toward more humanitarian goals - democracy, equity, social justice, non-racism, non-sexism? Indeed, is mathematics and mathematics education in fact innocent in the production and perpetuation of injustices and inequalities, both overt and covert found everywhere, in wealthy and poor countries? How did mathematics education participate in apartheid education and apartheid society? There is a growing and widespread development in theory, practice, curricula and research in mathematics education exploring such questions in a wide variety of contexts. This book hopes to contribute to and become part of this endeavour. Specifically, the concern is about what role, if any, could mathematics education have in an education for post-apartheid South Africa? I began to explore this fundamental question through mathematics teacher education curricula that I offered to prospective teachers. Working with student teachers, we embarked on a research journey which took us, with our theoretical ideas and practices related to what I have called *a social, cultural, political approach* to the school mathematics curriculum which integrates a *critical perspective*, into a primary mathematics classroom in a school, and then back into the domain of theory, and reflections on practice.

As part of my work in mathematics education courses with student teachers, I introduce them to a wide variety of new and controversial ideas both in theory and in practice in their preparation to become teachers of mathematics. I am interested in how student teachers understand a particular theoretical perspective and related practices within the context of mathematics teacher education, but the question which constitutes the main inquiry for this study is: what happens in a mathematics classroom when student teachers attempt to realise a social, cultural, political approach to a school mathematics curriculum, particularly one that integrates a critical perspective? What is the nature of the participation and interaction of the different actors: the pupils, the class teacher, student teachers and researcher-teacher educator? What kinds of practices are produced and engaged by these different participants and what are their consequences? What theoretical reflections emerge from these classroom practices and settings? And how do these link back to the theoretical ideas and practices that inspired this situation in the first place?

The research sought to describe, understand and explain what was transpiring in classrooms during that time set aside for school based teaching practice, the intention being to critique and develop a social, cultural, political approach to a mathematics curriculum, both in practice and in theory. In taking a broader look into the classroom, a main focus on student teachers is retained because they played a key role as co-teacher-researchers, but the class teacher and especially the pupils are also given prominent positions. As the researcher-teacher educator I enter the classroom via the student teachers and it is through their understandings and actions that we jointly come to look

at the approach in reality. Our concern was with both the theoretical and practical meaning given to the approach, both before and once student teachers entered a mathematics classroom. It includes issues of how the opportunity to work with the approach is negotiated by student teachers within the school setting; the nature of their engagement within this setting; how that is related to the curriculum approach; and the form it comes to take in the school setting. Through the effort of mainly one student teacher, I explore how and why student teachers give meaning to this curriculum approach in particular ways, and what their reflections are as a consequence of trying out the approach. I chose to take a closer look inside one particular classroom, and to do this, student teacher Sumaiya Desai is given a lead role in telling the story as a co-teacher-researcher. The research participants are introduced later. First I sketch the theoretical landscape of a social cultural, political approach.

In essence this is a study of the relation between theory and practice in mathematics education. By theory I refer to a landscape of theoretical ideas that I bring together¹. It is an emergent theory, serving as background to what I have called a social, cultural, political approach to the mathematics curriculum to which I want to give substance and meaning. It is an emergent theory also because I bring together ideas that have their roots in contexts outside South Africa but which I interpret in particular ways with reference to the South African context. However, I demonstrate also their connection and that this is not a complete importation because similar or related ideas have also arisen here in South Africa. I harness these ideas by elaborating some aspects of practice associated with this landscape. In particular, I discuss project work. Throughout I attempt to contextualise both theory and practice in the broader educational concerns, challenges and conditions of post-apartheid South Africa.

2. FOUR STRANDS OF A SOCIAL, CULTURAL, POLITICAL APPROACH

The emergence of this social, cultural, political approach can be traced in two ways. In the first instance it can be traced to its development in the literature in mathematics education, and secondly, it can be traced back to the teacher education programme I offered to student teachers within the context of mathematics education in South Africa (Vithal, 1997). These are, of course, connected. The purpose of sketching this landscape is therefore, first to make explicit the theoretical basis underpinning the mathematics curriculum approach – referred to as a social, cultural, political approach. Second, it is to create a landscape of theoretical ideas with which to confront the data produced in the study. Both are used as a lens through which to look at what is happening in the classroom, and to reflect back on the emergent theory, and its associated practice, to critique and seek further development of both.

The roots of a social, cultural, political approach to the mathematics curriculum in the international literature may be found in writings considered seminal and through the work of mathematics educators who have made a substantial contribution both in theory and in practice. Possibly one of the earliest and best argued papers that puts culture in the centre of mathematics education debates was that of Munir Fasheh (1982) in

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