

UNIVERSITY OF CAPE TOWN

FACULTY OF EDUCATION

BRIDGING THE BOUNDARIES? A STUDY OF MAINSTREAM  
MATHEMATICS, ACADEMIC SUPPORT AND "DISADVANTAGED  
LEARNERS" IN AN INDEPENDENT, SECONDARY SCHOOL IN THE  
WESTERN CAPE.

A dissertation presented in partial fulfillment of the requirements  
for the degree of

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by

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**DECLARATION**

I, Dalene M Swanson, declare that this work is my own original work and that it has not been submitted to any other institution before for assessment purposes. I have acknowledged all sources and have cited these in the bibliography.

Signed by candidate

Signed: Signature removed

18 May '98  
Date

## DEDICATION

This dissertation is dedicated to the memory of Nongetheni (Edith) Tekani, beloved friend. It is also dedicated to my mother and father, special friend Louise Dyamond and most especially to my husband Terryl O'Donovan and daughter Grace, without whose love and support the completion of this project would not have been possible.

I would also like to thank Paula Ensor for her conscientious and dedicated support under the difficult circumstances of long-distance supervision.

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## ABSTRACT.

A small-scale study was conducted within a historic and traditional, independent, all-boys secondary school in the Western Cape, the focus of which is the exploration of subject positions potentially available to the black male students of the "Black Scholarship Programme" in their study of school mathematics.

This includes an examination of the particular nature of the schooling ethos and culture, and its role in creating and maintaining boundaries, producing and reproducing forms of power and control which assist in holding these black students to positions of subordination. It is proposed that the hierarchical and differentiating rituals and codes within the school context provide the means by which the Black Scholarship students are constructed as disadvantaged.

Particular emphasis is placed on the discourse of mathematics within the Academic Support Programme of the school, designed to assist these black students in "bridging the gap" in their academic knowledge and experience; and in the differentiated nature of the mathematics discourse available to the Black Scholarship students within the Mainstream Programme. There is an examination of the power relations between these two discourses and other discourses within the social domain which shape the way in which these students are positioned in terms of deficit and disadvantage.

Four students of the Black Scholarship Programme were interviewed in their initial year at the secondary school (Standard Six) as were the two teachers of the Academic Support Programme. The discussions were taped and transcribed and formed the basis of the analysis. Field notes were taken of discussions with academic staff within the Mathematics Department and school documentation reflecting school policies and discussions within the school were used, where relevant, in relation to the Black Scholarship students and mathematics. The methodological framework was drawn, in the main, from the work of Basil Bernstein and Paul Dowling in focusing on context, discourse and subjectivity.

The study was used to interrogate previous research work in the area of Social Inequality and Mathematics Education. It also raised questions about taken-for-granted assumptions, both within the school as well as the wider community, regarding race, social class, language and cultural difference.

The study attempts to investigate and bring into focus how "difference" is created and maintained, produced and reproduced within the context of the school, providing boundaries rather than bridges, and how this difference is recontextualised into disadvantage in relation to the Black Scholarship students and mathematics.

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## CHAPTER 1:

### INTRODUCTION.

#### 1. THE STUDY: LOCATION AND SOCIAL CONTEXT.

This study, inaugurated in 1994 and developed since, has been written during a time of rapid and unprecedented socio-political and economic change in South Africa. These changes culminated in a new political dispensation for this country and have been reflected most poignantly in the educational arena. It is a time characterised by the development of a new educational dispensation, shifts in power-relations between educationalists and policy-makers and contestation between students, educators, politicians, industrialists and the electorate. It has granted scope for new avenues to be explored educationally and posed new alternatives. It has introduced new issues, new concerns and raised new questions, as well, perhaps, as restating old ones. It has provided a forum for long-overdue educational debates to be granted some legitimacy and has made possible the consideration, and often the implementation, of new educational ideas. It has also heightened the difficulties that are faced in future education, bringing new focus and new emphases to the socio-economic realities of educational crisis in South Africa.

#### 2. THE INDEPENDENT SCHOOLS: A HISTORY.

In 1976, an educational crisis took place which precipitated a social revolt against the state, apartheid and its associated political ideals in South Africa. In response to this crisis, certain independent schools, (known then as private schools), began opening their doors to black (African, Coloured and Asian) students, previously barred under the race laws enforced by the apartheid regime of the time. In 1978, the school used for this research, was one of those that began to accept students of other race groups. This was a trend which gained momentum amongst many independent schools. The independent schools became the fore-runners of multicultural schooling in South Africa, and they became associated with multiracialism and multiculturalism.

Consequently, many of the independent schools were looked to for direction in establishing criteria and principles on which a future educational dispensation encompassing multiracialism could be based. These schools had been hailed as "laboratories of the future", (Cross, 1986), in which young people from "disadvantaged communities", could be granted access to a form of education which would be economically empowering and provide leadership for South Africa's changing society. (Corke, 1980: 5)

This trend was not without criticism as many questioned the relevance of this multicultural approach against a backdrop of apartheid education which reflected nuanced shifts in the S.A. state's policy of "total strategy" at the time. Some argued that the admission of black (African, Coloured and Asian) students to these schools reflected the changing economic needs of industry and provided a base for establishing a broader middle class which might act as a bulwark against radical social change. (Cross, 1986). Others argued that as a result of high fees and stringent academic requirements the schools acted as social filters which would allow their cultural authority to be maintained whilst limiting and containing the presence of other cultures. Charges of tokenism and elitism were levelled at them. It is a point of view which still persists and has gained further currency, becoming more pronounced under the philosophically humanist requirements of the new South African political dispensation. Many independent schools have reacted to the threat of reduced or withdrawn state subsidies, in the interests of a more equitable distribution of educational resources, by attempting to increase black student ratios and establishing scholarship and bursary programmes to assist "disadvantaged" students educationally. By this they have been hoping to create an impression of being more educationally relevant and cognisant of the sensitivities and understandings of current political thinking and trends.

### **3. THE INDEPENDENT SCHOOL SYSTEM.**

Gaganakis (1990) gives a description of the independent (private) church school system in South Africa and highlights the political and social emphases that underpin the cultural development of these schools. She says, in relation to Protestant independent schools:

These Protestant schools are modelled to a large extent on the British public school system. In South Africa, they form closed systems having few points of contact with state schools which fall under the national system of education. High fees and the passing of an entrance examination make admission to these schools difficult. They provide excellent facilities and standards of teaching are high. They are often set in impressive park-like grounds with some of the buildings being reminiscent of English country houses. They cater largely for upper and middle income groups who see these schools as providing not only a higher quality of education for their children and an alternative to the Christian National education in state schools, but also the necessary qualifications for upward social mobility.

Randall describes the ethos of these schools as embodied in an "Englishness", in that the "top" private schools resemble the British public schools and in some areas were consciously modelled on them (eg. Hilton on Rugby). Features of these public schools include the house system, the prefectorial system, the emphasis on games and character development, the host of petty regulations disguised as "tradition" and the chapel. (Gaganakas, 1990: 4)

The school in which I have based my research project can be considered as fitting into the category of independent school described above. Established by the Anglican church, it is one of the oldest schools in South Africa and reflects a dominant "English" culture, (in so far as this is perceived as being English), reinforced by the numerous social rituals and traditions. It is a culture which supports upper and middle class values and, sociologically, produces and reproduces codes of class. This school, as are others in this category, is spoken of in terms of a "middle-classness", the concomitant values of which are embedded in the school culture and are supported and legitimised by "tradition". This construction is supported by Corke, who said of these private schools:

Of all our institutions, the private schools are best placed to respond positively to the forces shaping the development of the middle class. Like their English counterparts, they have a history of service to the nation, and many have done pioneering work in the field of secondary education;...they serve people who have nothing to fear from an enriched middle class; they are repositories of values and a tradition...and they are geared to developing leaders in business and the professions. (Corke, 1977:9)

Against this description of the independent schools, Gaganakis gives a historical background of the **nature** of the inclusion of "black" students into their domain; where the differentiating mechanisms of class, in which race is

embedded, are operational. She comments on the reluctance with which black children were included into the schools and on the delay in doing so by certain private schools:

The admission of black pupils to these schools is a fairly recent phenomenon. The schools offer different reasons for this. A common reason is that "integration" was illegal and schools would risk closure by the government; alternatively, white parents might object and remove their children from these schools which would then face financial ruin. Aside from these "practical" problems, it was feared that the admission of "other races" would threaten the "the essential heritage" of the school (Randall, 1982, 97). One headmaster claimed that "if Africans were in the majority, they could easily ruin the whole pattern of ideals and discipline" while another wondered if black pupils would become "intellectual misfits, as the coloureds are racial misfits" (Page 100). (Gaganakas, 1990: 5)

Here, a disjuncture occurs between being black and being middle class, so that they are spoken of in terms of being mutually exclusive. It is these conditions of being and the way in which they are spoken about that supports the "construction of disadvantage", the key focus of this research topic.

#### **4. INDEPENDENT SCHOOLS, BLACK STUDENTS AND INDUSTRY.**

As in the case of the school in which I have conducted my research, special programmes have been brought into operation to draw "desirable" black students into the independent school system. It is a trend which has been driven by the private sector and is a fairly recent initiative that has corresponded with a new political consciousness towards education and the imbalances in the system. Gaganakas describes Cross' (1986) point of view, in the following terms:

The moves to admit black pupils to private schools have been supported by increasing involvement on the part of the private sector, with local and foreign companies as well as various local trusts providing considerable financial support. They provide funds for buildings and equipment, bursaries for black pupils and, more recently, funds for "outreach programmes".... This intervention by the private sector has been explained in terms of the role these schools are expected to play in ideologically shaping and equipping sectors of the black middle class for the free-market or free enterprise system. (Gaganakas, 1990: 7)

Similar to Gaganakas' description, the school in which I have based my research, instituted a Bursary Programme for black students with financial assistance from a private sector company. This became known as the school's "Black Scholarship Programme". It is the black (African) students that enter the school through this Programme, in the Standard Six year, and the way in which they are positioned within the school in relation to school mathematics, that is the main focus of this research.

Interestingly, the descriptions and political approaches described above, (by Corke (1977, 1980), Cross (1986), and others), are elaborated in a particular discourse which, in the main, has framed the dominant educational debates in South Africa. They support, through language, the existence of societal structures and maintain the "language of difference" by referring to individuals in terms of political and social groupings. They legitimise political divisions by maintaining the same social labels and categories. They are entrenched in a paradigm of thinking which does not include the understanding of the individual as possessing multiple subjectivities, the role of context in establishing these subjectivities nor the role of language in framing them.

##### **5. THE STUDY: INTENTION.**

It is the focus of this small-scale study to examine the construction of disadvantage in relation to the discourse of school mathematics within the context of a South African independent school, (in the Western Cape region), with particular emphasis on the role of the categories of race, class and culture in assisting with the formulations and maintenance, (production and reproduction), of such constructions.

This will be done by examining the "Black Scholarship Programme" at this small-scale study school. The focus will be the discourse surrounding the black scholarship students and mathematics, in relation to mainstream mathematics at the school, as well as the mathematical discourse framed within the school's Academic Support Programme. This necessitates an examination of the distribution of mathematical discourse to these students through the contexts of mainstream mathematics and Academic Support, and how these

contexts/discourses relate to each other. It provides an understanding of when and how the scholarship students might be alienated from mathematics in the school, through an analysis of student discourse and the way in which these students position themselves as subjects with respect to mathematics. This also necessitates an examination of teacher discourse which constructs the scholarship students in particular ways which are associated with race, social class, language and cultural difference, and which assist in their being positioned as subordinate in relation to other "more successful" students who are granted access to the "regulating principles" of mathematical discourse within the school.

This dissertation also hopes to provide a discussion on the "language of difference", how "difference" is created within a society or socially constructed and maintained, producing and reproducing itself through class codes which may also relate to race, language and culture. In the case of the Black Scholarship students of this small scale-study school, their position of "difference" becomes recontextualised into "disadvantage", the boundaries of which become insurmountable, so that "disadvantage", (as constructed within the social domain of the school), begets "disadvantage", (as supported by the distribution of pedagogic discourses and practices within the school).

The title: "Bridging the Boundaries", a double entendre, is a play on words, and throws into question the role and function of the Academic Bridging Programme, or Academic Support. It refers directly to the research question which asks whether the Academic Support Programme at this school, does, in fact, assist in allowing the black scholarship students to bridge the "gaps" in their knowledge of mathematics and overcome the boundaries of their educational disadvantage, or whether it assists in formulating and maintaining social boundaries, creating difference and producing and reproducing disadvantage. With respect to the Black Scholarship students, there are many boundaries to be bridged within the school: the boundaries between discourses such as mainstream mathematics and Academic Support and the concomitant relations of power and control between discourses; the differentiating mechanisms of the educational streaming system at the school which provide boundaries to student access to the regulating principles of discursively

elaborated mathematical discourse; the differentiating rituals within the school's social domain which limit access to a position of advantage at the school; and the cultural code and ethos of this stratified school which regulates the distribution of messages and practices within the school so that unbridgeable cultural boundaries are formed.

In essence, the question that arises is paradoxical: are the structures which are intended to provide advantage, (such as the Black Scholarship Programme), and facilitate the "bridging" of educational disadvantage, (such as the Academic Support Programme), the same mechanisms which, in fact, assist in producing unbridgeable boundaries which differentiate students, create and reinforce difference and, in fact, hold the Black Scholarship students of this school to a position of disadvantage? Put differently, does the Black Scholarship Programme in which the Academic Support Programme is embedded, as well as the structures of mainstream mathematics, provide **advantages** for students from "disadvantaged" educational backgrounds, or do the codes of social class, race, and culture within this stratified school work together to **disadvantage** these black students in relation to mathematics at this school?

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## CHAPTER TWO

### LITERATURE SURVEY.

#### 1. INTRODUCTION.

Secada (1990) wrote an editorial in which he makes an appeal to what he refers to as "the mathematics education research community", to assist in setting an agenda for equity in mathematics education: a change in the sociological approach to research in mathematics education which refers to social inequality, (1990: 354). This appeal arises out of a need, as he sees it, to "become more conscious about whether our studies incorporate tacit ways of viewing the world that legitimate the social arrangements by which diverse student populations fail, or whether they provide us with the vision and understanding that go beyond merely labelling failure in different ways." (1990: 354). Secada categorises this group of studies as, amongst other things, tying equity "to equal educational opportunity and its outcomes, to cultural deprivation, and to compensatory education." (1990: 354). He defines these studies, without naming specific examples, in the following terms:

Studies that report on the "effects of" poverty, race, or ethnicity on mathematics achievement merely relabel and thereby legitimate what we already know - that students from diverse backgrounds are not well served in the mathematics that they are taught. Such studies also shift the burden. Poverty, race, ethnicity, or gender no longer are ways by which our society is stratified; they become causal variables that carry within them their own explanations. (Secada, 1990: 354).

In critique of this research paradigm, Secada states: "student demographic characteristics do not cause poor mathematics achievement. Rather, they provide contextual settings that are socially constructed and maintained. Mathematics gets taught and mathematics education research gets carried out within these settings. We need to grapple with this fact." (1990: 354). Secada discusses notions of educational equity which underpin research characterised by the use of social groupings to explain educational "effects", in the terms:

There may be conceptual power in defining groups along single demographic characteristics, but individuals are situated in this society in ways that are complex and combine race, ethnicity, gender, social class, and language among themselves. The socially constructed - and hence problematic - nature of these groupings should be acknowledged. (Secada, 1990: 354).

Secada problematises research of this nature in which the proclivity exists to view socially constructed groupings as carrying with them certain assumptions about cause and effect. Here, the taken-for-granted social groupings are spoken of in a way which suggests that they possess some innate capacity, or more often lack, which reposes in individuals and which is responsible for the educational outcome. Consequently, these social groupings carry with them certain meanings which give rise to discussions about lack, deficit and compensation. (This also often includes understandings of "interference" in the case of language difference.) Secada argues that such research tends to shift the focus of educational accountability away from society and the school.

Secada critiques research that concentrates on statistical correlations between social groupings and levels of ability or achievement and which presents this as being educationally significant. For him, the implications of this approach are to suggest to the educational arena that problems and deficiencies in education are quantifiable, easily accessible and measurable as long as the correct statistical techniques are used. Therefore, it is seen as possible to correct these problems by using compensatory educational techniques and it lies within the responsibility of those engaged in classroom practice and interaction. The research within this paradigm of thinking shifts the burden of responsibility away from society and limits the focus. It presents a particular "reality", which is presented as quantifiable, objective, and true and which disregards the problematic nature of its own construction.

It could be debated whether it is possible, (as Secada seems to suggest), for the mathematics research community to make a sufficient mark on educational practice in a way which could recognise the complex and powerful influence of the **social domain** outside of its limits and constraints. Secada speaks of "the new research agenda" as becoming "one of developing curriculum and practices that will engage diverse students so that the healthy reaction is engagement and the learning of mathematics", (1990: 355). It might be argued that the power to effect change exists within a broader context which includes classroom practice, schooling institutions, policy-making bodies and, most importantly, society at large. Since there are a myriad of complex social factors which feed into the system which influence outcome, initiatives must be taken from all these quarters, which requires a comprehensive change in

ideological as well as theoretical approach. Secada's request for a new agenda at least recognises those social complexities which assist in constructing individuals according to their social demographics and subjectifying them. The 'new "researchable" questions' (as Secada refers to them, pg 355), would necessitate the problematising and deconstructing of certain social categories, their function and role within research as well as the classroom and school.

Secada's appeal for a new agenda draws attention to a category of research literature which is framed within the paradigm of thinking which views the problems associated with equity in education as being determined by deficiency, lack, deprivation and disadvantage. These are associated, in the main, with the social constructs of social class, race, gender, poverty, ethnicity and cultural and language difference. Here, by direct correlation, socially constructed difference often translates into deficit and disadvantage.

Whilst Secada refers to the need for new researchable questions, (in the light of the aforementioned criticisms), in the context of the current research, similar concerns to those of Secada's exist in the formulation of the research question. Although Secada's concerns were directed at the "educational research community", the concerns of the current research are with the discourse of teachers and students which formulate the constructions, as well as the cultural and social context of the school and the discourse of mathematics within it which supports the creation and maintenance of these constructions. The analytical and methodological approach to this research is in response to common-place and taken-for-granted understandings of the spoken-of difficulties which the Black Scholarship students experience at this school as being constructed in terms of deficiencies which they are said to possess and which "cause" their "failure". These deficiencies are linked to the categories of race, class, language and cultural difference in an unproblematised way, and are spoken of as having a direct cause-and-effect relationship, producing the outcome of low academic achievement. In critique of this mode of thinking, I have embraced a theoretical and methodological position which problematises the socially constructed categories of race, class and culture and their role in determining educational outcomes. There is, therefore, a shift in emphasis. This approach attempts to evaluate the various ways in which subjects are positioned within a location or context, and grants

greater credence to the role of language in framing subjectivity. It also recognises the role of the social in supporting, maintaining and producing the constructions which establish a hierarchy of positions.

The current research is a break from the category of research which Secada critiques and, on an empirical and conceptual level, attempts to elicit new understandings of the construction of "success" and "failure", review and problematise the socially constructed emphases on the groupings of race, class, and culture and give recognition to the role of language in these constructions as well as to social context. Analytically, it seeks to take issue with the assumptions about the taken-for-granted social stratifications by which students are classified and which are said to possess educationally relevant characteristics which affect learning outcomes. By contrast, the current research methodology poses an alternative conceptual viewpoint. The research question asks whether the difficulties which the Black Scholarship students are said to experience with regard to mathematics, relate more to differences and deficiencies which the students possess as a consequence of their race, class, culture and language; or, alternatively, whether this so-called disadvantage can be described in terms of the various ways in which the Black Scholarship students, as subjects, might be positioned as subordinate in relation to mathematics at this school, with due consideration of the cultural context of the school in influencing their possible alienation from mathematical discourse. I have, therefore, engaged in research which seeks to establish whether the difficulties which the scholarship students experience at this school can be described in terms of the social construction of disadvantage.

I will now discuss examples of research literature, which Secada is referring to, in the light of the criticisms he mentions, in describing the current research approach. I will provide exemplars of research framed within this paradigm of thinking and contrast it with exemplars of research which problematise the reliance on social constructions to produce learning outcomes. My research study would, therefore, tend to be located in the latter group of studies within the field of social inequality - ones which provide greater legitimacy to the social and grant credence to the subjective relationship between the individual, pedagogic discourse and context. Ensor (1991) provides a similar discussion, utilising contrasting exemplars to map out the field of her research.

## 2. RESEARCH INTO SOCIAL INEQUALITY AND EDUCATION.

### 2.1 Exemplars of cause-and-effect: The relationship between social constructs and learning/cognitive outcomes.

I will engage with the type of research - which documents the “purported deficiencies of diverse learners who fail to achieve” as being a measure of their social demographics, (Secada, 1990: 355) by looking in detail at some exemplars and their similarities to other research in this field. One of the exemplars I have chosen is the work of **Backman** (1972). This study was designed to investigate the relationships of ethnicity, SES (socio-economic status) and gender to patterns of mental abilities of adolescents. In Backman’s study, there were 2925 twelfth grade students from among those who participated in Project TALENT, a study of 4.5% of the U.S. students in grades 9 through to 12 in the spring of 1960 (Schoenfeldt in Backman, 1972). Backman’s study sample was composed of 1236 Jewish-whites, 1051 non-Jewish-whites, 488 Negroes, and 150 Orientals. SES was reflected in an index of father’s education and occupation, mother’s education, family income, value of the home, and a number of specific facilities and economic goods in the home, such as television set, radio, and typewriter. Factor analysis of 60 information, achievement, and aptitude tests administered to the students in Project TALENT resulted in the categorising of eleven orthogonal ability factors (Lohnes in Backman, 1972). Six of the eleven factors were examined for the presence of patterns in specific ethnic, SES, and gender groups. The statistical model was a fixed effects analysis of variance in which ethnicity, SES and gender were treated as between-subjects variables and the mental ability factors were treated as a within-subjects variable (Block, Levine and McNemar; Myers in Backman, 1972). Differences in the shapes of the patterns of mental abilities were reflected by the interactions of ethnicity, SES, and gender with the mental ability factors.

This research is an example of the construction of individuals in terms of their ethnic, socio-economic and “sex” differences and how this relates to mental abilities. The research predominantly focuses on cognition, with little emphasis on the social, other than to assume taken-for-granted social categories as legitimate research variables which are assumed to affect the construct of

"mental ability". The quantitative nature of the research places emphasis on statistical correlation and variance intended to grant scientific legitimacy to the results. Discussion regarding how the "six mental ability factors" were chosen is absent, other than to give a circumstantial account of their origins based on aptitude tests administered to students in Project TALENT. These factors are not problematised in allowing for cultural, language and other bias and are considered neutral. No attention is given to the social setting or context of the aptitude tests. Instead, the focus is on mental abilities - spoken of as being innate - a concept which is, in itself, assumed and left unproblematised. The subject becomes an aggregate of abilities, race, class and/or gender, which are seen as immutable and determinable. The understanding is that the results are consistent, irrespective of context, and are continuously valid over time. The "six mental ability factors" were given as:

Verbal Knowledges (VKN)... a measure of general information; English Language (ENG) - a measure of grammar and language usage; Mathematics (MAT) - a measure of high school mathematics with a minimum of computation; Visual Reasoning (VIS) - a measure of reasoning with spatial forms; Perceptual Speed and Accuracy (PSA) - a measure of visual-motor co-ordination under speeded conditions; and Memory (MEM) - a measure of short-term recall of verbal symbols. (Backman, 1972: 3)

Most of these so-called "mental abilities" are not independent of social circumstance, yet they are read as innate characteristics of a hereditary nature. Again, the appropriateness of these factors as constituent of mental ability is not brought into question. Instead, a statistical account is given of the origins of these factors to present them as scientifically valid.

The role of social context and setting as possible factors influencing the research is not considered. The choice of concept indicators and variables in the research does not exhibit an awareness of the problematic role of language in framing the construction of concepts. The concepts of race, socio-economic circumstance and mental ability are taken-for-granted constructs which are assumed to possess pedagogic differences or deficiencies in themselves. Their linkage to each other is considered to be measurable and consistent over time.

It is critical that the role of language is not considered as a biasing factor in framing the research in a particular way in accordance with the context in

which it was undertaken. This is a key indicator of a fundamental assumption which underpins the research: that language can transparently reflect an objective reality; a reality which can be discovered through research of this nature and which is accessible through language and statistical techniques. The research premise is built largely on commonly understood assumptions about how the social constructs of race, social class and gender correlate with cognitive (or "native") ability. No explicitly articulated theoretical framework is given to support these assertions. Most importantly, the research hinges on socially constructed categories which then become causal variables based on prejudicial and common sense understandings of such categories by which individuals become pathologised. The aims and objectives of the research support such prejudicial assumptions. This is evidenced in:

The results of the present study revealed that for a given ethnic group males and females tended to exhibit patterns of mental abilities **characteristic of their sex**; these patterns were only slightly modified by ethnic background. (Backman, 1972:9, emphasis added - DS)

It then becomes a competition between the social categories as to which one most affects the development of "mental abilities". The subject becomes the vehicle by which this "cause-and-effect" process takes place. This is seen in:

It appears that sex may play a greater role in the development of patterns of mental abilities than either ethnicity or SES (socio-economic status). (Backman; 1972: 10)

It is interesting that only when an unexpected result is established, (that: "sex would account for such a large proportion of the total variance (69%), as compared to ethnicity (13%) and SES (2%)", (Backman, 1972: 10)), that any discussion takes place about possible bias in the tests. This discussion is relegated to the end of the research paper, possibly to suggest that this issue was of a non-critical nature within the broader context of the study. The discussion then follows the mould of common sense understandings of the nature of gender differences. As Backman says:

The higher mean scores of the males on VKN probably reflects the large percentage of tests with loadings on this factor that would be expected to favor males, e.g., tests of information about the military (.59), aeronautics and space (.50), outdoor activities (.50), sports (.48), and electricity and electronics (.36), (Backman;1972:10).

The focus of the study is on measuring and comparing difference, not on how this difference may be socially constructed or created by society. It reports on how this established difference affects cognition or "mental abilities", in accordance with the way in which it is defined in the research.

Another more recent exemplar of this paradigm of research literature is the work of **Reyes and Stanic**, (1988). In their paper, they draw predominantly on the quantitative research of others in the field of social inequality and mathematics education to formulate a model to explain differences in mathematics achievement based on race, "sex" and socio-economic status of students. In this model, an attempt is made to integrate the findings of other researchers who have statistically analysed the correlations and variations in the characteristics associated with race, gender and socio-economic status, in a way which determines correspondence between these characteristics and other factors associated with achievement in mathematics. In this research, categories are given which, through statistical measurement, reflect internal variations determined by the constructs of race, gender and socio-economic status. These categories are: teacher attitudes, societal influences, school mathematics, student attitudes, student achievement-related behaviour, classroom process and student achievement. Whilst Reyes and Stanic draws ~~on~~ <sup>\*</sup> on a category of research literature making similar or related comparisons, the differences between the studies in the way in which the constructs of race, gender and socio-economic status is conceptualised and formulated, is not addressed and they are considered established, unproblematic categories, accessible and corresponding conceptually in their meanings across the studies. Although Reyes and Stanic indicate a consciousness of the influences of society on the process of differential performance, the same categories are utilised unproblematically and assumed reflective of an objective reality. Again, race, class and gender become causal variables of academic performance.

In their theoretical framework, Reyes and Stanic attempt to merge two different theoretical positions. They describe these as "the critical sociology of education", citing the work of Apple (1979, 1982a, 1982b), Apple and Weis, (1983), Bernstein (1977), Bourdieu & Passeron (1977), Bowles & Gintis (1976), Karabel & Halsey (1977), Whitty & Young (1976, 1977), and Willis (1977), and "the work of mathematics educators interested in differential

achievement by race, sex, and SES", (Reyes and Stanic; 1988: 27/28) in which they cite the work of Anick, Carpenter & Smith (1981), Burton & Jones (1982), Fennema & Carpenter (1981), Fennema & Peterson (1984), Matthews et al. (1984), Chipman et al. (1985), and White (1982), amongst others. Much discussion is given to the effects of social factors in supporting "fundamental inequalities in school performance and societal position", (Reyes and Stanic; 1988: 27). Some discussion includes an examination of what is meant by "hidden curriculum", a term coined by Philip Jackson (1968), - a covert set of rules, principles and messages which students are expected to master based on the social relations of schooling institutions. It includes discussion on "the formal corpus of school knowledge" referred to by Apple (1979) in Reyes and Stanic (1988) - curriculum selection from a wider universe of knowledge on the part of "value-laden institutions". Recognition is given to research that counters the correspondence theory of Bowles and Gintis (1976) in that some students resist, ignore or acquiesce to teachers' attempts to control the learning environment - a theory espoused by Willis (1977). Although there is some credence granted to effects of the wider society on classroom practice, the discussion continuously returns to one of comparison, measurement and classification and depends on the supposedly educationally-significant characteristics of the constructs of race, socio-economic status and gender. The language of the discussion is couched in terms of what is immutable, and describes innate characteristics and pre-dispositions of individuals based on social classifications. This is seen in:

The model based on this theoretical framework considers factors within schools and classrooms, factors outside of schools, and the characteristics of the individuals involved in attempting to explain differential performance based on race, sex, and SES. (Reyes and Stanic; 1988: 29).

Here, the main objective of the research is to observe "difference" in relation to taken-for-granted social constructions, without problematising these constructions in any way. The premise which underpins the model is one of existing difference. The research which is quoted and used to support this model establishes that difference in the context of similar commonly understood social categories. The social categories soon become the source of measurable difference and the research focus moves away from societal factors to the constructions themselves as carrying some deficiency. This

allows for a contradiction, inherent to the understanding of what is meant by societal factors. Here, the social is not relative. No impediment is raised to understanding the social as neutral, measurable and objective. It a paradigm of thinking whose premise rests on given social structures and no cognisance is taken of the possibility of the relative nature of reality and truth.

Language, as a vehicle by means of which the individual is constructed in terms of social class, race and gender, is not examined, but assumed to be transparently reflective of social truth. As a result of the research focus concentrating on measuring difference, assumptions about: average aptitude, native capacity, ability and characteristics of individuals; enter the discussion without examination of their credibility as concepts. The role of language in constructing the meanings of terms and framing the nature of the context of measurement (aptitude tests, interviews etc.), is not problematised. This also applies to the terms: student attitudes, teacher-expectation, achievement-related behaviour and classroom processes, (Reyes and Stanic; 1988: 33/35) seen then as factors in the model affected by the characteristics of race, socio-economic status and gender, all deemed accessible through language. Its subjective and subjectifying nature is not considered.

**Clarkson's** (1992) study, was conducted in Papua New Guinea in a land where the official language is English but there are some 750 other languages spoken. The study was intended to establish whether bilingualism poses an advantage or disadvantage to mathematics achievement. Two groups of students were used: one group of 232 in their sixth year of schooling in Lae city considered bilingual in that they spoke Melanesian Pidgin as well as English; another group of 69, considered monolingual with a competent knowledge of English, also in their sixth year, but from the two international schools and whose parents were mostly expatriates. Two instruments were used, a general test drawing on a broad range of mathematical concepts and another which focused on mathematical word-problems.

This study linked language competence to mathematics achievement. By making use of statistical techniques Clarkson indicates that language is a "factor" in determining test outcomes in mathematics. He states that: "results from the present study indicate that Papua New Guinea bilingual students

competent in both their languages scored significantly higher on two different types of mathematical tests compared to colleagues who had low competence in their languages." Here, low language competence can be seen as **interfering** with the acquisition of mathematical concepts and principles. Language competence and mathematics achievement are spoken of, unproblematically, as directly correlating with each other. This correlation is validated by making comparisons of test scores and statistical techniques. The concern that mathematics achieves different constructions depending on its framing and social context, is not granted any consideration. The fact that the different groups of students are drawn from different school contexts is not granted consideration in the possibility of this affecting research outcomes. Also, consideration that "low language competence" might relate more to the positioning of subjects within the social domain of the school, a positioning which might also relate to their subjectivity with respect to mathematical discourse at these schools, is not granted any legitimacy. It is assumed that language competence correlates with mathematical prowess in an independent way and not that these "factors" might be integrated with socially constructed understandings of language and mathematical discourse.

Similarly, **Orr** (1987) argues, in her book, that "documented language differences" between Standard English and Black English Vernacular "may be interfering with the performance of these students in school" (1987: 12). Like Clarkson, Orr speaks of language difference as **interfering** with mathematical acquisition, so that culturally-defined linguistic difference carries with it deficiencies by which the students are constructed as disadvantaged. Their language difference becomes a pathology of their group, a classifying characteristic, and this social construction then becomes the instrument by which their disadvantage is measured. Again, the way in which language is seen as a factor in mathematical achievement is not problematised, nor is the concept of how mathematical discourse might be contextually constituted as a socially constructed discourse, granted any consideration.

**Lancy's** (1983) study "Cross-Cultural Studies in Cognition and Mathematics", is set up to examine the relationship between children's cultural background and their pattern of cognitive development, and whether the acquisition of school arithmetic is influenced by these factors. Again statistical techniques

are used to "access" the correlation, which, as a starting point, is an assumed reality. Six tests are selected to "probe the cognitive structures" and the unproblematised categories of culture and gender, as well as "nutritional states" are selected as independent variables. The first phase of research took place between 1976 and 1977. It was data gathering and was purported to be ethnographic in nature with significant anthropological assistance. The second phase was assessment based. Children were categorised into two age groups, 6-9 and 10-13 years, in the same "societies" researched ethnographically. Students were compared with each other according to cultural categories and on their performance in a series of school-based mathematics tests. The assumed correlation between socially constructed cultural groupings and mathematics performance is "validated" by statistical techniques which rely on these categories for emphasis. Again, the socially constructed categories are spoken of as carrying deficiencies which translate into cultural disadvantage.

Reyes and Stanic (1988) categorised this group of studies in the field of Social Inequality and Education as "the work of mathematics educators interested in the differential achievement by race, sex, and SES" (page 27/28). This category might be broadened a little and described as: studies which rely on socially constructed categories to access/discover truths about an objective world and which cite comparisons to validate correlations between often unproblematised social categories and differential achievement or learning/cognitive outcomes. These social categories are often seen as factors in determining and affecting achievement/cognition. Some studies which might be considered to fall into this category are those of E. Moore and A. Wade Smith, (1987), N.W Burton and L.V Jones, (1982), L.V Jones, (1987) and C.M Anick, T.M Carpenter and C. Smith, (1981), amongst others.

In the area of compensatory education, there are a number of research projects which provide a statistical account of the nature and "success" of educational assistance programmes, ("bridging" or Academic Support), instituted to assist underachieving students. One such example is a university "restoration program" in Pennsylvania, funded by federal grant: "Student Support Services". In the research report, **Policicchio** and **Parson's** (1993) provide "success rates" of students entering this programme. Although they do not refer to race or gender, one of the criteria they give for entry into this

programme, (set up by federal grant), includes "being from a low-income family". Here, students are classified according to socio-economic circumstance in groupings which are assumed educationally significant. No account is given of how this criterion is arrived at, nor is there any discussion around the "sociology of difference", the accountability of the university in constructing these students as "underachievers" or of how the university may sociologically and unproblematically support their subordinate position within the social domain.

**Winfield** (1993) discusses another compensatory educational project which researches students' "opportunity to learn" in terms of "the provision of adequate and timely instruction of specific content and skills prior to taking a test" (page 288). Winfield discusses learning assistance criteria in relation to the "Chapter 1" project, whereby a group of underachieving students were given extra instruction in grade four mathematics prior to testing. Again, the discussion revolves around educational equity issues whereby statistical comparisons of different groups of students are given. These student groupings are with reference to the social constructs of race and socio-economic status. Winfield says: "opportunity to learn must be viewed as a major equity concern for students from low-socioeconomic or racial/ethnic minority groups" (1993: 289). As before, the categories referred to here are viewed as educationally significant and are unproblematised, just as student "success" and "opportunity to learn" is assumed measurable through examination performance. Although greater accountability of the school is inferred in determining the success of students, no consideration is given to how students might be positioned within the social domain or to how these deemed "educationally-significant" social categories might be arrived at.

## **2.2 Exemplars of studies in the "critical sociology of education".**

I will now, by contrast, mark out the field of social inequality in mathematics education engaging in discourse which critically reviews the research premise described in section 2.1 above, which problematises the use of taken-for-granted social constructs as educationally relevant categories for measuring educational differences. It can also be identified as a body of research literature which, by contrast to the previous category, places greater emphasis on the

social and grants greater legitimacy to the relative nature of context and language and to the subjective nature of the individual in relation to context and discourse. I have coined the phrase "critical sociology of education" from Reyes and Stanic (1988) in an attempt to describe this field of research literature as being the educational researchers and writers who stand **distinct** from the category they refer to as: "the work of mathematics educators interested in differential achievement by race, sex and SES". Whilst Reyes and Stanic's category, however, includes a broad spectrum of sociological approaches, including writers whose work may fall into the categories of symbolic interactionism, phenomenological sociology, or ethno-methodology, etc. (Sarup, 1991), I have, for the purposes of marking out the methodological approach to this project, recruited those in this field who place emphasis on the social and subjectivity and whose research premise is not based on assumptions about socially constructed differences, their educational significance and their measurement. Interestingly, Reyes and Stanic cite Bernstein (1977) as fitting into the category of "critical sociologists", yet Bernstein himself critically reviews the educational premise of those that might fit into Reyes and Stanic's **other** category - a category of educational research which Bernstein terms: "The Deficit Model" approach (1973, 1977) and which he critiques. It is in Reyes and Stanic's attempt to create coherence between the two categories they cite, that they fail to appreciate the differences in the research premise of each and that the theoretical/empirical understanding of the one, to some degree, excludes the other.

The first exemplar I will discuss is that of **Ensor** (1991). Ensor's study is "an exploration of subject positions potentially available to black girls in the study of school mathematics", (page 2). She points to how the methodological approach to her study contrasts with the previously discussed tradition of research in 2.1. In this, she refers to a comment made by Burton et al, (in Ensor, 1991: 4), expressing the need for "hard evidence" in future research into achievement in mathematics, in examining gender and ethnicity. She responds by stating, in relation to her own study: "This research study does not present itself as 'hard evidence' about black girls studying mathematics. It is not, furthermore, concerned with individual differences in background, culture or experience", (page 4). She continues in support of her theoretical approach: "The present study thus seeks to move away from approaches

which attempt to explain differences in performance on the basis of measured differences in cognitive or affective traits, or cultural background. Such approaches, it will be argued, displace the social to secondary account and focus upon the individual student as an ensemble of abilities, attitudes, beliefs and experiences." Ensor's study is concerned with how the "social constitutes and at the same time delimits areas of possibility for black girls as students of mathematics", and how "ethnic difference is socially constructed", (pages 5/6). She selected five African-Caribbean female students in their third year (grade 9) of secondary school mathematics. These students were involved in drafting a questionnaire to access the attitudes of their peer group to mathematics. The drafting of a questionnaire was intended to encourage "student talk" so that the students might interact with each other in a less inhibited and restricted way than they might in an interviewer/interviewee relationship. The discussions surrounding the drafting of these questionnaires were taped and transcribed and formed the basis of her analysis. Also, members of the mathematics department of the research school were asked to generate profiles of "good" and "poor" students of mathematics within the school. The positioning of black female students, what it is possible for them and others to say, where and how, was considered to be shaped by the discourse of mathematics within the school as well as other discourses within the social domain which assist in constructing these students as "black" and "female". Previous research, which marked out the area of racism and education, was used to establish and demarcate three possible subject positions: a position of accommodation, of resistance and accommodation within resistance. The subject positions considered were demarcated on the basis of statements made by the students in relation to themselves and to others. The profiles of teachers regarding the constructions of "good" and "poor" learners was contrasted with the positions available to black female students and "an area of conflict between teacher expectations and student meanings" was identified "regarding what is possible for black girls as students of mathematics within the school." (1991: 2) It was established that not only race, but also gender played a role in the take up of these positions.

Ensor suggests, through her research focus on subjectivity, that it is the "subject positions open to black girls, and possibly black boys, as students of mathematics" rather than attitudes, which "place a limitation upon

participation and performance. The question of change would thus have to be taken up at the level of discussing how these positions might be changed, and how the limits of possibility might be expanded." (Ensor, 1991: 101). Whilst the research intent was not to propose methods of change, it did however, raise questions about the manner in which research in mathematics education has been taken up with regard to issues of race and gender. As Ensor states: "A 'girl', or a 'black pupil', have no essential qualities which can be measured; the issues of sexism and racism need to be taken up and explored as interwoven elements in terms of how they produce and reproduce gender and ethnic difference in mathematics classrooms." (page 102).

I now move onto an examination of some of the work of **Walkerdine**. Walkerdine's methodological emphasis, like Ensor's, places the social at the forefront and gives credence to how language constructs and facilitates the positioning of subjects. For Walkerdine, the subject is framed within language according to specific locations or contexts and these subject positions and meanings are produced and reproduced within the social domain. (Walden and Walkerdine, 1988: 20).

Walkerdine (1987, 1988, 1989, 1990) places specific emphasis on the socially constructed gender categories and their role in producing outcomes which delimit possibilities and allocate categories of "success" and "failure" in accordance with taken-for-granted assumptions about "males" and "females". For Walkerdine, social "difference" is created and constructed. It is not a taken-for-granted element of an "objective reality". Walkerdine examines how this difference is re-created and reproduced within the practices and discourse of school mathematics as well as other discourses within the social domain.

Walkerdine's focus is not on "the individual" as a unified, objective and rational being, but on the positioning of subjects and the messages and meanings which are fabricated within the language and practices of mathematics discourse. Walkerdine's special interest is in the problematising of gender categories which are seen as distinct and which pose a particular truth about the unitary and fixed-category nature of the social domain. Instead, Walkerdine grants credence to gender positioning within specific locations or contexts. She speaks of the "government of reason" (1990: 186), the bourgeois and

patriarchal rule by science. Here, mathematics provides the possibility of perfect control in a rational and ordered universe, where it dominates over a world of clouding emotion. (1990:186/187). Gender characteristics which associate being "male" with reason and being "female" with emotion, become part of this "reality" and mathematics then becomes the forum by which masculine superiority is constantly proved, as is female failure. For Walkerdine, behaviours and related practices become read in gender-specific ways which produce constructions of "success" or "failure". Consequently, female students become trapped in a double-bind, so that despite their very best efforts they are never seen as possessing real ability in mathematics, and if they challenge authority, this is seen as lack of co-operation rather than willingness to break set, as it might be read in male children.

Walkerdine's theorising possesses its own assumptions about the way in which society constructs "male" and "female" characteristics. The characteristics which Walkerdine assumes, are constituted from European and middle class assumptions about gender which is historical in nature. When class and race/ethnicity is taken into account, different formulations and possibilities of positioning and of gender constructions may easily apply. In "Counting Girls Out" (1989) Walkerdine selects a series of research projects which, for the most part, fail to consider ethnicity and class in any systematic way in the take up of subject positions. What Walkerdine's work does do, however, is break from the tradition of research which relies on statistical analysis and measurement to consider the effects of ethnic/race, gender or socio-economic/social class differences on achievement/performance or cognitive ability. It provides alternative understandings of the way in which the individual is constituted, having multiple subjectivities in different locations, fore-fronts the relative nature of social context and its power of influence, and problematises the way in which "reason", knowledge and ability is constituted within the social domain.

The work of **Gaganakis** (1990), is of particular interest to this research project as it locates the study in a South African context where, historically, the political and ideological components of race/ethnicity and social class possess their own distinguishing features, forms of boundary, control and power. Gaganakis critically examines the notion of "culture" as an explanatory

category and considers Frank Parkin's notion of social closure to examine the notion of "class". By considering her interpretations in terms of micro and macro levels of analysis and their linkage, Gaganakis describes the reported experiences and perceptions of black private (independent) school students in these terms and arrives at the understanding that the difficulties which black students in private schools experience lies with the discrepancy in expectations between the school, and the home and community environment. In positioning her work methodologically, Gaganakis critically examines what she refers to as the "multi-cultural approach" to these issues: one which would describe the experiences and problems associated with black students in "predominantly white schooling systems in the West" as being associated with "cultural deprivation" or "cultural mismatch", where "culture is generally conceived as a set of beliefs and traditional values which are handed down to us in immutable form," (1990:13). In reviewing the "multi-cultural approach" and its influence on South African educational research, Gaganakis states:

It is important to consider some of the assumptions of multiculturalism as this perspective is increasingly gaining currency as a way of understanding de-segregated education in South Africa. Indeed much of the multi-cultural rhetoric has been transposed unproblematically to the South African context. It should be noted at the outset that most of the findings in the literature on ethnic minorities in predominantly white schools are based on British and American subjects. However, because black pupils in South African private schools are subject to different sets of pressures, they constitute a very particular kind of minority. (Gaganakis: 1990, 13/14).

Here, Gaganakis provides an alternative context of what constitutes a minority grouping in South African terms: firstly, that black African students are not immigrants as are the Asian or Afro-Caribbean pupils in the U.K or U.S.A, and, secondly, that they are not minorities in the numerical sense but, historically, in the subjective sense as part of an oppressed and disempowered group under Apartheid. Gaganakis links this to social class. She suggests that if minority membership is associated with social position, then black pupils' "status is ambiguous in terms of their presence at schools which are considered by many in their own communities to be 'islands of privilege' (Cross, 1985)," (in Gaganakis, 1990: 14). Gaganakis, in considering the limitations of the "multi-cultural approach", adopts what she refers to as "an interactionist and culturalist perspective" (page 13) as an alternative. Gaganakis problematises the research tradition within "multiculturalism" where:

explanation tends to be located within functionalist models which imply adaptation to a pre-existing system. Methodologically, this tradition relies on positivistic 'fact-finding' procedures with arbitrarily imposed categories being used for differentiating data. The reliance on statistical data means that the perceptions of pupils are seldom taken into account, which is a problem in educational literature in general (Furlong, 1977: 163). The analytical categories are those of the researcher rather than those of the subjects being studied. (Gaganakis, 1990: 17).

Gaganakis explains how the studies within this tradition are "under attack" for their "pathological conception of the black child" and their generally inconclusive and contradictory results, (Stone, & Mullard, in Gaganakis, 1990). She describes a criticism of this tradition, in which ethnic identity is given primacy as an explanatory category with the assumption that an individual's fundamental "identity" is established by membership of an ethnic group.

Gaganakis's standpoint is problematic, however, in that it relies on the assumption that attitudes and perceptions (in this case, of black pupils in private schools) are accessible to us directly and that the cognitive experience unproblematically describes reality, and that there is an objective reality to know about "black pupils" in "private schools". It does not grant credence to the possibility that these "perceptions" might reflect different subject positions under different locations (including that of the interview situation), and that context has a role to play in the take up these positions. Language as a linguistic resource, whose selective recruitment assists in constituting subjectivity within specific locations, is not considered and the relative nature of language in framing these "perceptions" is not problematised. Gaganakis does, however, recognise that the distributions of power and social control are embedded in the institutions in which the black students find themselves as well as in elements of the wider community. In this regard, Gaganakis emphasises a "macro-level of analysis" to describe the experiences of the black students in terms of a social class structure and the concomitant issues of social relations, distributions of power, forms of domination and oppression which apply. Gaganakis attempts to take both "race" and "class" into account in a way where the principles of the one were not "reductionist" in excluding the principles of the other. It could be argued, that this attempt is self-defeating in the sense that it fails to appreciate that each perspective formulates a construction about class or race from which an interpretation of student "attitudes" or "perceptions" is made, i.e. it formulates a framework by

which the “reality” of the students’ perceptions and attitudes can be read. By contrast, Ensor and Walkerdine’s methodological approaches do not purport to describe “an objective reality”, but attempt to explain how this “reality”, already described, is a constructed one, framed by language. The emphasis for Ensor and Walkerdine, is on describing the positions available to subjects, based on distributions of power and discourse within different locations.

**Cohen** (1993) has similarities with Gaganakis’ approach, in that she looks at the deficiencies of the multicultural approach and also places emphasis on the “perceptions” and “attitudes” of students in constructing and deconstructing notions of race. In her essay, Cohen proposes a re-examination of multicultural education, one in which “young people’s experiences, questions, and critiques of the meanings of race/ethnicity in our society” are not left out. She says:

Multicultural education provides a framework for examining some of the contradictions in schools today. A buzzword vaguely and variously defined, multicultural education has been interpreted as assimilating students of color into the mainstream; improving intergroup relations; studying discrete cultural groups; promoting reform so that school programs reflect cultural diversity; and preparing students to challenge structural inequality. The literature focuses on teachers’ managing activities; scant attention is paid to a reconsideration of overall processes and content from a multicultural perspective. With few exceptions, voices critical to this discussion - the voices of students themselves - go unheard. (Cohen, 1993: 290)

Cohen spent six months in a large urban high school in a working-class neighbourhood in the U.S.A, where the majority of students were African-American. She conducted interviews, had discussions, worked on writing projects with the students to elicit understandings of race and individual identity. She found, from her perspective, that individual identity was inextricably linked to group identity and that constructions of race were based on concepts of skin colour and historical group origins, but included a cultural identity, psychology and created pattern of behaviour to support the differences in identity. For Cohen difference provides boundaries, limitations and is even associated with dissension, and in response to this difference, African-American students “create their own culture”. The solution which Cohen proposes is curriculum based, where students should be given tasks to research racial issues so as to learn to exclude elements of racial constructs from their personal identities: a task which, it could be argued, is potentially

self-defeating. For Cohen, like Gaganakis, "perceptions" and "attitudes" of students are validated through language. Language is not seen as a resource by which subjects are positioned with respect to each other within specific locations and with respect to different discourses and practices in the social domain. For Cohen, change needs to occur at the level of perceptions and attitudes, and no consideration is given to the possibility of change at the level of the positioning of subjects within the social domain. Cohen provides possible solutions which could be considered to be compensatory in nature, after espousing that attention should be given to "overall processes from a multicultural perspective". There is little theoretical underpinning of Cohen's work and issues of social class and race are not dealt with in a systematic way, which may account for the contradictory nature of some of the issues she discusses. Cohen does, however, grant credence to the understanding that different constructions of race apply in the taking on of individual identity. She says: "Many of the young people I spoke with had begun a process of inquiry, as they tried on, discarded, and revisited images of race". (page 291).

### **3. CONCLUSION.**

It is the research and modes of analysis taken on by Ensor and Walkerdine, as well as that of Dowling and Bernstein, which have influenced the theoretical position of my own research. It is proposed that the categories of race, class and culture, amongst others, are socially constructed and framed within language and that these constructions assist in the positioning of subjects in relation to the discourse of school mathematics. It is also with the understanding that the way in which mathematical discourse is constituted within the school in relation to other discourses, both within the school as well as the social domain, plays a role in the availability of certain subject positions and the way in which subject positions are taken up. It is with this premise that research is undertaken at the school. I now move onto Chapter 3 in developing the theoretical framework which underpins the current research.

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## CHAPTER 3

### THEORETICAL FRAMEWORK.

#### 1. THE MOTIVATION AND THE METHOD.

Having taught school mathematics within the context of an exclusive independent (private) school environment in South Africa for eight years, I became interested in "the effects" of the schooling process on the "black boys", (as they are referred to within the school), who had won "scholarships" to attend this secondary school. The "difficulties" they "experienced" in the mathematics classroom through professed "disadvantage" and the way in which these were viewed by the schooling system became of particular concern to me which directed my attention to theories of subjectivity.

It is with a critical approach to how disadvantage is constructed within the discourse of school mathematics that analysis takes place in this research project. My concerns are with the pedagogic practices, activities and discourses, codes/messages, rituals and schooling ethos which assist in positioning the Black Scholarship students as subordinate in relation to other "successful" students within the school. These concerns are with regard to mathematical discourse, in particular, and how this discourse is constituted in a way that alienates these black students from school mathematics. An initial concern was the way in which the Black Scholarship students came into the school carrying a position of disadvantage. Several questions arise as a consequence: Does the "advantage" of having "won" a scholarship to attend this exclusive independent school translate into effective **advantage** in relation to mathematical discourse at this school, or are these students held to a position of **disadvantage** in relation to mathematical discourse? If the latter, how is this achieved? Is it as a consequence of entering the school as disadvantaged and consequently being positioned as subordinate in relation to other learners, or is it as a consequence of the differentiating rituals and codes at work within the social domain of the school which create difference, (especially in relation to the social constructs of race, social class, language and cultural difference) and translate this difference into disadvantage? Or is it both? Does disadvantage in relation to the school produce disadvantage

effects such as social class and is, therefore, not problematised. In Bernstein's terms (1990:166), no systematic account is given of the principles of "legitimate communication" which inhere around the pedagogic practice of transmission and acquisition in the school. According to Bernstein (1973, 1975), informal everyday experience, everyday communication within the family and peer group, creates procedures and performances fundamental to formal education, which he refers to as primary socialisation. There are social principles or "codes", however, which regulate the context and manner in which social relationships are structured within the school. Formal education selects, re-sequences, re-focuses and abstracts from the experiences of primary socialisation and in so doing "decontextualises" and then "recontextualises".

In the process, boundaries and forms of repression, both visible and invisible, are created and social meanings put together and separated in particular and different ways. This leads to secondary contextualising. Social class and race are fundamental categories of exclusion and therefore act differentially upon the process of primary contextualising and recontextualising so as to reproduce themselves. The distinctive forms of social relationships driven by, for example, the ideologies of social class or race have been generated according to the principles of the "recontextualising" process and are a function of what Bernstein refers to as the "code" underlying this process. Here, power and control are essential requirements of this code which regulates the recontextualising.

Sewell's comment gives little credence to the theorising of the role of schools in the process of social transmission. It places the debate within a framework which sees the child as the object of scrutiny, social class and cultural effect as measurable factors, context as neutral whilst imposing hierarchical value-judgements on children according to their social class and cultural background. The terminology used in the statement: "the **inequalities imposed** on children by their home, neighbourhood and peer environment are **carried** along to become the **inequalities** with which they confront adult life", (Cutlip et al, 1985:168, emphasis added - DS), not only denies a process other than direct transmission, which might be supported by the earlier work of Bowles and Gintis (1976), but it also supports the understanding of cultural effects as

possessing certain innate advantages or inadequacies which then transform into "success" or "failure" in performance in the same "unequal" way, through direct correspondence.

In other words, a causal relationship is set up between the child's cultural background and the way in which they achieve in later life. This causal relationship also permits the interpretation that the effects of social class and culture on outcomes are accessible to us via quantitative methods and that measurement of these effects can be applied unproblematically. This is possibly why the statement by Sewell was used to support the following statement by Cutlip et al which followed it directly:

In a study on 'Equality of Educational Opportunity' by Prof Frederick Mosteller and Daniel P Meymillan, which analysed 570 000 pupils in 4000 schools, it was found that the social class of a child's fellow students had more impact on individual achievement than any other factor in the school. (Cutlip et al, 1985: 168)

Here, social class is seen as a measurable factor which acts as a "cause" of "success" or "failure". The statement in this context does not easily permit the view that "success" or "failure" may be socially constructed and regulated by codes of social class and culture and the mechanisms of power and control. Neither does it address what is meant by "achievement" and the context-specific assumptions associated with this term are not placed under scrutiny.

Essentially, it pathologises children according to "attributes" of social class, and facts and figures are given about children (and their peers) in accordance with their social class in support of such pathologies and in the name of scientific research. This might be understood in terms of a deficit model where the focus is on inherent traits which individuals or groups may possess or lack, and on the effects of these. Bernstein discusses this approach critically:

I take deficit theory to be a set of propositions which attempts to account for educational failure by locating its origins solely in surface features of the child's family and local community. The unit of such theory is a child and the distinguishing features are indices of pathology. (Bernstein, 1975: 27).

Cutlip et al, engage with this deficit approach and in doing so reduce the level of analysis to focus merely on correlations between social class and resultant

pathologies in individuals, limiting the focus of discussion and excluding alternative understandings of the broader social context and of other possibilities. Bernstein responds critically to proponents of research carried out from a deficit model approach:

Their assumptions make it difficult to raise a general problematic about the fundamental structure and changes in the structure of the reproduction of forms of consciousness. In other words, deficit theory fails to examine how the distribution of power and the principles of social control regulate the distribution of, the reception to, participation in, and change of dominant cultural categories. (Bernstein, 1975: 27)

### **3. THEORY: BERNSTEIN'S MODEL.**

#### **3.1 Describing the Context of the School.**

Since context is crucial to an analysis underpinned by theories of subjectivity, it is necessary to explain the specific context in which the Black Scholarship students find themselves when admitted to this school. Bernstein gives a clear theoretical description of the mechanisms in place, both inside of the schooling system in general, and within the broader social domain, which influence the way in which messages, events and sensitivities associated with a specific school context are read. He provides a model which is useful for analysing the broader context of the school within which the classroom falls and recognises the influence of the broader community on both the school and classroom.

It is not the intention of this research to analyse the school context in any depth, but only in so far as it impacts on the mechanisms in place within the mathematics classroom and Academic Support classroom which position subjects in particular ways. The school context is crucial, however, in understanding the extent of influence on the mathematics classroom, the codes which are transmitted from the cultural domain of the school to the classroom context, and in gaining insight into the ways in which the Black Scholarship students are positioned at this school.

#### **3.2 Consensus and Disaffection.**

Bernstein (1975, 1993) considers the culture of the school and the messages which the school transmits to the student. He defines two distinct but inter-

related complexes of behaviour which the school transmits:

- the **social order** (1993; previously referred to as the expressive order, 1975);
- and, the **discursive order** (1993; previously referred to as the instrumental order, 1975) of the school.

The social (expressive) order of the school is that complex of behaviour and activities in the school which is to do with conduct, character and manner.

The discursive (instrumental) order of the school is concerned with more formal learning and the acquisition of specific skills. Bernstein states:

The instrumental (\*discursive) order may be transmitted in such a way that it distinguishes sharply between groups of pupils. Children may often be streamed off from each other in terms of ability, in order to assist the development of specific skills in some. Thus the instrumental order of the school is potentially and often actually, divisive in function. It is a source of cleavage not only between pupils, but also between staff (depending on the subject taught, the age, sex, social class and stream of the pupils). (Bernstein, 1975: 38/39) (\*instrumental refers equally to discursive; insertion - DS)

For Bernstein there exists a tension between the social and discursive orders of any school:

The more the instrumental (\*or discursive) order dominates, the more examination minded the school becomes, the more divisive becomes its social organisation. (Bernstein, 1975: 39) (\*insertion - DS)

Bernstein sees this tension as affecting the way in which the students, (their parents, peers and teachers) relate to the school. He goes further to define criteria by which certain positions of strength or weakness are held by the students in relation to the culture of the school. Understanding the means by which either the expressive or instrumental orders of the school are transmitted as well as accepting the ends of these transmissions are crucial indicators of the student's probable, positive involvement in the school. The opposite also applies.

These indicators assist in defining the role which the student acts out in relation to the school culture. Here, the culture of the school is predominant in cultivating this relationship with the student, and the determining factor does not lie with the social class position of the student's family. A student defines

his/her own role by the way in which he/she relates to the two orders of the school: the discursive (instrumental) and the social (expressive):

These different ways of relating to these two orders are not necessarily a function of a pupil's specific psychology, or of his family setting, but they are often shaped by the school. (Bernstein, 1975: 43)

Bernstein defines certain categories of involvement positions which reflect the students' positions of weakness or strength in relation to the two orders of the school. The types of involvement positions which students may hold are defined as commitment, detachment, deferment, estrangement, and alienation. Bernstein's role involvement positions are described in Appendix 1.

In elaborating on **Bernstein's work** and for the purposes of clarity, it is necessary to acknowledge the development of his model over time. I have drawn on his work which spans a twenty year period between 1973 and 1993 in which concepts and ideas have developed and terminology occasionally adapted. An example of this, is the use of the expressive and instrumental orders in his earlier work, which become the social and discursive orders in his later work, for which there is continuity of concept. Also in his later work, the concepts of the regulative and instructional discourses are introduced. Briefly, the regulative discourse is that which is embedded in the social order, whilst the instructional discourse is embedded in the discursive order.

### **3.3 Ritual in Education.**

This next section is essential to the research in that it provides a theoretical description of school culture. It is a further elaboration of the theoretical framework and feeds into the discussion in the sub-chapter or sub-section of Chapter 4, entitled: "The Contextual Description". It assists in giving a broad sociological and historical description of the cultural context of this school.

#### **3.3.1 The Role of Ritual.**

A major contributory agent in the generation of a school's culture is the role of ritual. Particular to schools steeped in tradition with a strong historical consciousness, (as in the research school), is the symbolic function of ritual which transmits and upholds the well-defined set of values to which the

schooling community is expected to subscribe. Ritual constructs a pattern of meanings which supports and maintains a particular social order within the school. It is an essential ingredient of school culture:

Ritual in humans generally refers to a relatively rigid pattern of acts, specific to a situation, which construct a framework of meaning over and beyond the specific situational meanings. (Bernstein, 1975: 54)

Here, Bernstein points to the enactment of ceremonies whose purpose stands outside the immediate context and refers to a broader historical context, detached from the moment, but which impinges on it. This broader historical context signifies the dominant value system and set of norms upheld by the school via symbolic ritual. Bernstein says:

The symbolic function of ritual is to relate the individual through ritualistic acts to a social order, to heighten respect for that order, to revivify that order within the individual and, in particular, to deepen acceptance of the procedures which are used to maintain continuity, order and boundary and which control ambivalence towards the social order. (Bernstein, 1973: 54)

The object of ritual is to attempt to achieve consensus with the values transmitted by the social order of the school and the major mechanism of social consensus is the social (expressive) order and so is prone to extensive ritualisation. The rituals of the social order may be divided into two main groups: **consensual** and **differentiating**.

#### 3.3.1.1 Consensual rituals.

These rituals, "recreate the past in the present and project it into the future." (Bernstein, 1973: 55) They assist in bringing the values of the school in line with dominant groups in the non-school community. The school's culture is a reflection of norms held by these dominant groups in the wider community and it the consensual rituals which support these norms and understandings. They give the school its unique identity and integrate the various ideals of the school within a coherent system of "shared values" for the sake of unity. These "shared values" become "internalised" and "accepted" via consensual rituals. "They facilitate appropriate sentiments towards the dominant value system of the wider society." (Bernstein, 1973: 55) Here, the rituals of punishment and reward are components of consensual rituals.

### 3.3.1.2 Differentiating rituals.

These are concerned with differentiating groups within the school from each other based on criteria such as age, gender, or social function. Differentiating rituals encourage behaviour which reinforces attachment to or detachment from specific groups within the schooling system, often reflected in the wider community. They also reinforce "respect behaviour" towards authority figures:

They buttress the formal authority relations and evoke respect through the ritualisation of difference and similarity of function; they create continuity in individual and social time and relate the value system and its derived norms to an approved external order. (Bernstein, 1973:56)

The problem of ordering, integrating and controlling heterogeneous student population within the school is assisted by the differentiating rituals. Some sub-categories of differentiating rituals which initiate students into particular groupings within the school, are classified by Bernstein (1973) as:

- age differentiating rituals;
- age relation rituals;
- sex (gender) rituals;
- house rituals.

- **Age differentiating rituals**, help to differentiate groups in time by marking out age status as being specially significant. Age rituals often function as rites de passage. According to Bernstein, they may become sources of conflict where these have been weakened in the non-school society. The "fagging system" which is institutionalised at the research school falls into this category.

- **Age relation rituals** also have significance to the small-scale study school and require further elaboration. Here, a cluster of rituals group around the prefect system, regulating the boundary to the system as a separate system of social control. These rituals increase distance between groupings of students and reinforce inequalities amongst them whilst attempting to strengthen commitment to basic values.

- **Sex (gender) rituals** are consensual in single-gender schools, as in the small-scale study school, but differentiating as far as the community outside the school is concerned. "They cohere around sporting activities but may appear as approach behaviour to female members of staff or to visitors". (Bernstein, 1973: 57)
- **House rituals** delineate contrived communities within the school, each having their own consensual and differentiating rituals and forms of induction to them. They are signified by dress codes, emblems, chants and other imagery. Each community gains its own "character" and identity through these rituals.

### 3.3.2 Cognitive ability.

For Bernstein, cognitive difference, as it finds expression in ability, becomes a component of differentiating rituals, especially if it relates to class and culture. An example of this is where students are streamed off in accordance with the criterion of the purported ability which they display in a particular subject. Here, ability is taken for granted as being a fixed attribute which a student possesses.

### 3.4 Stratified and Differentiated schools.

Ritualisation is highly developed in schools where students are ordered according to perceived fixed attributes, (such as age, gender or intelligence) which are then taken as the basis for ordering relationships within the school context. An explicit vertical and horizontal form of social organisation develops and the schooling structure can be classified as a stratified one. This school supports a **stratified structure** in that male students are sharply delineated and streamed off according to the ability or proficiency they display in each school subject (or instructional discourse). Where relationships are not ordered according to "fixed attribute", the schooling structure becomes differentiated. This exists where "cognitive ability is seen as a process rather than a substance." (Bernstein, 1976: 61)

Bernstein sees ritual as a form of, what he terms, a **restricted code**. The social order is communicated in a way which is verbally condensed, predictable and

highly redundant in a stratified school. The social order in a differentiated school is not communicated through ritual, but its meanings are verbally elaborated, less predictable and more individualised.

Social control is achieved by the transmission, reception and internalisation of the social structure by means of the arousal of sentiments evoked through ritualistic signs and symbols. As a consequence, the stratified school has a social order which rests on **domination** rather than **co-operation**, as in a differentiated school. Bernstein makes the following observation:

One might wonder whether the stratified, ritualised school does not evoke shame as a major controlling sentiment in the pupils, whereas the differentiated, personalised school might evoke guilt as the controlling sentiment. The stratified school is, perhaps, also more likely to **communalize** failure, whereas the differentiated school is more likely to **individualise** failure. (Bernstein, 1973: 63).

### 3.5 The Analysis of Pedagogic Texts.

#### 3.5.1 Classification and Framing.

Ritual and other forms of communication act as pedagogic codes which facilitate the process of cultural reproduction. Yet, they embody the means by which patterns of dominance with respect to social class, patriarchy and race take place. Pedagogic discourse is then not only a carrier of power relations but it possesses, according to Bernstein, its own inner logic - principles of communication - whereby forms of pedagogic consciousness are produced.

The way in which a pedagogic text is put together by means of the rules of its construction, circulation and contextualisation is determined by the power relations governing that text. To fully appreciate the terms of Classification and Framing as defined by Bernstein, it is necessary to clarify the terms of power and control which underpin the notions of Classification and Framing and which give clarity to understandings of pedagogic codes and their modalities. According to Bernstein, power and control translate into principles of communication which differentially regulate forms of consciousness. Power relations, from this perspective: "create boundaries, reproduce boundaries... between different categories of groups, gender, class, race... discourse,... agents." (Bernstein, 1993: 116/7).

In this regard, power produces dislocations or punctuations in social space. Bernstein points to the main distinctions between power and control:

Power always operates on the relations between categories. The focus of power from this point of view is on the relations **between**, and in this way, power establishes legitimate relations of order. Control, on the other hand, from this point of view establishes legitimate forms of communication appropriate to the different categories. Control carries the boundary relations of power and socialises individuals into these relationships. (Bernstein, 1993: 117)

Essentially, we could say that "control establishes legitimate communication" whilst "power establishes legitimate relations between categories"; or more concisely, we could define power as constructing "relations between" and control "relations within" given forms of interaction. (Bernstein, 1993: 117). Classification, in Bernstein's use of the term, "refers to a defining attribute not of a category but of the relations between categories". (Bernstein, 1993: 117). Some of the categories which Bernstein exemplifies as possessing certain power relations within the school context are the discourses generated from the secondary school curriculum, the discourse of Mathematics being one such category. Here, each discourse is differentially specialised, has its own identity, internal rules and **special voice**, to a greater or lesser extent. Bernstein highlights the point that the categories are separated according to a "social division of labour of discourses." (Bernstein, 1993: 118)



Importantly, the "specialisation" of the discourse lies in its distinction from other discourses and it is not internal to the discourse itself. In other words, it is the nature of the space between discourses which distinguish one from another and it is the insulation from other discourses which maintains the principles of the "social division of labour of discourses". For Bernstein, it is "the silence which carries the message of power" and the "dislocation in the potential flow of discourse which is crucial to the specialisation of any category". (Bernstein, 1993: 118)

The maintenance of each category's distinct voice is determined by the strength of the insulation between it and other categories, and is supported by the principles of the social division of labour. The insulations or "regions of silence" are preserved by power relations, and as a result, we can distinguish between **strong** and **weak** classifications.

In the case of strong classification, the dislocation between the category and others is well defined and the category has a unique voice and identity and highly specialised rules of internal relations. In the case of weak classification, the identities, voices and internal rules are less defined and less specialised. In strong classification, the basic rule is that categories must be kept separate, whereas in weak classification the tendency exists for things to be brought together. Bernstein poses the question: "In whose interest is the apartness of things, and in whose interest is the new togetherness and new integration?" (Bernstein, 1993: 122). He comments on the effects of strong and weak classification in the following terms:

Strong classification of discourse is likely to lead empirically to a dislocation in the transmission of knowledge, because with strong classification, the progression will be from concrete local knowledge, to the mastery of simple operations, to more abstract general principles which will be only available later in the transmission. Thus, there is an internal classification and distribution of forms of knowledge. When children fail at school, dropout, repeat, they are likely to be positioned in a factual world tied to simple operations, where knowledge is impermeable. The successful have access to the general principle, and some of these - a small number - those who are going to produce the discourse, will become aware that the mystery of discourse is not order, but disorder, incoherence, the possibility of the unthinkable. But the long socialisation into the pedagogic code can remove the danger of the unthinkable and of alternative realities. (Bernstein, 1993: 122).

The point that strong classification is likely to lead to a dislocation in the transmission of knowledge, is a key issue in the discussion regarding the relative difference in strength of classification between mainstream mathematics discourse and that of the Academic Support Programme. It will be integrated into the analysis section where Bernstein's point is exemplified.

Whilst classification can "construct the nature of social space" via power relations, (Bernstein, 1993: 122), so framing is the construction of "different forms of legitimate communication realised in any pedagogic practice". It refers to the "controls on communication in local, international pedagogic relations." (Bernstein, 1993: 123). Classification provides the **voice** and the limits of the discourse whilst framing provides the **message** and regulates the "realisation rules" for producing the discourse.

Framing, for Bernstein (1993:123), refers to relations between transmitters and acquirers of "the principle of legitimate communication" and to:

- the selection of the communication
- its sequencing
- its pacing
- the criteria, and
- the control over the social base which makes this transmission possible.

Strong framing is present when the transmitter has explicit control over the above criteria and weak framing when the acquirer has more apparent control. Strong or weak framing can vary with respect to elements of the discourse e.g. pacing, but not selection etc. Two systems of rules are regulated by framing:

- the social order;
- discursive order

The rules of the social order refer to expectations about conduct, character and manner. This means that an acquirer can potentially be a recipient of "labels". Which labels are selected and communicated is a function of the framing. Bernstein gives the example of where framing is strong, labels such as "conscientious, attentive, industrious, careful, receptive" are possibly used. (Bernstein, 1993: 124). The rules of the discursive order "refer to selection, sequence, pacing and criteria of the knowledge." (Bernstein, 1993: 124)

Regulative discourse is constituted by the rules of the social order, whilst instructional discourse is constituted by those of the discursive order. The strength of framing is reflected in the extent to which instructional discourse is embedded in regulative discourse. Where framing is strong, a **visible pedagogic** practice exists, whereas with weak framing, the pedagogic practice is **invisible**.

The pedagogic codes of classification and framing have internal and external features which can be classified strong or weak. Bernstein, (1993) gives a description of internal classification and of external framing. **Internal classification** refers to the arrangements of the space and objects in it, such as the nature and form of images on the walls of a classroom, seating

arrangements of the students and distribution of tasks among the students. The **external value of framing** according to Bernstein "refers to the controls on communications outside of that pedagogic practice entering the pedagogic practice." (Bernstein, 1993: 125). Bernstein states:

Where framing is strong, that is when the external (e) feature is strong, social class may play a crucial role. Where the external framing is strong, this often means that the images, voices and practices the school reflects, makes it difficult for the children of the marginal classes to recognise themselves in the school. (Bernstein, 1993: 125).

Change of the pedagogic codes can and does take place and a struggle always exists over the nature of **symbolic control**, since the capacity for change is inherent to the discourse itself. Strong classification and framing is always under pressure to be weakened. Here, **ideology** is constructed in the process and relates to the power relations which regulate the pedagogic codes and their modalities. For Bernstein, as the measures of classification and framing:

change in values, from strong to weak, then there are changes in organisational practices, changes in discursive practices, changes in transmission practices, changes in psychic defences, changes in the concepts of the teacher, changes in the concepts of the pupils, changes in the concepts of knowledge itself. (Bernstein, 1993: 126)

### 3. 5. 2 Transmission and Acquisition.

According to Bernstein (1993: 127), the process of transmission and acquisition depends on framing and the context. Acquisition then relies on the **recognition rules** which are formulated by classification, which orientate the subject to the speciality of the context and determines what is **legitimate communication** in that context, in accordance with its special features. There may be unequal distribution of recognition rules in as much as classification regulates them. Hence, recognition rules refer to power relations. Particular distributions of power give rise to particular distributions of recognition rules. Without knowing the recognition rules, nothing legitimate can be said in that context. Bernstein points to these effects in terms of class, culture and race:

It may well be that the children from the marginal classes are **silent in school** because of the unequal distribution of recognition rules. There are relationships between power, classification and recognition rules. Power is never more fundamental as far as communication is concerned than when it acts on the distribution of recognition rules. (Bernstein, 1993: 128, emphasis added - DS).

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Recognition rules are fundamental to appropriate communication. "If you do not have the recognition rule, you cannot produce legitimate communication, nor can you evaluate it in others." (Bernstein, 1993: 128)

Bernstein (1993:128) also defines the **realisation rule**. The realisation rule determines how we put meanings together and communicate them to others as "**legitimate text**". Framing and its different modes act selectively on realisation rules and so on the production of different "texts". "Text", according to Bernstein refers to anything which "attracts evaluation" and may be no more than how you sit or move, no matter how slight the movement. Bernstein again draws attention to the effects of these rules as they relate to class, culture and race by stating that for:

Many children of the marginal classes, some of these may indeed have a recognition rule- that is, they can recognise the power relations in which they are involved and their position in it- but they may not possess a realisation rule. If they do not possess a realisation rule, they cannot then speak the expected legitimate text. These children in school then will not have acquired the legitimate pedagogic code, but they will have acquired their place in the classificatory system. For these children, the experience of school is essentially an experience of power relations, and its realisations and its principles of classification. (Bernstein, 1993: 128)

Bernstein discusses the pedagogic rules of acquisition and transmission as they relate to "working class" and "middle class" children in the context of research undertaken in the U.K.

The difference between the children is not a difference in cognitive facility/ power but a difference in recognition and realisation rules used by the children to read the context, select their interactional practice and create their texts. (Bernstein, 1993: 131)

This point is highlighted in the analysis section and can be extrapolated to the context of the research school in relation to the black scholarship students and the effects of their spoken-of "disadvantage".

#### **4. ANALYSING PEDAGOGIC TEXTS: DOWLING'S DISCOURSE.**

Bernstein's discourse is useful in providing a sociological description of the schooling context and the texts it produces. It also provides a perspective on the construction of disadvantage, how students acquire "labels", and the sociological concepts, interactions and pedagogic practices which are

underpinned by issues of race, social class and culture and which assist in the establishment of student involvement positions in relation to discourses within the school and in relation to the school culture. Bernstein's model is used to provide a contextual description of the research school, and it permits discussion concerning the relations of power and control between and within discourses at the school. At this point, I will now introduce the work of Paul Dowling (1991a, 1992b, 1993, 1994). \* I have acted selectively on his work to bring in, here, his extension of Bernstein's concept of classification. It involves a more fine-grained exploration, by considering classification of both **contents** and **mode** of expression. It is in varying the strength of classification with respect to content and mode of expression that Dowling's four domains: esoteric domain, mythical domain, metaphorical domain and the public domain, are arrived at. For Dowling, the social domain is a "kind of patchwork of text-producing and recontextualising contexts which are to be referred to as **activities**" (1992b: 2). The discursive resources which the four domains locate, "constitute the **message** of a given activity" (1992b: 3). The discursive resources available within a particular activity are broadly divided into two domains: the **esoteric domain** and the **public domain**, and it is, essentially, these two domains that I will focus on in my analysis. In my research, I am considering Dowling's "language of description", with respect to his refinement of classification, and the mode of textual analysis that this has given rise to. It is this, in the main, that I am recruiting. Dowling's study is concerned with "the production of a language for the systematic sociological description of pedagogic texts", (Dowling, 1993: 2). In examining the modes of expression of a school mathematics textbook, Dowling describes how meaning is articulated. His concepts of "discourse" and "procedure" are a useful theoretical resource to describe distribution within the esoteric domain of mathematical discourse, the differing modes of expression of this discourse and the nature of the discourse which is made available to the Black Scholarship students of this school. It also assists in discussing these students in terms of the various subject positions which are established in relation to mathematical discourse.

**\*FOOTNOTE.**

It is important to note that I have developed my framework on the basis of Dowling's earlier work and that my argument does not incorporate his later work post 1995, which reflects some changes in the naming of domains and the introduction of certain other concepts.\*

For Dowling (1992b), textual strategies refer to the construction/constructing of messages. **Apprenticeship** and **alienation** are textual strategies which may be achieved "by the relative presence or absence, respectively, of apprenticing text" (1992b: 6). In other words, apprenticeship and alienation may be achieved by the **extension** or **delimitation** of the esoteric domain. "An apprenticing text will incorporate an indexing of the esoteric domain as the **motivating** domain for the text, whereas an alienating text may **index motivation** within the public domain. The **textual resources** available for the production of these strategies include the mode of recontextualising." (Dowling, 1992b: 6).

Two forms of discursive resource or activity structure exist within the esoteric domain, which differ in the mode of elaboration of the principles establishing the structure within and between topics. As Dowling explains: "The first mode of elaboration is referred to as **procedure**: textually, esoteric domain utterances are procedurally elaborated where the principles which structure them are always implicit. Within procedure, pedagogic texts - texts intended to relay or sustain an activity - may be rendered as **algorithms** or as **operational matrices** which constrain semantic options" (1992b: 4). The second mode of elaboration, **discourse**, is realised by rendering explicit the general principles within the esoteric domain. "The esoteric domain incorporates discursive resources which objectify the resources comprising the topics, and in so doing, incorporates and institutionalises what might be referred to as theory." (Dowling, 1992b, 4) Procedurally elaborated message lays out the topics of the discourse concerned without discursive commentary, "so that its realisations are highly context-specific." (1992b: 4/5). Discursively elaborated message is more generalising. It can be related to a wider range of elements, topics and contexts, "and esoteric domain topic elements can be substituted for public domain elements." (Dowling, 1992b: 5). The esoteric domain of an activity can either be, discursively or procedurally elaborated. If discursively, this can extend to a wide range of practices outside of their esoteric domains.

Dowling considers both transmitter and acquirer as textual categories in the production of meaning and the transmitter described as being "in possession of the regulative rules of the practices of the activity which the acquirer is to acquire" (Dowling, 1993: 90). Of importance, are the concepts of message

and voice which refer to these positions of transmitter and acquirer. **Message** is determined by who can say what - how the message of the transmitter is determined by the speciality of the activity being engaged with and its context. Activities/practices distribute their message between distinct subject positions, also referred to as **voices**. "Activities partition their message according to a power principle which employs message domain and elaboration as resources and which results in a broadly hierarchical array of voices." (Dowling, 1992b: 5). The principles, according to Dowling, in the partitioning of message and the construction of voice originate from the status of the esoteric domain as the centre of subjectivity of an activity. Pedagogic texts are designed so that **dominant voices** are apprenticed into the esoteric domain. **Subordinate voices** are alienated from the esoteric domain so that context specificity is maximised for these voices in relation to the low context specificity of text relating to relatively dominant voices. (Dowling, 1992b: 6).

How mathematical discourse is reproduced, its forms, practices and modalities is of interest to this research. (See Appendix 2). What is to be considered is how it is constituted and elaborated in different contexts, i.e. what activities, practices and articulations of meaning apply. Essentially, **discursive elaboration** of mathematical discourse includes making available and explicit the regulating principles of this discourse, whilst **procedural elaboration**, hides meaning and obscures the regulating principles of the mathematical discourse. In other words, discursive elaboration makes principled connections between and within topics thus providing **access** to the discourse. It refers to the specialisation and generalisation of the discourse. Procedural elaboration, by contrast, hides the relationships and teaches algorithms, facts and procedures. It embeds the student in the mundane and disallows access to the regulating principles of the discourse. It provides students with mere rules rather than the regulating principles of the discourse. Often, for these students who are alienated from the esoteric domain of mathematical discourse, mathematics is transmitted as an "abbreviated" text so that little or no continuity of meaning exists and the connection between concepts is not made. Strategies which **alienate** and construct students in a **subordinate position** are referred to as **localising strategies**, while strategies which apprentice students into the **esoteric domain of mathematics** as a relatively **dominant voice**, are referred to as **generalising strategies**. (Dowling, 1993: 105). \*\*

In essence, the three major themes dealt with in this theoretical section of the chapter are, the theoretical description of context, the theoretical description of pedagogic discourse (and in these I have drawn substantially on the work of Basil Bernstein) and an analysis of realisations of pedagogic discourse in texts, (where the main emphasis has been on the work of Paul Dowling). I now move onto the next chapter, (Chapter 4), which has two sub-sections: "Data Collection and Research Design", (in establishing the empirical aspect of my research) and "Contextual Description" of the small-scale study school and schooling ethos, which precedes the analysis of the text on which I have based my research: the transcripts of interviews and fieldnotes of teacher and student discourse, (Chapters 5 & 6).

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**\*\* FOOTNOTE: The Use of the Concept of Voice/The Concept of Knowledge.**

Dowling and Bernstein make use of the concept of "voice" in different ways. Bernstein uses voice to refer to strength of classification, example: an academic voice, the voice of mathematics, become specialised. Dowling uses voice as a textual production of a subject position, example: the voice of the scholarship students, refers to their subordinate position in relation to other voices, such as the voice of mathematics teachers or of "upper stream" students. Where I have made use of the term "voice", it has been in context. In other words, where I have made use of Bernstein's notions of classification and framing, I have used voice in that context, whilst when referring to Dowling, I have done likewise: the context has dictated the appropriate use of the term.

Whilst Bernstein has a "notion of knowledge as contents", (Dowling, 1994:5), Dowling sees knowledge more as an activity or practice and as "articulations of meaning". Dowling refers more to **discourse** rather than **knowledge** in his later writings to give distinction to the underlying differences in concept. \*\*

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## CHAPTER 4

### RESEARCH DESIGN AND DATA COLLECTION, AND CONTEXTUAL DESCRIPTION.

This chapter is divided into two sections. In the first section, "Research Design and Data Collection", I will briefly describe the research question, research design and method of collecting data. The second section, "The Contextual Description", will focus on a description of the context of the school in which research took place.

#### A. RESEARCH DESIGN AND DATA COLLECTION.

##### 1. RESEARCH INTENTION.

As previously discussed, the intention of this research project is to investigate the possible constructions of the Black Scholarship students at this small-scale study school, and establish whether a position of advantage is, at all, available to them. This involves a look at the various ways in which these students might be constructed as disadvantaged; what relationship this has to their being alienated from school mathematics, and consequently, how they might inhabit a position of subordination in relation to other subject positions with respect to school mathematics. It investigates how subject positions are produced and reproduced within this school context, what boundaries are created and maintained, and to what extent the stratified nature of the school context assists in the construction of disadvantage, holding the scholarship students to a subordinate position with respect to mathematical discourse at the school. The investigation will also look at the ways in which mathematical discourse is constituted within the school, its modes of expression and the ways in which it, and pedagogic practice, is distributed in accordance with differentiated subject positions in relation to mathematical discourse.

The hypothesis is, then, that the Black Scholarship students are constructed in terms of "difference", relating to race, social class, ethnic culture and language. This "difference" is recontextualised into "cultural disadvantage"

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and the students are brought into the school carrying this construction. This "cultural disadvantage" translates into "academic disadvantage" as the scholarship students are alienated from mathematics within the school and positioned as subordinate. The question which follows is: does the Academic Support Programme "assist" the scholarship students in "bridging their gaps in knowledge" thereby providing them with a position of educational advantage, or does it, instead, delimit possibilities, linguistic repertoires and positions and assist in constructing them as disadvantaged? Does this construction subordinate them in relation to other "successful" students, or not? And, does it compound their experiences of alienation in relation to mathematical discourse at the school, or not? Essentially, does Academic Support do what it purports to do, or does it exacerbate the scholarship students' construction as disadvantaged learners, as a consequence of an inequitable arrangement and distribution of discourses and practices?

## 2. QUALITATIVE RESEARCH.

The theoretical premise which underpins the current research is that context provides differing "realities" in which subjectivity is differentially constituted. Contextual resources are selectively recruited in the taking up of subject positions and these positions are established in relation to other subject positions. Discourse, pedagogic practice and social comportment are resources whose selective recontextualising elaborate a position, and foreground or background subjectivities. My engagement in the research involved focusing initially on theories of discourse and subjectivity in positioning myself in the field of social inequality and mathematics education. My interest in engaging in research in this area, arose out of an increasing appreciation that there might be other interpretations of the difficulties which the scholarship students experience in mathematics other than the "reality" which is more commonly being espoused within the school, which is: that the Black Scholarship students come into a position of privilege and advantage in relation to their previous educational backgrounds, but achieve low academic results as a consequence of these former impoverished experiences; that they were requiring academic support to "fill in the gaps" of their knowledge and provide the necessary support so that they might

"come into line" with other students in the school; and that their potential, or realised, failure to do so is as a consequence of something "innate" - a fault or deficiency of the students themselves.

In advising how to analyse discourse of this nature, Potter and Wetherhill discuss a coherent theme or restriction in the possibilities of questions to be asked by discourse analysts. It refers to the issue of methodology. They say: "Participants' discourse or social texts are approached in **their own right** and not as a secondary route to things 'beyond' the text like attitudes, events or cognitive processes. Discourse is treated as a potent, action-orientated medium, not a transparent information channel." (1990: 160). Cognisant of this, my research approach does not rely on attempting to discover the truth about the scholarship students as if a set of facts could be found about them which represent an "objective reality". It is an approach which places greater emphasis on the social and on how subjectivity is constituted. Consequently, the interview is seen as a "social event", as Silverman (1994) describes it, possessing all the dependencies, influences and assumptions associated with interpersonal relationships as constituted within a specific location. The conditions or social resources which frame the social event of the interview should be acknowledged and described, rather than seen as a hindrance to the analytical process. Silverman says: "Interviews can also be seen to possess basic properties of all social interaction deriving from both parties' employment of their every-day, common-sense knowledge of social structures. It follows that such properties should be **investigated** rather than treated as a 'problem'." (1994: 97, emphasis in the original). In deciding to interview the black scholarship students as well as their Academic Support Programme teachers, I was hoping to assess whether or not there was a gap between the way in which the students positioned themselves and the way in which they were positioned by teachers, and if there was resonance to these positions in any area, cognisant of the subjective relationship between the interviewer, interviewees and the social context.

The current research approach is an attempt to access the "enunciative spaces" (Weedon et al, 1986) which are opened up by the repertoires of language utterances and comportment, which might provide a window on another world through selective description and redescription, albeit not

transparently reflective of an "objective reality". The purpose then, is to establish an alternative position to the one most commonly espoused at the school, by means of a theoretical framework best suited to a **qualitative approach** to the research question. This involves the examination of taken-for-granted assumptions about the scholarship students and whether these assumptions are underpinned by constructions of race, social class, culture and language difference, or any others. At a quantitative level, existing statistics indicate a "discrepancy" in academic achievement in mathematics between the Black Scholarship students and other "more successful students" in the school. This is not my primary concern. Rather, I am concerned with how this "discrepancy" is established and spoken about; what codes and messages are transmitted within the educational environment of the school which create and establish "difference" through the stratified schooling system, and assist in holding these students to a position of disadvantage, so that this institutionalised disadvantage is produced and reproduced within the school.

The interviews were approached with the understanding that "interviews vary in terms of the subjectivities and linguistic performances that are privileged", and that "the evoking context of interviewing foregrounds or backgrounds subjectivities, repertoires, positions, and in this way motivates the selective recruitment of resources", (Ensor, 1996). With this in mind, a short interview schedule was drafted with a few open-ended questions, more in the form of general topics to be addressed, which was given to the Academic Support Programme teachers for their perusal, comments and criticisms. The teachers indicated that the interview schedule was acceptable to them as well as the open-ended, semi-structured approach to the interview. Whilst it is recognised that open-ended or non-directive interviewing can, in itself, be a form of social control and can shape what people say (Hammersley and Atkinson in Silverman, 1994: 95), the intention in this research, was to minimise the influence of the interviewer on the interviewees' discursive shaping of positions in favour of a more "conversational" approach. I was hoping to decentralise the interviewer and to provide a context of interviewing which would be the least intrusive on the part of the interviewer. I consequently proceeded to set up appointments for interviews with the two Academic Support Programme (ASP) teachers. I

also arranged to conduct an interview with the four current Black Scholarship students in Standard 6, with the same criteria in mind. The interviews were audio-taped and transcribed to form the analysing text.

Field-notes were gathered from statements and comments by mathematics department staff in formal (example, mathematics department meetings) and informal discussions. Policy documents and letters, minutes of mathematics department meetings and other written statements relevant to the research were also gathered, (for which permission was granted). These fed into the analysis sections of the research (Chapters 5 & 6) as further analysing text. Potter and Wetherhill regard the collecting of what they refer to as "naturalistic records" as having advantages to research which analyses discourse, the most important advantage being that there is an "almost complete absence of researcher influence on the data". According to Potter and Wetherhill: "Transcripts of everyday conversations, news reports, scientific papers, letters, official documents, are features of the social fabric that the researcher has had no part in producing. From the discourse analysis point of view in particular, this material is helpful because it allows the researcher to capture the widest possible variation in accounts." This was the intention in the current research in making field-notes of conversations and in gathering school documents and other written statements. For Potter and Wetherhill, "by collecting documents from many sources, recording interactions, and then combining this with more directive interviewing, it is possible to build up a much fuller idea of the way participants' linguistic practices are organized compared to one source alone." (1990: 162).

To summarise the essential points of the research design: two pre-arranged interviews took place. One interview was with the two AS teachers and another was with Black Scholarship students. I chose to interview the four scholarship students who had most recently (at the time of the research) entered the school in the Standard 6 year. This academic year was chosen as it is the year of entry to the research school, the Black Scholarship Programme, as well as the Academic Support Programme, which runs for the first two years (Standards 6 and 7). I felt that the Standard 6 scholarship students' would speak with more immediacy regarding issues, "experiences"

and "feelings" pertaining to their entry into the school, the writing of the Black Scholarship entrance papers, and in being able to speak most vividly about their previous schools and the research school. All names used in the analysis are pseudonyms to honour students and teachers' confidentiality. The pseudonyms assigned to the scholarship students interviewed are: Marcus, Sam, Derrien and Simon. The names given to the two Academic Support teachers' are Pam and Jane, (although Ms F is used to refer to Jane in the student interviews.) I interviewed the AS teachers together, as they worked in collaboration with each other and were the most directly involved in interaction with the scholarship students regarding Academic Support. In deciding to interview these teachers it was hoped that they would, through discursive reference, illuminate the ways in which mathematical discourse is constituted within the school, as well as provide the linguistic framework for the positioning of subjects: the scholarship students, other students within and outside of the school, and the teachers within the school, including themselves. It was not necessary to confer pseudonyms on the teachers within the mathematics department as they were not formally interviewed and distinction between personal identities was not necessary. One reference is made, however, of the head of the mathematics department, referred to in the analysis as Beth, as well as to a vice-principal, referred to as Max.

### **3. THE INTERVIEWS.**

The interviews took place on two separate occasions. I was granted permission to conduct these interviews by the students' housemasters and the principal. My interview with the Black Scholarship students preceded my interview with the Academic Support teachers as it had been difficult to find a mutually acceptable time for setting up an interview with the teachers. The teacher in charge of the "science-related" fields in AS (whom I will refer to as Jane), was a little apprehensive at first and I continued to assure her of anonymity in the research. I was also eager that my role as mathematics teacher should not interfere with my role as interviewer and I assured the teachers that the information given would be strictly confidential. It was agreed that both Jane and Pam would be present in the interview. Some points worthy of comment are:

The AS teachers requested that the interviews take place in their "home" classroom: a prefabricated classroom set away from the main architectural structure of classroom "blocks".

- Jane was guarded in some of her responses at the beginning of the interview, but this became less pronounced as the interview progressed.
- Pam appeared eager to speak of the students' "difficulties" and at the end of the one and a half hour interview, expressed the desire to continue the discussion at some other time.

The interview with the scholarship students produced less tensions and the students were not reticent to speak. As they were not allowed to leave the campus for purposes of the interview, we arranged to use the private "on-campus" premises of a housemaster who was away from home at the time of the interviews. Heath discusses the impact of questioning children at home compared to at school. This is in the light of the meaning and use of teachers' questions having different interpretations by children depending on the differing linguistic socialisation of these children in the home environment, (Heath, 1986). In cognisance of this potential difficulty, a semi-structured, "conversational" interview was decided on in an attempt to ensure an informal interview context, which I hoped would allow the students to see me in a less formal role, thereby reducing the emphasis on questions, on a "classroom" context, and on a teacher/student relationship. The students appeared relaxed, contributing freely and eagerly to the conversation. They seemed comfortable with the research, and trusting in my promised confidentiality. Points regarding the interview are:

- The students seemed eager to speak about the "difficulties" they were experiencing in a non-formal, "unofficial" and "safe" context.
- Although they spoke without hesitation, they did not always speak distinctly and I often found myself unintentionally repeating what they had just said, in question form, to verify if I had heard correctly. This then served as a prompt for further information along the same lines and assisted in the conversation flowing well. There were very few tacit periods where nothing was said in the over three and a half hours of interview time. Downs et al. (1980) refers to this repeating back of interviewee comments as "reflective" or "mirror statements", which serve as useful prompting techniques.

- I tried to keep my questions as simple and as open-ended as possible, being as careful as possible not to use discourse - terminology, phraseology - which I knew to be common usage in discussing the scholarship students within the school, so as not to facilitate the students' construction or shaping of themselves in accordance with a pre-determined "teacher outlook" of them. I made a concerted effort not to contribute any "opinion" which the students might read as a "teacher opinion", so as to avoid a giving-the-teacher-what-she-wants-to-know syndrome. In other words, I attempted to keep the role of teacher and interviewer separate.
- I noted that the students felt happy to interrupt each other to complete or embellish on each other's stories so that they predominantly spoke, not as individuals with individual problems, but as a group sharing a unified experience.
- The students did not, at any stage, lapse into their mother-tongue during the conversations, but provided each other with language assistance in a co-operative and supportive way when any one of them hesitated over the use of an English word or expression.

There are some general points regarding methodology which are worth discussing. Downs et al (1980) discusses "inadequate responses", in terms of the following categories: no response, an incomplete response, an answer which may be irrelevant to the question, and inaccurate information. Downs et al. provides advice on how to deal with an interview where "information given contradicts known fact or that the interviewee is making unwarranted assumptions," (page 87). Given the theoretical approach to the current research, these issues were not considered in these terms. Responses were not viewed as being "inadequate", "irrelevant", "incomplete", "assumptions" or "contradicting known fact", as I was not attempting to discover the inherent "truth" about the "reality" of the scholarship students' experiences. This was not my brief. Rather, I sought to establish the ways in which the Black Scholarship students recruited textual and discursive resources by which they positioned themselves in relation to other subject positions, and the way in which these positions were shaped by student discourse with respect to school mathematics, cognisant of the constraining elements of the interview context as a form of account. As Ensor points out:

The interview is an invitation, an evocation, to speak. In this sense it is productive. At the same time it is constraining insofar as it canalises and silences expression. In the way it is constituted and in the manner of questioning, probing and responding, a regulation on speaking and silence is imposed, although by no means absolutely. The interview can be regarded as a context in which subjects position themselves in relation to each other, and recruit or recontextualise linguistic (and somatic) resources in order to achieve this. Questions, narratives, accounts, rhetorical devices of different kinds, and body posture are potential resources for recruitment in the elaboration of subjectivity. (Ensor, 1996: 2)

In the semi-structured interviews, flow of conversation was prioritised over organisation of interviewing agenda and the point-form answering of specific questions in a specific order was not considered important. Given that "the interview constrains in that through the questions asked, certain reservoirs are indexed and not others (although none are likely to be explicitly excluded)", (Ensor, 1996: 4), I allowed the conversation, largely, to develop and find its own route rather than enforcing a pre-determined structure on the interview context. I was hoping to prevent halting or inhibited responses which were over canalised by the interviewing agenda, a decision which was borne out in the analysis. Greater emphasis was placed on generating "student talk", producing accounts, and opening up "enunciative spaces", (Weedon et al, 1986).

In the light of these comments, I will now address the issues of validity, reliability and generalisability. Shipman (1992) discusses these, (in a foreword), in context of both qualitative and quantitative research. For Shipman, reliability is underpinned by the question: "If the investigation had been carried out again, by different researchers, using the same methods, would the same results have been obtained?" The question of validity is couched in the terms: "Does the evidence reflect the reality under investigation?" and generalisability is posed by: "What relevance do the results have beyond the situation investigated?"

To address the issue of reliability it is necessary to be explicit about the research method, and the connections between empirical work and analysis of the text and how these connections are underpinned by a theoretical position. Shipman (1992) says, what needs to be emphasised in qualitative research is, "the intimate relation of research and the evidence produced, to

the models of human behaviour and organisation that guided the researcher," The methodology used in this study is drawn from writings on language, discourse and subjectivity. I have utilised Bernstein's Model and Dowling's language of description, in the main, (which I have discussed in more detail in Chapter 3), in developing my theoretical position. This position has informed the research question. The empirical work - the generation of student and teacher discussions around an established topic, the gathering of relevant documents and field-notes as well as an examination and description of the school context in which the research took place - assisted in providing the text on which analysis is based. These theoretical and empirical resources underpin the research and provide the resources by which another researcher might undergo the same research.

A point of comparison can be made about my engagement in the current research as opposed to that of another researcher. This point refers to the difference in positioning of the researchers. As I have already indicated, my involvement as mathematics teacher within the same school, alerted me to some of the issues and questions posed in the research through my involvement in some of the pedagogic practices of the school. It must also be noted that I came into the research from a position of "experience", having a "tacit knowledge" (as Stake (1980: 66) refers to it), of the school, its practices and discourses. Stake refers to Polanyi in defining "tacit knowledge". This form of knowledge may "dwell on objects and events, but it is knowledge gained from experience with them, experience with propositions about them, and rumination." Stake points at the advantages of this form of knowledge to research in the terms: "I believe that it is reasonable to conclude that one of the more effective means of adding to understanding - for all readers - will be by approximating through the words and illustrations of our reports the natural experience attained in ordinary personal involvements," (page 65). The issue of what constitutes "natural experience" needs to be placed under scrutiny in its suggestion that there is a "natural truth" which can be illuminated through "experience" of this kind. Nevertheless, an argument can be made for the positive contribution of this "tacit knowledge" in facilitating the research. The disadvantages to this "tacit knowledge" are more obvious. One such disadvantage refers to the limits of the research, where the research cannot extend into the

researcher's own practices, although it may, in the process, alert the researcher to similar practices within the social and pedagogic context being observed. It is a dichotomy between the observer and the observed. I discuss this point in context of "Further Research" in the Discussion and Conclusion chapter.

This research, however, is not, essentially, about "tacit knowledge" which is brought into the research context, it is to do with an investigation into the previously elaborated research issues and an examination and close reading of the text - established in a systematic way through analysis of interviews and their transcriptions, and other documentation. Whilst my "tacit" or "working knowledge" of the school assisted in facilitating these investigations, which included where and how to find information, with whom to speak, and where to go, it by no means took the place of any investigations or the close scrutiny of the text on which analysis was based. I have, therefore, attempted to make explicit both the theoretical and empirical position of the current research, as well as the resources by which another researcher may undergo the same research. The relative and subjective nature of this qualitative research does, however, have to be acknowledged and that certain, already established, theoretical assumptions underpin the methodology. For Circourel, (in Silverman (1994)), all research approaches are concerned with what he calls "the synchronisation of meaning", (page 98): all use "rules of evidence" deriving from a single conceptual framework based on assumed common relevances, knowledges, typifications or constructions. These shared "common sense devices for making sense of the environment" are presupposed in conducting or analysing interviews. According to Circourel, we must therefore learn to "conceive of the error as evidence not only of poor reliability but also of 'normal' interpersonal relations." (page 98). This interpretation of "poor reliability" may be in relation to a positivistic mode of analysis where the emphasis lies in finding facts and figures in an assumed neutral environment, rather than, what Silverman would term, a more "interactionist" mode of analysis. Even so, according to Circourel's point of view, this "poor reliability" and "error" is to be de-emphasised in favour of what is spoken of as "normal interpersonal relations" or what, at least, is unavoidable in research of this nature.

This brings me to the issue of validity: whether the research analysed what the researcher set out to analyse. The research attempted to provide a form of account of the "difficulties" which the black scholarship students experience in mathematics at this school. In doing so, it sought to analyse the possible ways in which the scholarship students are positioned and position themselves in relation to other subject positions with respect to school mathematics. It investigated if there was any resonance between positions and whether or not there was a gap in the way the teachers constructed the students and how they constructed themselves. From the standpoint of the research methodology, it was necessary to examine by what means the black scholarship students are positioned in the way they are, within the instructional discourse of school mathematics as well as the regulative discourse of the school. It examines how notions of social class, race, language difference, ability and others are discursively located rather than reposing in individual students - as elements of group characteristics. In the analysis, extracts from the transcript are given, when the synchronic flow of statements are of interest; in others, isolated statements are extracted from it. The subject positions considered are demarcated on the basis of statements made by the students and teachers themselves, of themselves and others. What it is possible to say is limited by, in this consideration, a number of discourses; that of school mathematics, Academic Support and those within the regulative discourse of the school. The research attempts to critique inherent assumptions and taken-for-granted understandings about the students, through a close scrutinising of the data, and establishes whether or not a position of advantage is available to these students with respect to mathematics. In so doing, it attempts to meet its objectives. Silverman, refers to the issue of reliability and validity of research to what he calls the "interactionist" approach as continuing to depart from the "positivist position". Here, according to Silverman, validity is gained through "intersubjective depth" or "deep understanding" in interviews and analysis. Considering this interpretation for the current research, validity is attempted through a close-grained analysis of the research text, consistent with its theoretical objectives and established position.

Although the location and context of the research is specific to this small-scale study school and it is not generalisable outside of the constraints of

this context, the research does provide some understanding of the differentiating mechanisms of a stratified school, the way in which difference may be created and maintained, supported by cultural context, and it questions the intentions and “positive effects” of the pedagogic practice of Academic Support and of some other specific educational practices in mathematics teaching within a similar schooling context, such as streaming. It also serves a problematising function in that it seeks to question and pose alternative interpretations to assumptions regarding race, social class and ethnic, cultural and language differences in relation to schooling discourses and how these might be discursively located. I elaborate on this issue in the Discussion and Conclusion, (Chapter 7), under “Further Research”.

I now move onto the next section of this chapter concerned with an empirical description of the context of the school in which research took place, underpinned by the theoretical position espoused in Chapter 3.

## **B. CONTEXTUAL DESCRIPTION**

### **1. INTRODUCTION**

As previously discussed, a Scholarship Programme was instituted to incorporate a number of “black” students into the schooling system whereby, each year, four (or less) black students from local township schools are brought into the Programme in the first year of their secondary schooling. It will be argued, in the following two chapters, that these students achieve positions of subordination in relation to other demarcated subject positions and that they are constructed as disadvantaged in reference to mathematics at the school. I argue that these constructions take place **within the schooling context**, and although the positions of subordination are established, within language, in relation to other demarcated subject positions as they relate to mathematical discourse at the school, **it is the broader school context and cultural ethos**, which provides the means by which these positions are established. It is the school context and culture which facilitates selection, recontextualisation and distribution of certain messages, codes and practices which establish subordinate positions and construct disadvantage.

Since it is the broader context of the school which underpins the context of the mathematics classroom and the discourse of mathematics as it relates to these scholarship students, I have found it necessary to precede an in-depth analysis of the statements from the students and teachers, by giving a clearer description of the **context of the school**, which would include a description of the relations of **power and control** with respect to the “mathematical” discourses at this school: “mainstream mathematics” which encompasses all the streamed classes of mathematics across all of the standards controlled by the mathematics department; and the discourse of mathematics contextualised within the “Academic Support Programme” associated with the school’s “Black Scholarship Programme”.

## 2. THE SCHOOL.

The school chosen for this research can be described as a boys’ independent (private) school (i.e. although a small subsidy, until very recently, was received from the state, the school was not, and is not, controlled by state education policy). It is a member of the Independent Schools Council. It comprises pre-preparatory, preparatory and secondary schools and a post-matriculation unit. The research was undertaken in the context of the secondary school with particular reference to the first year of secondary schooling - Standard Six (approximately equivalent to grade 8).

The school was founded by the first consecrated Bishop of Cape Town soon after his arrival from England. The first advertisement for the school appeared in the “SA Commercial Advertiser” in February 1849 and stated that the object of the school was “to give a sound Education to the Youth of the Colony”. It continued: “It will be conducted strictly on the principles of the English Church”. In a book celebrating the centenary of the school it states that the school was to be modelled on Radley - a historical public school in England. Although it grew from humble beginnings, it is now a well known church school, steeped in tradition and considered to have a long and distinguished history.

The secondary school has three boarding houses and four houses for day scholars with a student enrolment of more than 600. The school is known for

period architecture including chapels which are historical monuments and has various impressive facilities and a physically large campus with many sports grounds. It states in the school prospectus that the boarding houses "are modelled on English university colleges". The school levies tuition fees which are, to a fair degree, beyond the financial means of the majority of South Africans.

The **school's mission statement** notes :

It strives to provide an excellent, all round education within the Anglican tradition of the Christian faith. The Mission of the school is to educate students in order that they might take their rightful place in the South African and world communities, and serve those communities with their skills and talents.

In support of this mission, the school is committed to :

- creating a climate which is characterised by high expectations, respect for excellence in all areas,...
- providing a vigorous academic programme in all areas required by the South African situation,...
- providing quality instruction.

Being an independent (private) school situated in a metropolitan area of the Western Cape, this school is in direct competition with many State schools, in close proximity, that provide similar education of a considered "high standard". To justify its high tuition fees and to attract applications, it is necessary for the school to provide "good facilities", a "small class size" and "competitive academic results". This is reinforced by the wording in the mission statement where there is a strong emphasis on "academic achievement" and "excellence" - these being measured by performance and are synonymous with "good examination results".

The preparatory school is a feeder to the secondary school, and although "common entrance examinations" are written by all students who enter the secondary school, except the black male students placed in the school's scholarship programme, it is the school's policy that automatic entrance be granted to those students who have graduated from the preparatory school. Any exception to this procedure would be by special circumstance. According to this policy, students from the preparatory school are privileged over all other candidates from other schools with regard to fulfilling entry requirements for

the secondary school. During one academic staff meeting, the Principal was questioned by academic staff members on the reasons for the existence of this policy and he responded: "We would like to believe that once a family has come into the school and become part of the broader (small-scale study) school family, they can always feel part of that family. That is what it means to be family: people caring about each other." This policy could be interpreted, by its inherent mechanisms of exclusion and privilege, as drawing on relations of class. The power relations which exist around the discourse of "common entrance examinations" are therefore associated with class ideology and school culture: codes transmitted between and within school discourses.

### **3. THE "BLACK SCHOLARSHIP PROGRAMME".**

The black and so-called "coloured" male students who have applied for a scholarship to the school, write special entrance examinations, distinct from the usual common entrance examinations written by all other male students. These "scholarship examinations" are written in Mathematics and English, considered, according to school policy, the two most important curriculum subjects in determining a candidate's "academic ability". English is also considered, within the school, as an important academic measure by which the scholarship entrants are tested for their "ability to cope with the cultural requirements of this English medium school".

Based on their performance in these entrance examinations, as well as a set of interviews with the candidates held by the Principal and those teachers in charge of the "Black Scholarship Programme", no more than four black students (occasionally less) and three so-called "coloured" students are chosen to attend the school in any one year, entering in the Standard Six year.

The black students' entrance results, particularly in mathematics, are considered to be very low. Candidates writing the scholarship entrance papers achieve, on average, results well below 50%, so that whilst "the best" candidates are selected from those who achieve the highest results, statements amongst teaching staff about their being "academically weak" abound. A contradiction exists as a result. The candidates chosen are told that they have "won scholarships" to the school suggesting academic prowess in

relation to school expectations thereby raising expectations within their home and community context, but their “low” entrance examination results position them as being “academically weak”. They then enter the school holding this position, and are assigned to a low set (or stream) in mathematics, usually set 5 or 6, as a consequence of their low academic results. (Discussed further under Section 4.) This is accentuated by the comparably higher results, on average, of other students who enter the school, having written the usual “common entrance examinations”.

Other reasons given, amongst academic staff in the school, especially those in charge of the scholarship programme, for the Black Scholarship holders being placed in a low set in mathematics are:

- their “weak standard in English” or “lack of language skills”;
- their “lack of experience” and “educationally disadvantaged backgrounds”.

One of the stated reasons for placing them in a low set for mathematics is given as: “They would be unable to cope with the language demands of mathematics at a higher level with such a poor standard of English”. (This requires extensive further analysis, and is elaborated on in chapters 5 and 6.)

Whilst they are placed in a lower stream as a result of “lack of language skills” and an “educationally disadvantaged background”, the low streaming differentially positions them as “low ability” students. Here, “cultural difference” translates into “educational deficit” in relation to the school context, which in turn results in the scholarship holders being associated with inherent “inability” and assigned a position of “low academic status”. A construction of them in terms of “failure” results. It is the task of the following chapters to analyse the language which constructs the scholarship students in terms of failure and disadvantage, thereby substantiating this claim to the establishment of subordinate and alienated subject positions.

It is evident that certain power relations exist around the discourses of “common entrance” and “Black Scholarship entrance” examinations. The entrants are streamed according to the different examination criteria. Whilst placed in sets within the same streaming context, they “compete” with each

other from separate examination contexts and are compared on grounds where the criteria for comparison are not equal. The discourse of "Common Entrance" is dominant over that of "Black Scholarship Entrance" in the main, in that the premise of the former is based on **privilege** and the latter on **philanthropy**. The school's "statement of intention" of the Scholarship Programme is given as:

This programme offers four boarders and three day students from educationally and economically deprived circumstances an education in our college. These are so-called black or coloured students.

The Scholarship Programme is designed so that the four "black" students entering Standard Six are given **full** bursaries (all expenses paid) for each year until matriculation, and are **expected** to reside in one of the three boarding houses at the school. The three "coloured" students are given half bursaries where tuition costs are partly covered and are assigned to one of the day houses. The "Black Scholarship boys", as they are commonly referred to within the school, are expected to reside at the school as this is deemed essential for their enculturation and "assimilation into the school". "Practical considerations" are also given to the "home environment", usually in one of the local townships, which is considered "not conducive to a learning environment". Since most of the townships are a fair distance from the school, cumbersome transport arrangements are also considered impractical.

#### 4. THE STREAMING SYSTEM AND INSTRUCTIONAL DISCOURSE

For each subject taken at the school, a student is placed in "a set" in accordance with his "ability" in that subject. The sets in Mathematics range from Set One (high ability) to at least Set Five or at most Set Seven (low ability) depending on the number of students in the standard. For most subject departments, movement from one set to another is regulated by the **results** achieved in tests and examinations and does not occur with frequency. This is also the case in the Mathematics Department, which regulates policies and organisation of mainstream mathematics (as opposed to the mathematical discourse framed by the Academic Support Programme). Here, examination results are the major determinant of the "set" or "stream" in which students are placed, in accordance with their "ability". On a rare occasion, a placement might be supported by review of a student's Intelligence Quotient result, if this is available, but more usually than not, consideration of an internally written

examination in mathematics would override a discrepancy between the two results in determining the set in which a student is placed. The results from internal examinations in mathematics are compared with all students in any one standard at any one time. More often than not, these comparisons are used as the sole determinant of the set in which a student will be placed. The entrance examination is also used for this purpose at the initial stage of a student's entry into the school.

Half-yearly reports are written in each subject, for each student, in which their position in the standard as well as their position in their set is given. Example: Standard six, Mathematics: 82/96, set 6: 5/19. This means that the student is eighty second out of ninety six students in the standard, and that the student was positioned as being fifth, in set five, out of nineteen students in the class. Comments regarding a student's "success" or "failure" in a particular subject and the nature of their "progress" would be made by teachers in relation to the student's recorded percentage and position in the set and standard, which would appear at the top of the report page, under the student's name.

The process of positioning the students takes place by averaging each student's test and examination results for the half year and writing each result on a large roster (or schedule of results) against a vertical axis of percentage. Each student's position would then be determined according to this vertical hierarchy of examination percentages. At the end of the academic year, this roster/schedule of results drawn up, predominantly covering the examination results for the latter half of the year, would be the determinant of which set a student will be placed in, for the next academic year, and whether or not there exists the possibility of a set change for any particular student. If such a change did take place, it would usually be within small parameters: example, from set three to set four or from set three to set two. A change from set five to set two, for example, would never occur, unless under very special circumstance. In particular, movement **into set one** from another set is highly unusual and almost never occurs after the first two academic years (Standard Six and Seven) have been completed.

Consequently, it could be said that the school's culture equates "ability" with "examination achievement" classifying the students according to a vertical

hierarchy, defined and supported by the streaming system. An organisational construction of "high ability" and "low ability" is then facilitated in terms of this hierarchy, supported by the selective recruitment of linguistic resources. According to this practice, whilst a student is differentially positioned according to his "ability" in a subject, the student is also correspondingly assigned and identified with academic "success" or "failure". Boundaries are formed, limiting mobility across the rungs of this "hierarchy of achievement". Not only does this take place on an organisational level in terms of practice, but it also has connections with the positioning of subjects through the construction of "success" and "failure". Here, the student is pathologised in terms of "existing attributes" which construct him in terms of "success" or "failure". For Bernstein, "the more examination-minded (the school) becomes, the more divisive becomes its social organisation". (Bernstein, 1973: 39). It could be argued, that this can be evidenced in the criteria given for streaming students according to "ability" in each of the academic subjects or instructional discourses in the school.

##### 5. RITUAL AND THE SCHOOL

According to Bernstein, an essential ingredient of school culture is ritual. The research school has a dominant culture which is highly ritualised given that it is steeped in tradition with a strong historical consciousness. According to Bernstein, the symbolic function of ritual upholds the well-defined set of values to which the school community is expected to subscribe. It relates the individual through ritualistic acts to the social order of the school, identifying "his place" in it. The purpose of ritual refers to a broader historical context outside of the immediate situational context and this broader historical context signifies the dominant value system: one which, in the case of this school, relates to the issue of class (codes which differentiate and subordinate subjects in relation to others). The streaming system at this school, is an example of the differentiating mechanisms of class. Bernstein divides ritual into two groups: **consensual and differentiating**.

The **social order** of the school is the major mechanism of **consensual ritual**. Here the ritualised chapel services are an example. Chapel services are performed on a daily basis with "Holy Eucharist" and "College Evensong" on

specific occasions. The services are performed in the “high Anglican tradition”, the rituals of which, with their strong choral emphasis, are particularly Euro-centric in nature. As a result, students having cultural and religious group identities other than that of the school’s, are strongly positioned in terms of cultural difference with Euro-centric Anglicanism playing the dominant role in defining the religious culture of the school. The formal nature of the services are also codes of the ideology of class. All students are expected to participate in the consensual rituals of the school, such as the chapel services, irrespective of their religious affiliations and cultural background.

Whilst the social order is the major mechanism of consensual ritual, the **differentiating ritual** is also worthy of description in this schooling context. Here, **age differentiating rituals**, **age relation rituals** and **house rituals** are of relevance:

- The **“fagging system”** which the Black Scholarship holders refer to in the interviews is a form of **age differentiating ritual**. Students in Standard Six are expected to do minor chores for students in their matriculation year. Each Standard Six student, called a “fag”, “fags” for his “fag master”. On a few occasions in the interviews, the Standard Six students being interviewed refer to their “dislike” or “difficulty” with the fagging system and of the “excessive duties” which they have to attend to which, they say, interferes with their time to attend to academic work.

- The **prefect system** is an **age relation ritual**. In this system, senior students specially chosen for “their leadership qualities” by housemasters, vice-principals and the Principal, are responsible for assisting academic staff in maintaining “discipline” over other students. The prefects have authority to administer punishment for certain offences. There are prefects assigned to each house. Again, in the interview situation, when asked “what difficulties they might experience with the school”, some of the Standard Six scholarship students referred to their “dislike” of the prefectorial system and of the excessive use of rules. They spoke of not being “used to all the rules”, compared with the context of their previous schools.

- **Boarding and day houses** refer to **house rituals**. Each male student is assigned to one of seven houses depending on whether or not he is a boarder

or a "day boy", as commonly referred to within the school. He is expected to abide by the rules of that house and give it his full support. The Black Scholarship students are assigned to one of the three boarding houses and this is a prerequisite of their admission to the school. This again, was commented on by some of the students interviewed when speaking about the "difficulties" they experience with the school. In the interviews, these students refer mostly to the quantity of duties and rules in the boarding house, their dislike of them as well as their inability to "get used to them".

■ **The "set" system:** This is a form of streaming and is a **differentiating ritual**. As previously mentioned, students at the small scale-study school are placed in a "set" ranging from set one through to as much as set seven. This occurs in all the major academic subjects or instructional discourses, including mathematics. Streaming is based on measured "ability" in that academic subject and the criteria used to determine this is the student's academic results. There is a different teacher for each set in any one academic subject.

These differentiating rituals are very specific and very much a part of the organisational structure of the school and of its historical tradition. It could be said that they are strongly classified, in Bernstein's terms, and they emphasise a **"culture of difference"** at the small scale-study school. Because of the emphasis on tradition at the school, there is little forum for open discussion regarding their appropriateness or relevance amongst the academic staff and no avenue of student debate exists around these differentiating rituals. They are supported by "school tradition and history", and are a strong component of the cultural ethos of the school. They act as a visible pedagogy which accentuates "difference" and "domination" and they lie at the heart of the school culture.

This last differentiating ritual referred to in the list of rituals, the "set" system, requires extensive further analysis and is elaborated on under **Classification and Framing** and in the next two chapters: **an analysis of discourse of teachers and scholarship students**. It is the major mechanism of positioning subjects within this school context.

## 6. THE STRATIFIED SCHOOL, DOMINATION AND DIFFERENCE.

The small scale-study school is a stratified one in that the students are ordered according to the "fixed attributes" of gender, age and "cognitive ability":

- **Gender:** it is an all boys' school, except for the post-Matriculation Unit.
- **Age:** students are assigned to a particular standard, from Standard Six to matriculation, based predominantly on the criterion of age.
- **Cognitive ability:** this inheres in the streaming system whereby students are placed in "sets" in accordance with their so-called "ability" in a subject, supported by the examination system and, on a rare occasion, IQ testing.

These "attributes" are therefore ritualised and communicated as **restricted codes**. Bernstein supports the idea that, as a result of these restricted codes, a stratified school has a social order resting on **domination** rather than **co-operation** (as might be the case in a differentiated school). This is evident in the stratified nature of the small-scale study school. The differentiating rituals, mentioned above, are instituted by school rules and procedures which are not dependent on the consent or acceptance of the students involved in any way and no forum or debate exists around these practices.

The black male students of the Scholarship Programme enter the context of the school and, as part of their enculturation, are expected from the start to engage in, conform to and participate in, the rituals mentioned above. This is the context in which the Black Scholarship students find themselves. The power relations between discourses and practices within the school are such that the students are not in a position to question the decision to place them in any particular "set" in any subject and have no authority in the decision-making process with regard to the streaming system. Such decisions are made by the existing head of department in that subject in consultation with her/ his subject teachers.

It can, therefore, be said, in Bernstein's terms, that the transmitter has explicit control over the discursive order i.e. with respect to elements/criteria of the discourse of mathematics. This connects with the concept of "codes" which assist in transmitting the particular power relations which maintain and support such procedures within the school culture.

## 7. CLASSIFICATION & FRAMING: MAINSTREAM AND ASP MATHEMATICS.

I will now describe the context in which the black male students of the Scholarship Programme find themselves in relation to **mathematics discourse**, by introducing Bernstein's terms of **Classification and Framing** - pedagogic codes transmitted and acquired according to relations of power and control.

### 7.1 Mainstream Mathematics: Classification.

The mathematics department includes seven mathematics teachers including a head of department and controls all mathematics discourse associated with each streamed class of each standard. This includes control over curriculum, teaching practice and organisation, and all forms of evaluation in mathematics. The subject of mathematics at this school, is a "singular discourse" and can be described as having a **strong classification** for the following reasons:

- It is **distinct** from other academic subjects/instructional discourses in that little liaison occurs between other subject departments and mathematics with regard to curriculum development and design, teaching methodology, organisational practices, and decision-making within the department;
- There is **little intersection** of "curriculum knowledge" with other academic subjects at the school and little to no attempt is made to integrate mathematics methodologically with other academic subjects. The selection of content and expression of the mathematics syllabus is largely the responsibility of the head of department of mathematics, and is devised in consultation with other mathematics teachers in the subject department. It is formulated in consideration of the National Education Department's mathematics curriculum and the Independent Examination Board's requirements for mathematics examinations for the Cape province. All the mathematics teachers within the school, are expected to conform to the prescribed syllabus (which has been outlined and documented for each standard) in their educational instruction as well as in the setting of examinations;
- The **teachers** within the mathematics department are all **qualified** in mathematics and are responsible for teaching mathematics **only**. They are considered specialists in their fields;

- Each standard is allocated a specific period or two for mathematics in the daily timetable and all students in a standard are time-tabled to take mathematics at the **same allocated time**;
- **Separate examinations** are written in mathematics for each standard;
- There is a **teacher per classroom** for each mathematics set in a standard;
- The subject of mathematics is **highly specialised** and is supported by its own unique “language” and distinctive “voice”;
- The mathematics department is **highly competitive** in that a strong accent is placed on “competition mathematics” and the winning of awards and medals. This has been one of the stated departmental objectives. Not only does the department enter “the top students” in many external, local, national and international mathematics competitions, (such as the National and International Mathematics Olympiads), but it also runs an “inter-house mathematics competition” on an annual basis. The department prides itself on the number of medals and awards won by students. In 1995, the Principal of the school announced at an assembly of staff and students that: “we have the best mathematics department in the country as the most number of students compared with all other schools in South Africa won through to the second round of the National Mathematics Olympiad”.

Consequently, the discourse of mathematics at this school:

- is **well insulated** from other curriculum discourses. The degree of insulation regulates criteria of demarcation between discourses and assists in generating rules of recognition. The power relations supported by the insulation create principles of the “social division of labour” of discourses;
- possesses its own **strong “voice” of mathematics** which supports the insulation between discourses, establishing demarcation markers and recognition rules. Its high specialisation, competitiveness and strong “voice” defines its **dominance** over other discourses and hence its **prominence** in the “social division of labour” of discourses;
- is a **visible pedagogy**, as the rules of the discursive order of mathematics are explicit i.e. the criteria of hierarchy, sequence and pace are well-defined, visible and explicit. The emphasis is on an “external gradable text” - the examination system, which then compares students with each other based on their **performance** in mathematics.

The **internal classification** of the mathematics classroom as it refers to the arrangement of desks and tables is also **strongly classified**. There is grid-like arrangement of desks in rows and columns. Each desk is separate from the next and the teacher's much larger desk, faces the rest of the class and stands at the front of the classroom. Also, in front of the classroom, a 'white board' is attached to the wall for educational instruction purposes. There is also an overhead projector screen permanently attached to the front wall. Attached to the side walls of the classroom are pin-boards for posters. There are also cabinets and bookshelves for the teacher's use only. Most classrooms in the school appear this way. Notable exceptions are the computer room and the classrooms allocated to the "Academic Support Programme". The regimental formation of the main academic subjects, a tradition at this school, presents a "conservative" or "traditional" (chalk and talk) approach to educational instruction at the school. It also visually supports the strong classification of the school's mathematical discourse.

## 7.2 Mainstream Mathematics: Framing.

The discourse of mainstream mathematics controlled by the mathematics department is also **strongly framed**. This is conveyed through many messages, especially through what Bernstein would refer to as its distribution of recognition and realisation rules, as it inheres in the streaming system. The framing of mainstream mathematics discourse at this school can be described in terms of the criteria which Bernstein gives for framing:

- the selection of the communication;
- its sequencing;
- its pacing;
- the criteria;

and the control over the social base which makes this transmission possible.

- **The selection of the communication:**

A set syllabus has been drawn up for each standard in terms of a "set of skills" which are expected to be "acquired" at that level. The syllabus tends to follow the prescribed textbook closely. The topics are highly compartmentalised into "sections" of the syllabus. Sections of mathematics to be "covered" during predetermined time intervals, usually refer to page

numbers of the prescribed textbook, especially in Standard Six and Seven. As a result, strong framing exists in the selection of mathematical discourse.

■ **Sequencing:**

Much departmental debate ensues over the sequencing of the syllabus. A "schedule" is drawn up for each quarterly academic term incorporating different "sections" of the syllabus, including the estimated number of teaching days or periods expected to cover "the material" by all teachers across the array of sets. Usually they are arranged in an order that suggests a **graded hierarchical progression** to the exposition of mathematical discourse. Comments such as "we need to do the chapter on equations with them first before they do geometry because they need it for solving geometric equations," are frequently made in the discussions. Little flexibility is granted to teachers to deviate from the prescribed "schedule". If they choose to do so, the material covered is not considered "examinable" in accordance with "standard tests" and half-yearly examinations.

"Standard tests" are given at regular intervals on sections of the prescribed syllabus. All sets are expected to write the same "standard tests" and examinations at the same set time, especially in Standards Six and Seven. Mathematical discourse is sectioned off into clearly defined units. These "sections" correspond with "skills" which the student is expected to acquire to be able to move onto the next section, although there is no option to repeat units whose "skills" were not satisfactorily acquired. The mathematics syllabus then becomes compartmentalised into "graded examinable texts" which follow each other sequentially. It can be said, as a result, that strong sequencing exists and all sets, in Standard Six and Seven in particular, learn the same "sections of the syllabus" over the same time periods. This leads to the issue of pacing:

■ **Pacing:**

The pacing in mainstream mathematics is strong in that all sets from set one to six cover the same "examinable sections of the syllabus" over the same time intervals. These intervals are compartmentalised into tight units comprising a small number of teaching periods and are concluded by evaluation in the form of unit tests: "common tests".

The school runs an "Accelerated Programme" in mathematics. Sections of the syllabus, as prescribed by the Cape Education department, are incorporated into the previous year's syllabus at the school. This means that the Standard Six syllabus will incorporate "sections" of the Standard Seven syllabus, and so on. This occurs progressively through the standards so that the Standard 10 syllabus is completed by the start of the second term of the matriculation year. Much debate ensues over this policy at mathematics department meetings. Some teachers responsible for teaching the lower sets refer to their and their students' "difficulty" in being able to "keep up with the pace" of transmission, acquisition and evaluation.

A construction of a "slow learner" inevitably results. Comments such as "the bottom set boys are slower on the uptake and can't keep up with the pace", are frequently heard in departmental meetings. In a letter to the Principal regarding "lack of motivation" among "weak pupils", a staff member of the mathematics department wrote:

I find it very hard to understand that in some departments the bottom set is required to work at the same rate as the top set! I fully appreciate that a certain amount of work has to be covered during the year but all pupils **do not learn at the same rate**. The result is the low self esteem, frustration and bad behaviour in the lower sets.

Departmental policy is to arrange student numbers in the sets so that there are fewer students in the lower sets than in the upper sets. The upper sets usually have their full complement of students, namely twenty four per class, whilst the lower sets can have as little as eight, on average twelve per class. The intention behind this policy of class size differentiation is to provide for the "special needs" of the "lower stream" students. It is so that the "lower streams" can work "at their own pace" and be given "more individual attention" which they "require" as a consequence of their "learning difficulties". A construction of a "slow learner" and an "academically weak pupil" is facilitated by this, although a contradiction in policy exists over the issue of "pacing" with regard to "lower stream" students. On the one hand, they are **expected** to acquire mathematical knowledge at a **slower pace** as a consequence of their "learning difficulties", (reflected in the policy on student numbers per class), whilst on the other hand, they are **required** to "cover the work" for examinations at the **same pace** as all the other sets.

■ **The criteria:**

This necessitates a discussion on the “long term” expectations of students in different sets for mathematics. The “top sets” (Sets 1 to 4), as they are often referred to within the school, are **expected** to maintain the higher grade stream while the “lower sets” (Sets 5 to 7) are **expected** to “drop” to standard grade (the less academic stream). Academic staff at the school commonly speak in terms of these expectations and comments advising parents on these appear on half-yearly reports. From Standard Eight onwards, there are two different half-yearly examinations set for each standard, reflecting this separation in “academic standard”. From Standard Eight, the “standard grade” option is formally offered where lower stream students write separate examinations to the other students. All students write the same examinations for Standards Six and Seven, including the black male students of the Scholarship Programme.

The nature of the dialogue, associated with the streaming system, emanating from mainstream mathematics at the school, differentiates subjects according to “ability in mathematics” and constructs them in terms of “success” or “failure” in this subject. This is apparent in the following two statements which come from a letter drawn up for “standard seven parents”:

**Choice of subjects for boys going into Standard 8**

**Statement 1:**

ADDITIONAL MATHEMATICS is taught to Set 1 Mathematics. It may be written in the final examination, as a seventh subject only.

**Statement 2:**

Parents are asked to consider seriously any suggestion from the school that their son take mathematics on the Standard Grade. Parents must please be practical and realistic when they arrive at their decision. The decision, where necessary, about entry on the Higher or Standard Grade, is made in consultation with House-masters in the Standard 10 year, though in the case of mathematics it will usually be apparent as early as Standard 8 or 9. It is unlikely that a bottom set boy will be able to cope with HG maths.

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The “apparent” capability of students being able to “cope” with and continue on the Higher Grade or having to “drop” to Standard Grade, is determined by their “academic performance” in mathematics as it relates to examination results. This, in turn, becomes a function of the **set** in which they are placed or are said to “belong”. The set in which the student is placed then substantiates

or justifies the academic level (Higher Grade or Standard grade) to which the student is "expected" to "belong", producing and reproducing itself as a differentiating code of academic ability. For those in the lower sets, this has a limiting effect on the options open to them. Boundaries are formed which hold them to a position of "failure" in relation to mathematical discourse at the school. As a result, statements about their inability to "cope with HG maths" as a consequence of the **set or stream** they are in, abound.

Acceptance of this position of "failure" is elicited from parents and students on the grounds of "realism" and "pragmatism". By asking parents to "be practical and realistic when they arrive at their decision", they are being asked to accept their son's "failure" in mathematics as being a natural function of his "inherent inability" in it. This condition of "inability" is justified by the set in which the student is in. The "fault" lies with the student's inability, rather than the school. Here the school remains neutral. It is being presented as a *fait accompli*, as a natural and normal occurrence, excluding the possibility that the problem might inhere in the constructing mechanisms of the streaming system in which the student was placed.

Another device which serves to exclude students from access to the regulating principles of the discourse of mathematics, and creates boundaries between academic subjects or discourses, is the criteria of membership of the "Mathematics Society" at this school. The "Mathematics Society" holds meetings in the evenings at least twice a term and these are only open to "top set boys" in mathematics. Here, student members are exposed to more "advanced mathematics" designed to stimulate "lateral thinking skills" and encourage interest in topics in more "advanced academic fields" in mathematics. In Dowling's terms, these students are provided with access to the "esoteric domain" where the discourse of mathematics is discursively elaborated. Those excluded from entry into the "Society" are considered "unable to cope with its intellectual demands" and are excluded from access to the "esoteric domain" of the discourse as constituted within the mathematics department of the school.

In some sessions of the "Mathematics Society", guest speakers are invited to speak to member students on vocational issues. Usually, the speakers are

considered to be "leaders" in their professions or fields and speak to the students on the requirements for entry into these professions at university level as a consequence of being "successful mathematics students". Codes pertaining to "the social division of labour" are evident here. With the construction of "success" is an associated "middle-classness" and codes of class are evident in the framing of mainstream mathematical discourse.

Whilst, on the one hand, a punctuated transmission takes place in the expression of mathematical discourse across the array of sets, on the other hand, the same rules of evaluation apply equally on the whole, to all sets in mathematics. All students are evaluated according to the same or similar criteria with regard to "standard tests", which are written by all sets in a standard at the same allocated time period and marked according to a set memorandum with specific mark allocations. They are also evaluated according to the same or similar specified criteria in internal half-yearly examinations.

Whilst students are **differentiated** according to sets in the transmission process, they are evaluated according to the **same** rules in examinations. Their performance in the examinations provides the mechanism to differentiate them from each other - an external gradable text. So whilst they "learn" separately according to criteria related to their stated "rate of acquisition" and "ability" in mathematics, they "compete" with each other in examinations. It is the hierarchy produced by examination results which provides the justification and means of "placing" the students in different streams and facilitates the establishment of an array of subject positions. As a consequence, they are streamed accordingly and might move up a set or more if an "improvement" is seen or might drop a set or more if a "deterioration" is evidenced in the examination results. As this "set changing" procedure progresses upwardly from one standard to the next, the majority of students remain stable according to sets and if movement between sets does occur, it tends to be an infrequent move of a few students up or down a single set. Large "leaps" across sets occur extremely infrequently. In conclusion, evidence of strong framing exists in the **criteria** on which the discourse of mainstream mathematics is based, as constituted and controlled by the mathematics department.

■ **The control over the social base which makes this transmission possible:**

The stratified nature of the schooling environment as evidenced in the hierarchy of the streaming system, (which persists in the hierarchical structure and status of academic and non-academic staff at the school) is, in itself, a visible pedagogy and presents itself ideologically in terms of **class codes**. Within the system, there are those who are expected to “succeed” (and become “leaders”) and those that are expected to “fail”. Codes of class provide the means by which success and failure are constructed.

Access to the recognition rules of the discourse of mathematics are made available to some whilst not to others, serving to differentiate subjects in a way which is consonant with the ideology of class and the social division of labour. This can be substantiated by Bernstein’s comment:

‘Class relations’ will be taken to refer to inequalities in the distribution of power, and in the principles of control between social groups, which are realised in the creation, distribution, reproduction, and legitimation of physical and symbolic values that have their source in the social division of labour. (Bernstein, 1990:13)

In the **school prospectus** class codes are evident in the following statement :

(The named school) is an academic school ... and it prepares boys for university or other tertiary education after school....School is not just about gaining certificates - we teach in order to prepare boys for life, and so we base our approach to the curriculum around a group of core life - skills, such as literacy, numeracy, dealing with the world of work, flexibility, adaptability, entrepreneurship and leadership. (Insertion - DS)

Statements, such as those in the school prospectus, that the school is committed to “creating a climate characterised by high expectations”, and “respect for excellence” carry class codes which reinforce distinctions and difference amongst subjects. Consequently, a set of messages are distributed which facilitate the construction of students in terms of “success” or “failure”, and which grant them positions of dominance or subordination accordingly.

These issues are raised and are evident the language of the following statement made by a staff member of the mathematics department, in a letter to the Principal, concerning the lack of motivation in “lower sets”:

I find parental attitudes and expectations are doing a lot to harm the weaker pupil who, even when he tries harder, is rewarded with 'surely you can do better' because he is 'below average'. The boys are continually reminded that they should strive for excellence but they all perceive excellence to be an 'A' in the classroom and the 'A' team on the sports field and thus feel alienated. How does one motivate someone who is short-sighted, knock-kneed in set 6/7 to be excellent?

Relations of power and control are evident between mathematical discourse controlled by the mathematics department and other academic discourses within the school where **codes of class** are also evident. The **superior status** the discourse of mathematics holds in terms of the "social division of labour of discourses" can be evidenced in the following statements which appear in the minutes of two successive mathematics department meetings (at which only the teachers within the mathematics department are present). The statements revolve around the debate as to which examination board the school should register with, in the light of new legislation for education in a post-apartheid South Africa:

**Statement 1**

There was a feeling that the IEB (Independent Examination Board) exam was likely to be **mathematically more demanding** than the WCED (Western Cape Education Department) (especially if standards of WCED were to drop), and therefore **more in tune with the (small scale-study school's) style of teaching**; at the same time, there were fears that if universities were not prepared to acknowledge different merits of different examining boards, some pupils could be disadvantaged by our changing to IEB. It was also noted that there are **positive implications** for Additional mathematics as it is set by IEB and allowed by them as a 'sixth subject'. The consensus, after some discussion, was that we should aim **to ally ourselves with the mathematically superior board**, which seemed to be IEB. (Emphasis added - DS)

**Statement 2**

(Mathematics teacher A) feels that the IEB Standard Grade papers are straight forward and generous with marks; the view on HG papers is similar. Thus the conclusion is that a switch to IEB should benefit our boys, especially if, as is hoped, the **IEB will develop mathematically in a way that is not too-common denominator orientated**. (Emphasis added-DS)

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Statements of academic superiority and distinction from the "national context", are evidenced here, which are intended to align the mathematics department with a superior class structure through academic status. Here, the issue of status and class are seen as synonymous.

“Mathematically demanding” and “high standards” are equated with the school’s “style of teaching” in mathematics. The availability of writing “additional mathematics” examinations, which are intended to be “higher level” mathematics, has “positive implications”. This implies that it will satisfy the predominantly upper and middle-class parental client-base of the school who would welcome their sons writing mathematics examinations that are of a superior status to the normal mathematics examinations. Not only this, but it would facilitate gaining extra credits towards university entrance and ensure entry into the more competitive fields of study which have more stringent academic requirements. The school would consequently also benefit by the success of students in “Additional Mathematics” as it is seen as projecting a positive image to the community of high academic results and “excellence”. Statements such as aiming “to ally ourselves with the mathematically superior board” and “develop mathematically in a way that is not too common-denominator orientated”, also carry messages and attitudes of superiority and distinction, and are hence codes, within the school context, which refer to class relations.

### 7.3 The Academic Support Programme: Classification.

The Academic Support Programme is intended to “fill in the gaps” of academic knowledge which might be “lacking” and provide “support” academically to the black male students of the Scholarship Programme so as to “bring them up to standard” and “in line with mainstream academics” at the school. This Programme covers, in the main, the first two academic years of study at the secondary school. The expected deficiencies which require correction through Academic Support are said to lie in the difference of cultural experience, the difference in language and the difference in access to education, in the main, and this will be elaborated on more extensively in the following chapter. The main academic subjects/instructional discourses which are considered able to provide correction to these “deficiencies” are English and the said “science-related fields”. The prospectus states: “there is an academic bridging course for those boys entering the College from disadvantaged education systems”.

The Academic Support Programme at the school is **weakly classified**, if at all. Although two highly qualified teachers have been granted responsibility for this

Programme, they have not been given specific criteria for its exposition. Certain points regarding its weak classification can be made:

- **No set syllabus** to cover academic “topics” is drawn up or schedule of work to be addressed. Academic discourse is initially acquired through the scholarship students by their being asked what difficulties they experience in any of the subjects, or it is assumed what “deficiencies” they may possess as a consequence of their “disadvantaged educational backgrounds”. Occasionally, certain broad areas are addressed as a consequence of other members of staffs’ ad hoc requests from a variety of different academic subject departments to provide support for “deficiencies in knowledge”. (These requests to assist the students in a certain “area” are usually made in casual conversation in the staff room during tea breaks and few, if any, formal meetings or structured communication exists around these issues between members of academic staff). Access to the rules of the various discourses as framed within each department, is usually not granted to the Academic Support teachers. The teachers then attempt to recontextualise the discourse acquired through the students or through other academic staff members in an attempt to provide some substance to its transmission.
- Academic Support is **not a singular discourse** where the rules of the discourse are visible. It is constituted by the recontextualisation of a variety of other academic discourses at the school.
- Academic Support is **not well insulated** from other discourse and there is much intersection of knowledge between discourses. There are no clear or visible demarcations between other discourses and Academic Support, and it could be considered an **invisible pedagogy**.

#### 7.4. The Academic Support Programme: Framing.

The Academic Support Programme is also **weakly framed**. This is with respect to **selection of communication, pacing, sequencing, criteria as well as control over its social base**. Academic Support possesses **no special voice**, but the voices of other academic discourses act as transmitter voices to the discourse of AS. It could also be described as an **invisible pedagogy** in that the rules of the discursive order are not explicit.

## 8. CONCLUSION:

The discourse of mathematics, embedded in the regulative discourse of the school serves to position the Black Scholarship holders in terms of "disadvantage". This is reinforced by the "culture of difference", which is the prevailing ethos of this stratified school, where differentiating rituals, the streaming system and various organisational structures and practices within the school, reinforce "difference". This "culture of difference" is exemplified in the practices which serve to alienate the Black Scholarship holders from the dominant culture of the school. This translates into "disadvantage". From their moment of entry into this schooling system, they are positioned in terms of difference, in that they are supported financially by bursaries as a consequence of their being "black" and "disadvantaged", the two being synonymous with each other. They also write separate entrance examinations which support the position of their being "academically weak" and which gives credence to the need for an Academic Support Programme. Despite their having "won scholarships" to the school suggesting that they have fulfilled academic criteria commensurate with that of the school's, they are expected to attend the academic bridging course as they are associated with, and spoken of, in terms of "disadvantaged education". Whilst the scholarships are presented as being based on **merit**, the contradiction is that they are also presented as **philanthropic** and intended to "assist boys from disadvantaged backgrounds".

This is reinforced in the **school prospectus** which states: "The school runs an extensive bursary programme which allows boys from the townships to enjoy a (named school) education, and for other (named school) boys to benefit from cross-cultural contact". (Insertions - DS).

Importantly, as result of the weak classification and framing of the Academic Support Programme and its concomitant status in the "social division of labour of discourses", it is granted less legitimacy compared with mainstream mathematics. As a result, it is unable to provide the necessary recognition and realisation rules necessary to the discourse of mathematics as these rules are particular to the strongly classified context of mainstream mathematics and do not apply to the weakly classified context of the AS Programme.

The Academic Support Programme has, as a result, more of the effect of **supporting cultural "difference"** (as only the "educationally disadvantaged" students attend the lessons and are seen in practice as being distinct from the rest), than **providing the regulating principles** of the mainstream discourses (such as mathematics) which stand outside of the discourse of the Academic Support Programme.

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## CHAPTER 5

### AN ANALYSIS OF TEACHER DISCOURSE.

#### 1. INTRODUCTION.

The intention of this section of analysis is to examine the construction of the Black Scholarship students as subjects within language, where "language" refers to the statements made by teachers in mainstream mathematics and in Academic Support. The analysis will entail an examination of the utterances of these teachers in assessing the various ways in which the Black Scholarship students are positioned as subjects in relation to other students and teachers within the school. In other words, through an examination of the transcripts of the interview with the Academic Support Programme teachers, as well as the field-notes in which I have documented statements from teachers of mainstream mathematics, the analysis will concentrate on the teachers' constructions of the scholarship students and other students and teachers within the context of mathematics discourse at this school. These statements form the data of the text upon which the analysis is made. The objective of this section of the analysis will be to look at distribution of discourse/practice. Some of the theoretical ideas of **Dowling** will inform the discussion, and the interpretations, when analysing the text. Dowling's notions on the **discourse/procedure** dichotomy will be used in the analysis, as will Bernstein's discourse on **classification and framing**.

#### 2. ACADEMIC SUPPORT PROGRAMME TEACHERS' DISCOURSE.

Certain subject positions are marked out by teacher talk. This section of analysis looks at the interviews with the Academic Support Programme (ASP) teachers, with the view to examining the possible demarcated subject positions which are made available to the Black Scholarship students.

##### 2.1 The Marking Out of Positions.

###### 2.1.1 Language deficit

When asked what criteria they think should apply in setting the Black Scholarship students' mathematics entrance paper, "what ought it to look like

and what it is intended to predict”, an initial response by an Academic Support Programme teacher was: “I first think that it should be in Xhosa, in the language which they use, so that you don’t have second language problems, otherwise you are not testing maths you are testing the language”.

Language plays a very important part in the discussion on the “difficulties” which the “Black Scholarship boys” might experience on entering the school, and is frequently referred to throughout the interviews with the Academic Support teachers. Two main themes emerge from the interviews with the Academic Support Programme teachers regarding the issue of language:

- i) one, in relation to the discourse of mathematics,
- ii) and the other, in relation to the scholarship students themselves:

**i) Language in relation to the discourse of mathematics:**

Language is spoken of as being **separate** to the discourse of mathematics - something which can be separated from so-called mathematical ability. It is a **factor** which can affect performance in mathematics but which emerges outside of the discourse of mathematics.

**ii) Language in relation to the scholarship students:**

With language being distinct from the mathematics itself, it becomes a factor in the **difficulties** which the students experience in mathematics, as a **deficiency** which they possess which **disables** them in their mathematics. They are spoken of as having “second language problems”. In speaking of their desire to have the mathematics scholarship paper translated into Xhosa, the comment made by one of the teachers was:

**Pam:** I would say rather be safe than sorry. Translate it because you want to reduce the numbers of factors. In the end, its a maths paper in a language they can understand and you are first testing maths and you have got a so-called peer mark - I think (Jane’s) point is valid. The individual kid may go up or down in marks but what you are trying to test is, is this boy who is quite weak in English quite good in maths? I’d also like to see if there were lots of boys who didn’t finish the paper because then the language is built into the speed problem.

Comments which separate language from mathematics abound. For example, Jane says "have you addressed getting out maths potential and English potential?". The students are positioned in terms of a so-called language deficit. Other problems are also associated with this deficit such as **lack of speed** in writing examination papers, as seen in the comment: "the language is built into the speed problem". Here, language difference is seen as a **problem** which carries with it an aggregation of other "related" problems - problems which become the burden of the scholarship students, distinct from mathematics. Mathematical discourse remains unproblematised, and becomes the "**neutral**" **medium** for measuring the students' educational "problems".

And, as **black students**, they carry with them the "language problems" which are seen as being characteristic of a **broader educational "problem"** in the current South African situation. This can be seen in the following statement made by Pam when I asked whether they had been taught mathematics, specifically word problems, in Xhosa at their previous school:

**Pam:** They probably would have had them in English - this doesn't mean they would have understood them all. The problem seems to be that English is generally a subject until standard 3 and then in standard 4 it becomes the medium. But children's English is not good enough. But the teachers are being encouraged to speak only English so stuff is just passing over the heads of the kids... It's a policy that hasn't really worked...probably needs to be looked at whether you need to start it lower. I personally think that if basically they had better English teachers lower down, they would cope with the medium when they change over, but they are not ready to cope with it in standard 4.

Here, we can see that the Black Scholarship students are spoken of as an amorphous group which carry with them the problems that are associated with the **educational woes in South Africa as a whole**, i.e. they are being spoken of as a product of "a deficient language policy in education". Throughout the interviews language is spoken of by the ASP teachers as the major factor in determining educational difficulties. Jane says, in response to the question referring to the possible requirements in setting the scholarship papers:

**Jane:** The language is the **main** issue: language and the experiential, those are the two factors. So you have got to try as much as possible, to get rid of the language, which you can't do to some degree because of the schooling and the way they have been taught and what they have experienced...it's a vicious circle.

### 2.1.2 Experiential deficiencies.

The above comment of Jane's refers to another "deficiency" which is connected to language. The proclivity exists for the scholarship students to be spoken of in terms of an **experiential deficit**: that they are disadvantaged through lack of experience. This comes through in two ways:

- i) **lack of life experiences;**
- ii) **lack of learning experience in the classroom.**

Reference, in **EXTRACT 1** below, is made of the scholarship students' lifestyle which presumes that it is different to that of the majority of other students, and that it carries with it certain deficiencies. In dealing with the issue of how a scholarship paper in mathematics might be set, the following was said:

#### **EXTRACT 1.**

1. **Jane:** You should try and avoid things which are not Maths
2. experience - experiential things which are not maths. If you've
3. got questions with bus timetables - travelling distances across
4. countries which some of them have no experience of, I think
5. these sorts of questions are unfair.
6. **DS:** Why do you say they are unfair?
7. **Jane:** Because it's not been in their experience, so you just
8. have to be careful of that sort of question. You want to
9. assess how they have come to their standard in mathematics,
10. on how good they are, and inevitably it depends on how well
11. they have been taught.

Here, various issues regarding the scholarship students' life experience come to the fore. They are spoken of in a way that suggests that they have "limited experience", (the experiences they have had are seen as "mundane" and as therefore constituting "restricted" or even "no" experience) and so are constructed in terms of an **experiential deficit**. They are consequently **positioned as subordinate** in relation to "other students" who are presumed to possess the kind of "experiential knowledge" which might require or justify evaluation by the school, through the discourse of mathematics. "Experiential knowledge" of this form is to be **avoided** in an evaluation context, with respect to the scholarship students, rather than engaged with, as they are spoken of as being "disadvantaged" in this area.

Jane's comments, in **EXTRACT 1, lines 1, 2, 7 and 8**, point at a **separation** in the criteria on which these students are to be judged. The criteria on which they might gain access to the school, is **different** to those of other students based on the presumption that they have had differentiated access to experiential knowledge, (both in terms of their life experiences outside of the classroom as well as, in **lines 10/11**, "how well they have been taught": pointing at "educational disadvantage").

Secondly, as seen in the comment in **EXTRACT 1, lines 1 and 2**, there is a separation between mathematical knowledge and experiential knowledge and that mathematical knowledge is accessible and desirable. It is **privileged** over the experiential and is the form of knowledge which requires evaluation. It is through this form of knowledge - mathematical knowledge - that the necessary criteria for entry into the school can be assessed and determined by the school. Such knowledge has an implicit **structure** to it - **levels** on which these criteria rest. As seen in the comment in **line 9**, the students' "standard of mathematics" (which excludes experiential knowledge) determines directly how "good" they are in "mathematics" and therefore whether they fulfil the criteria for entry into this school. Here, in the separation of the forms of knowledge - mathematical and experiential; in the **privileging of mathematical knowledge over experiential**, (or, at least, the form of experiential knowledge which the scholarship students are purported to have access to - that which is associated with the mundane); and in the presumption that the scholarship students are lacking in experiential knowledge, (both in their life-style as well as in the way in which they are taught in the classroom), certain messages are carried which relate to **codes of class**. These codes are carried by the dominant culture of the school. There exists **resonance of voice with the mathematics department** of mainstream mathematics in Jane's comment referring to the **privileging** of "mathematical" knowledge above experiential, in **lines 1 and 2**, and in the comment referring to "standard of mathematics" and "how good" the students are, in **lines 9, 10 and 11**. (This will be elaborated on later in the section on "mainstream mathematics teachers' discourse"). The authority of the mathematics department is **presumed** with regard to its unquestioned capability and right to assess this innate "standard" in the scholarship students and whether or not they are able to meet these criteria. Also, inherent in this, is the automatic presumption that the mathematics department's "standard" is

superior. The use of the term "standard", in itself, suggests hierarchy or levels, taken-for-granted constructions of mathematics, supported by the dominant culture of the school. The existence of such levels are based on criteria of what constitutes legitimate knowledge - knowledge which **the school, and hence the mathematics department**, has access to and whose authority in this regard is taken-for-granted. It is **recontextualised knowledge** which suits the cultural context of the school and the criteria it sets. **Class codes** are thus supported by the regulative discourse of the school (and transferred through the instructional discourse of mathematics.) The way in which the discourse of mathematics is constituted and spoken of within the school, what forms legitimate knowledge and what kind of "mathematical knowledge" is privileged over other forms, assists in positioning the scholarship students as subordinate in relation to other students and teachers who have access to these forms of knowledge legitimised by the mathematics department within the school. By being associated with experiential deficits, and with a lack of certain forms of knowledge (recontextualised and given priority within the school), these students are held to a position of subordination.

A further example of the **construction of the scholarship students in terms of an experiential deficit** can be seen in the following comment, which more directly connects "experiential deficit" with "educational disadvantage". A causal link is made between "experiential deficit" and an "analytical disability". The students are seen as lacking in an area of mathematical ability as a consequence of a socio-economic lack in their life-experiences:

**Jane:** Regarding the scholarship boys and maths... the main things are, language and...maths is a lot of three-dimensional/experiential stuff. That's something that people would tend to suggest; experiential toys. What do the other boys here have as birthday presents? Experiential-related stuff. The geography and other people would say that they have a problem with 3D visualisation. That would be common. That would be expected. They struggle with that.

### 2.1.3 Taught mathematics vs. innate mathematical ability.

The scholarship students are positioned as lacking in innate mathematical ability/ reasoning ability, by the way in which the ASP teacher speaks of them in relation to the scholarship entrance paper, in the next comment in **EXTRACT 2**. By speaking unproblematically about the entrance paper as possessing the

taken-for-granted “capability” of accessing and determining this mathematical ability in the scholarship students, (with the knowledge of how “low” the scholarship students scores were in the examination paper referred to), assists in positioning the scholarship students as “mathematically disable”.

In this regard, there is a dichotomy which exists between “taught mathematics” and “innate mathematical ability”. This often gives rise to contradiction. There is also a shift in focus of what constitutes legitimate “mathematical knowledge” - knowledge considered worthy of evaluation (in scholarship entrance papers) and through which the “necessary” criteria to be evaluated can be assessed. This is to say that the recontextualising rules that define mathematical discourse within the school achieve a particular **emphasis** for the purposes of evaluating the scholarship students’ “mathematical prowess”. This can be seen in the following comment in **EXTRACT 2**, in reference to the scholarship entrance paper set for the current students:

**EXTRACT 2.**

1. **Jane:** If I think of the maths paper that I looked at: What I liked
2. about it was that a lot of it was how well they’d be able to think
3. in the exam situation, using so-called innate maths ability and
4. reasoning. So this particular maths paper didn’t have very much
5. on direct syllabus stuff. A lot of it was things that they might
6. know from everyday use like you have R10 and you go off and
7. buy a few boxes of bread or something; so that’s talking about
8. their general experience outside the classroom. And then there
9. were quite a lot of things which seemed to me to be in terms of
10. being able to reason. And all like IQ type test situation. I
11. remember when I was talking to Beth, (Head of mathematics dept), she
12. said that had been one of their aims was to ignore
13. teacher element and the syllabus because all schools have
14. different levels. What you’re looking at is the child and his
15. ability. So I would say you stress more that, OK? You do want
16. to know how good he is and whether he will cope here, but I
17. think I would tend to look more for potential and ability than the
18. level that’s been reached, thanks to the teacher.

Jane talks about “innate maths ability” and “reasoning”, in **line 3**, separating this from “syllabus mathematics”, but in the same breath, incorporating it with “everyday use”, in **line 6**, - experiential knowledge. It is interesting to note that **this** form of experiential knowledge is considered legitimate mathematical knowledge as it **embeds the scholarship students in the mundane** i.e. the buying of bread, in **line 7**. The previous form of experiential knowledge was

**not** seen as acceptable mathematical knowledge as it involved experiences considered usual to “other” students but not scholarship students i.e. travelling across countries, as seen in **EXTRACT 1, lines 3 and 4**. So, the one form of experiential knowledge is privileged over the other as the scholarship students are seen as possessing a deficit in an area of experiential knowledge. Further, what is implied in the comment is that “innate mathematical ability” can be assessed through “general experience outside of the classroom”, in **EXTRACT 2, line 8**, which is the form of experience the scholarship students “have had” and which the ASP teachers and mathematics department has the authority to judge and is privy to “knowing”. The message is one of superiority, and it carries with it the dominant cultural codes of the school, **codes of class**.

This association of the scholarship students with experiential knowledge which is **mundane** (and could also highlight their association with **impoverishment**, as they are seen to be buying bread, not computers or motorcars etc., and certainly not in the financial position to be “travelling across countries”), and the linking of mathematical knowledge with this form of experience, also has the purpose of **localising** the scholarship students in the **public domain** of the discourse of mathematics. (In fact, the “buying of bread” examination question is an example of Mythical Domain text which is procedurally elaborated). It positions the scholarship students as subordinate in relation to “other” students who are presumed to have access to other forms of experiential knowledge which is not embedded in the mundane. Codes of class are evident here. These “other” students would be presumed to have closer cultural proximity to the dominant culture of the school and hence access to the associated cultural knowledge embedded in the instructional discourses of the school, and form a majority of students.

Further, “ability to reason” is seen as being synonymous with “IQ type questions” which are also, by implication, a legitimate component of mathematical knowledge. Implicit in the comment **on lines 9 to 17**, is the understanding that not only can the ability to reason **be** assessed, but **it can be assessed through the discourse of mathematics** - through questions which are designed to test intelligence. Here, the discourse of mathematics is dominant and possesses absolute authority in determining not only mathematical ability but also reasoning ability and intelligence. These “mathematical” questions are

posed as being divorced from cultural, linguistic and experiential issues and are presumed not to carry with them any forms of bias which may prevent access to evaluating the criteria for "reasoning" and "intelligence". They are spoken of as unproblematic **indicators** of what is "needed to be assessed"- ability and potential. Again, in the ASP teacher's comment is a message carried by the dominant culture of the school and it resonates with the voice of the mainstream mathematics teachers, indicating their dominance of voice over that of ASP teachers, (to be discussed in the section under "Mainstream mathematics teachers' discourse"). The fact that ability and intelligence are stressed as being necessary criteria for acceptance into the school, highlights the emphasis of the school culture on "striving towards academic excellence", which is, according to the school ethos, dependent on ability and intelligence.

Interestingly, "taught mathematics" and "syllabus" related mathematics are not spoken of as being desirable forms of mathematical knowledge for assessment of the scholarship candidates, for they highlight potential deficits which these candidates are assumed to possess. This reinforces their being positioned in terms of "educational disadvantage". The intention of the Black Scholarship Programme is to take students from "disadvantaged schooling backgrounds" and "advance" them educationally through granting them "equal access" to "improved" facilities and a "sound educational standard". The understanding, then, is that the students come from "disadvantaged schooling backgrounds", satisfying the **conditions** of the AS Programme, and are spoken of as such. Consequently, they are spoken of in a way which suggests that their "taught mathematics" is not worth being assessed as it cannot meet the "standard" of the school's, and even if it **did** meet the school's criteria on this score, the criteria of ability/intelligence **supercedes** it, as these are the primary criteria for entry into the school. This is because the school culture places a tremendous accent on differentiating students according to ability/intelligence on which the school's "academic excellence" is seen to depend, (and which the hierarchical school structure supports). This is emphasised further in the following comment referring to the most important assessment requirements for candidates wishing to enter the school:

**Pam:** Their ability to think and to a certain extent how much they have been taught at school - if the kid is really bright but that he had a lousy teacher and hasn't been taught - you are going to have a real battle. I certainly feel there's a tension in the boys between taking a kid who really is clever and badly taught and someone who is quite fluent but an average student of average ability but he happens to have been sent to one of the multi-racial schools and so through better teaching and smaller classes he has reached a high standard. I sort of tend to go for the first group.

Interestingly, the scholarship students are **not** sourced from multi-racial schools. They are invited to write the scholarship papers and are chosen from a selection of local "township" schools - the objective being that they are assisted by the school to compensate for their "disadvantaged backgrounds". (This Programme, although administered through the school, is sponsored by a multi-national corporation and is one of their "corporate community investment programmes".) The reference to multi-racial schools is made as a **point of comparison** only, in an attempt to highlight the differences between students - those that have ability but lack in schooling, verses those that have the schooling but lack in ability. By referring to a certain group of students as having come from multi-racial schools, (rather than referring to independent schools), it is clear that the students being referred to are "black" students. There is a small percentage of so-called black students, who are not scholarship students at the school, but that have come from independent (multi-racial) schools. Interestingly, both groups are black and both, in Pam's comment, are constructed in terms of some kind of deficit - either their schooling or their ability. A position of advantage is not available to them. Also, the "multi-racial schools" are spoken of as necessarily "better", and have a higher "standard" than the all-black "township" schools. (Pam speaks of the multi-racial schools as having smaller class sizes, better teaching and a high standard). Here, the dimension of **race** carries with it the association of **disadvantage**, and hence, also of **class**. The scholarship students (and other black students at the school) are spoken of in these terms and carry with them the attributes of "their race" - which is associated with certain deficits.

Again, the reference to the term "standard", (pointing at academic levels), is associated with the internal hierarchy of the school. Not only is **knowledge** differentiated according to a hierarchy where some forms of knowledge are privileged over others, but the scholarship students are accordingly

differentiated in **ability**, where they are mostly spoken of as weak or lacking. The differentiation of knowledge becomes consonant with the differentiation of so-called ability, thereby constructing the students in a subordinate position in relation to "other able students". Codes of class are present here.

#### 2.1.4 Social deficit and disadvantage.

I asked the question: "What difficulties do the scholarship boys encounter in maths? How are these reflected in your special classes?" The response was:

#### **EXTRACT 3.**

1. **Jane:** Language...experience.
2. **Pam:** I was just thinking...I could speak about English but I could talk
3. about that later. But first looking generally how they are coping - on a
4. macro-scale - finding their way around the school and what's expected
5. of them. The first week of term, etc. is a major problem - major
6. adaptation. To a certain extent they are thrown in at the deep end and
7. the school is enormous. They come from a place that is just like an L-
8. shaped building with a quad and suddenly there are hundreds of
9. buildings and rooms. People aren't very good at helping each other and
10. you're supposed to go and check out on notice boards and you have
11. got to be in millions of places and all of the scholarship boys are in the
12. boarding house and I'd say that's a major problem area - more in the
13. boarding house than in the actual classroom. The plus factors about the
14. boarding house are that they learn more English and get to know the
15. boys and so forth. Socialisation happens here, but I also think there are
16. quite a few emotional factors - negatives in the boarding house which
17. are being looked at and are being reviewed. So I think it's a major
18. change for them. Many of the boys coming to the school are coming
19. from the prep.\* I'm not sure of the numbers, but let's say over a half,
20. and, so they feel at home, they know lots of other boys. It's similar.
21. It's all part of the same ethos etc. Then the kids coming from WP \*\* or
22. whatever are used to a fairly big school and a complicated organisation.
23. I think the boys are very lost when they come here, the black students,
24. maybe they know only one or two other boys in the whole school. So
25. they are quite lonely or whatever, so I think the beginning part is crucial
26. and then the other problem...

\* **prep**, refers to the preparatory wing of the small scale-study school.

\*\* **WP**, refers to a similar independent preparatory school to the small-scale study school's preparatory wing. It is situated in the same vicinity - an "upper middle-class" area, and draws from the same socio-economic clientele. It is considered the main feeder school to the small scale-study secondary school, other than the school's own preparatory wing.

It is interesting to note, in **EXTRACT 3**, that in response to a question on difficulties in mathematics, the Academic Support class teachers respond about issues related to their "coping on a macro-scale" - i.e. to regulative discourse. The problems that the scholarship students experience in

instructional discourse are spoken of in terms of the regulative discourse. It is the nature of the regulative discourse - the social, the schooling ethos - that facilitates the positioning of the scholarship students in terms of the discourse of mathematics - the instructional.

The comment above made by Pam refers to an **environmental difference** in the experience the scholarship students had previously to the current school. It draws parallels between students who went to similar preparatory schools to this secondary school and highlights the differences between those schools and the "township" schools. Here their physical structure and organisation represent the differences between the two groups of students and is a manifestation of the one group's advantage over the other. The scholarship students' lack of school resources and by implication experience, is forcefully represented in **lines 6, 7, 8 and 9**, by these images of the schools - one being "simple" and small, the other being large and "complex". The physical differences between the schools represent the gap in educational "standards" and the extent of the "disadvantage" which is transposed onto the scholarship students as "their" disadvantage - their inability to cope with the new school.

The comment is made in **line 9**, that "people aren't very good at helping each other" at the school, drawing attention to the nature of the schooling ethos of this **stratified school**. It is interesting that the use of the word "people", as opposed to "boys", was specifically used for the first time in the interviews, possibly indicating that the competitive nature of the school applies to staff as well as students. This might be implied here by Pam, since the stratified structure (and differentiating rituals) apply throughout the school. What is also clearly indicated here is the divisive and alienating nature of this **competitiveness** which emphasises **individualism** at the expense of **community**.

The boarding house is also commented on as being, in part, positive and negative in **lines 12 to 16**. Their learning of English and the enculturation process are seen as positives, although the "emotional negatives", in **line 16**, are not elaborated on. The above comment of Pam's points to the scholarship students' **cultural distinction** from other students. (Culture embraces language on this score). What is considered "positive" is the cultural movement towards that of the current school's - its being the dominant culture and is all-

embracing. The students are positioned in terms of possessing a **cultural deficit** in relation to the school's dominant culture - one which "needs" to be bridged. At the same time the students are seen as experiencing emotional problems as a result of the existing cultural difference - an "**emotional disadvantage**" which requires to be overcome by being assimilated into the school culture. From what is said, the scholarship students carry with them, not only a "cultural" deficit but a related "emotional" one as well.

It is also interesting how "emotional factors" are spoken of as being able to be resolved through the **mechanisms of the schooling system**. Pam says in **lines 16 and 17**: "...but I also think there are quite a few emotional factors - negatives in the boarding house which are being looked at and are being reviewed." The suggestion is, by this, that any problems associated with the scholarship Programme can be resolved in a piece-meal fashion by "factoring them out" i.e. separating them from other "factors" and "resolving" the problem "factor by factor". So, "emotional factors" in the boarding house can be "reviewed" and hence resolved by a change in **policy**. The changes do not encompass a structural change of the schooling system and ethos, but stand distinct from the school and its context. The focus of such change is on the separate "factors" of the scholarship students' "problems". Not only does the school possess the authority to "review policies", but the assumption is that they **can** be resolved via mechanisms of the schooling structure, and within the existing context. The problem remains, however, the possession of the scholarship students and not the school. The school merely acts on some of the "factors" which constitute the problem. The school culture and its broader context remain unproblematised and the authority which the school possesses to address these issues is taken-for-granted.

#### 2.1.5 Race, Class and Culture.

Also, embedded in the above comment made by Pam in **EXTRACT 3**, is the **concept of race**. Reference is made to the "black students" who are said to experience loneliness and feel lost, in **lines 23 and 24**. The reasons given, in **lines 18 to 24**, for their experiences of loss and loneliness are their physical separation from other students who attended preparatory schools sharing a common ethos to the current school. The schools being referred to are

independent “middle-class” schools and are juxtaposed with state-run “township” schools. The distinctions along the lines of race are consistent with distinctions in class and follow a continuum which assigns being “black” with a class structure which is “inferior” to that of the school’s. The inclusion of commentary which refers to school ethos as being similar or different to others, introduces a binary opposite to the concept of culture, drawing parallels with the concept of race. That is to say, **the distinctions in culture carry with them the concomitant associations with distinctions in race, and achieve a hierarchy through the distinctions in class**, i.e. an association is made between “different school ethos” and “black students”, as well as between “similar school ethos” and “other boys”, in such a way that suggests the authority and superiority of the school’s culture above others. Here, race, class and culture merge to form certain barriers in access to education and to inclusion in the school. They carry with them distinctions, which by their hierarchical nature are attributable to the mechanisms of class, and can be associated with either deficit or advantage.

The use of the term “black students”, in **line 23**, (as opposed to “black boys”) is of political interest, as the term “student” is not used elsewhere in the interviews other than in association with the term “black”. The use of the term “student” is not common terminology within the school amongst staff or students. It is possible that the term is used in its **generalised political sense**, so that the students who are considered “black” at the school are associated with a broader political entity. (“Black students” is a generic term which is commonly used in SA political debates). By the use of the term “black students” in this context, the scholarship students are associated with a **political grouping** and hence carry with them the political baggage of the current (and past) SA situation. Essentially, the scholarship students are spoken of as “black students” and, consequently, carry with them the constructions in terms of class, race and culture associated with the broader political and historical debate.

The concentration on **groupings** based on race as a dominant category is very much a part of this debate in SA and of its apartheid history. Constructions relating to minority/majority racial groupings often play a role in this debate, and have been at the forefront of segregationist politics. This is reflected in the

following comment, in **EXTRACT 4**, which follows on from the previous one by Pam (when she says: "and then the other problem...").

**EXTRACT 4.**

1. Pam: ...I was thinking there seems to be quite a problem with the fact
2. that, related to, that black students are a minority at this school. I'm
3. pleased to say that I have hardly ever encountered racism. I think the
4. boys all fit in very well but what happens is that if you are part of a
5. minority YOU may feel that you are not totally accepted. The result is
6. quite a serious one. I find the black students often tend to become, try
7. and become, more western than they would, say, if they continued at
8. a black school. They imitate the behaviour of the students around them
9. and I think that's bad in many ways: One is that you deny your own
10. roots, culture, or identity and well, it must cause a lot of tension
11. because you don't feel... you feel I'm not good enough, I've got to
12. pretend to be something to be accepted. And, quite frankly, I don't
13. think you can function very well if you're not solidly who you are and
14. when I've encountered this in my own classes, I've, like, swooped
15. down and challenged the boys.

At the start of this **EXTRACT 4**, in lines 1 and 2, the scholarship students are spoken of in terms of race, as "black students" carrying with them some of the constructs associated with race as, (in this case), a minority grouping. Race becomes the focus of the discussion, and the issue of racism is introduced in line 3. It is interesting that Pam **makes** the point that she has "hardly ever encountered racism" at this school, but later, in **EXTRACT 5**, relates a story where scholarship students speak of being afraid of being laughed at by other students for speaking Xhosa. In the same breath as describing the lack of racism in the school, Pam speaks of the students' feelings of rejection as a result of being part of a racial minority. She says, in lines 4 and 5 of **EXTRACT 4**, : "...if you are part of a minority YOU may feel that you are not totally accepted." By this, not only are the students being spoken of in terms of a minority grouping as a taken-for-granted construct within the school, but the school is exonerated from carrying any responsibility for their feelings of rejection. These feelings of alienation are spoken of as a **consequence** of belonging to a minority grouping - a construct supported within the school structure. The existence of such racially-based groupings within the school are not problematised and such groupings are spoken of as a *fait accompli*. As a result, there is a shift in responsibility. The problem lies with the students who might feel rejected, and not with the school itself.

It is noteworthy, that after having spoken of racial groupings at the start of the comment, the issue of racism is introduced. This exposes a “consciousness” of the correlation between racial groupings and racism, in general, where the existence of the one precipitates the other. The issue of racism is, however, denied! The burden of the problems associated with minority racial groupings at the school is made to be that of the students’ and **not** that of the school’s. This has the effect of reconstituting the meaning of racism through the exposition of this comment. Racism is redefined as the interactions between students of a divisive nature regarding the issue of race, and no longer has to do with the construction of racial groupings or the support of such categories which precipitate racism. Inherent in Pam’s comment is the tacit understanding that the school’s acceptance (and legitimising) of such racial groupings within its precincts can no longer be constituted as racism. This is a **recontextualising** of the meaning of racism for the purposes of suiting the cultural context of the school.

Equally important, in **EXTRACT 4**, is how the discussion begins with a focus on **race** but develops into one of **culture**. The students are spoken of as possessing a separate non-“western” culture. Race, class and culture are again intermeshed in the comment, in **lines 6, 7 and 8**: “I find the black students often tend to become, try and become, more western than they would, say, if they continued at a black school.” Here, the so-called “black students” are associated with “black schooling” which is distinct from “western” culture. The implication is that the dominant culture at “black schools” is not that of **this** school’s which is constructed as being “western”. By comparing their cultural development at this school with that of other “black schools”, in **lines 7 and 8**, the students are positioned as (naturally) belonging at “black schools” where “they would have continued”. They are spoken of in terms which suggest that they culturally **belong** to “black schools” as a consequence of being “black” and are distinct from “western” schooling. They are positioned outside of the dominant culture of the school (which is deemed “western”) and will consequently never gain legitimate access to it. This is reinforced in the wording, in **lines 6 and 7**: “tend to become, **try and become** more western,” (own emphasis). The black scholarship students can only “try and become” more western but this is never achieved because they are “black” and come from “black schools”, in **line 8**.

What cannot be ignored is the use of the term “western” which is intended to highlight the **cultural antithesis** of the scholarship students. In the broader SA context “western” carries associations of sophistication, industrialisation, “Europeanism” and modernism. The culture assigned to the scholarship students stands as a binary opposite to this, which, in SA terms, has associations of tribalism, lack of sophistication, under-development, old-worldliness and “Africanism”. (It is interesting to note that this perception of a “tribalistic” culture is maintained despite the scholarship students having been sourced from “township” (urban) areas. This serves to enhance the distinction between the two cultures).

Importantly, a contradiction exists here. Previously the boarding houses were spoken of as being **positive** as they assisted with the enculturation process and with making the scholarship students “similar” to “other boys”, but **here** the students are spoken of as never being able to achieve that as a consequence of being “black”. The students aspirations to be and behave like “other boys” at the school is spoken of as being false and as denying their “roots”, **in lines 8, 9 and 10**. Their “roots” are obviously not “western” as they “imitate” western behaviour which is not, **in line 13**, what they “solidly are”. A **gap** occurs in the **expectations** of them. On one hand, they are expected to enculturate into the school to be “successful”, whilst on the other hand, they are represented as not being able to legitimately attain this. Such attempts are seen as unacceptable - denial of their “identities” and mere “pretension”. The students are consequently spoken of as being at a cultural disadvantage, of not being able to function and suffering from poor self-esteem. It is not possible for the students to bridge this gap as they are seen as culturally distinct, as a consequence of being “black” (i.e. they can only **imitate** the behaviour of “other boys”, they cannot **be** “other boys”). In relating, **in lines 11 and 12**, that the scholarship students feel “I’m not good enough, I’ve got to pretend to be something to be accepted”, Pam places the “western culture” of the school above that of the scholarship students: “to be something” means to be “western” - to adopt the school’s culture. She thereby points at the cultural presumption of “western” superiority, which the school culture fits. The scholarship students are placed, as a consequence, in a subordinate position in relation to other students with respect to the dominant culture of the school, and held to this position as a consequence of being “black”.

The extent to which the scholarship students are held to this position of cultural subordination, and the sense of alienation which derives from a separation (on the part of the school) of “their black” culture from that of the school’s, is evident in the dialogue extract in **Appendix 3**, where Pam discusses her “difficulties” in attempting to produce a “culturally relevant” play with the scholarship students to be performed for the rest of the school.

#### 2.1.6. The streaming system, self-concept and disadvantage.

The dialogue extract in **Appendix 3**, (regarding Pam’s attempt to compensate for the scholarship students lack of self-esteem by producing a “culturally-relevant” play), follows on to talk about the “negative effects” of the streaming system at this school. It is interesting to note that the “failure” of the play discussed in **Appendix 3** occurred at the same time, (the third term), and with the same group of students as the incident being described in the following extract:

#### EXTRACT 5.

**Pam:** ... In fact, an interesting point, I teach this group as an English second language class, and they, this same class which we said was quite difficult, they spoke to me, because there was actually a crisis I would say in the third term because they were saying that the other boys were teasing them and saying, “Oh ja, you’re in set 7 or 8”. ESL was regarded as even below set 6, and the kids who were the weakest in the bottom set, like struggling with reading and writing interestingly enough, turned to these guys in ESL and said “you are kind of dumb, you’re in a set of 4” and it was regarded really as a remedial set. And they were saying “How come are we in the bottom set when we are better than the boys in set 6” and I was trying to explain that it’s not anything to do with better or worse but with different needs. I was hoping that after 2 years of specialised tuition they would be able to jump over some of these sets and end up in a set 5 or 4 for English, whereas the people who still had their learning problems would remain in these bottom sets. But it was quite difficult...At the end of Standard 7 they enter the mainstream.

Not only are the scholarship students subordinated in relation to “other students” with respect to “culture”, but with respect to “ability” as well, as reflected in the above **EXTRACT 5**. It is evident, here, that a “low stream” in this school is associated with “low ability” so that even a “special set” such as English Second Language (ESL) is associated with **lack of ability**. Pam speaks of trying to explain that this separation of the four scholarship students into a special set does not mean “better” or “worse”, but merely “different”. At a

stratified school of this nature where all forms of differentiation automatically are associated with hierarchies, **contradictory messages** are distributed to the scholarship students, and it is a daunting task to convince these students otherwise. (The recognition rule is a strongly acquired code.) She says as much: "But it was quite difficult...." The act of physically separating the scholarship students for the purposes of granting them special attention serves to position them as subordinate in relation to the other students in the standard. They are alienated from the discourse of English as constituted within the mainstream, and are localised within ESL. At the same time they are alienated from their peers in the same standard - reinforcing their position of "difference" as well as "deficit".

The emphasis on **numerical positions of sets**, (and positions within sets), reinforces **competition** amongst the students - based on their "academic ability". They are measured in relation to **each other** by the school and are constructed accordingly as "able" or "unable". This can be seen in what is spoken of as the students "teasing" and "undermining" of each other over the issue of classroom setting.

A **contradiction** exists here. The stated **intention** of the Academic Support Programme is to provide assistance and support and to provide access to knowledge which is enabling to the students. The low streaming has the **effect** of **constructing** the students as "less able" thereby subordinating them in relation to other "more able" students within the school. I will argue, in the following section on "Discourse: Power, Control and Distribution", that rather than providing for their needs academically, in effect, the Academic Support Programme **limits** their access to knowledge which could empower them within the schooling structure.

## 2.2 Discourse: Power, Control and Distribution.

### 2.2.1 Classification and Framing: Academic Support in relation to mainstream mathematics.

One of the major areas in which the scholarship students have been held to a subordinate position in relation to mathematical discourse, has been in the **differences in classification and framing** between the Academic Support

Programme and mainstream mathematics. These differences have been pointed at and described in Chapter 4. They will be further exemplified through teacher talk reflected in the interviews with the ASP teachers. The following dialogue in **EXTRACT 6**, emphasises the **discrepancies** between the approaches to mathematical discourse between the two classrooms - how the strong classification and framing of the mainstream mathematics classroom "illegitimises", within the context of the school, the discourse defined by ASP, which is weakly classified and framed. Consequentially, the two discourses are differentially positioned in the hierarchy of discourses at the school, in terms of the social division of labour of discourses. It is the discrepancy in classification and framing between the two discourses which accentuates the difference in status between mainstream mathematics and ASP.

Here, as it becomes evident in the following dialogue in **EXTRACT 6**, the students are not granted access to the principled connections between the two discourses. Whilst ASP is designed to **assist** the students in their mainstream mathematics (and other subjects), the context in which this is attempted, is so **distanced** from that of the mainstream mathematics classroom, whether it be in the "upper" streams or "lower" streams, that the necessary principles of mainstream discourse cannot be transferred to Academic Support. That is, that **neither the rules nor the regulating principles of the discourse of mainstream mathematics transfer from the context of mainstream mathematics - which is highly-specialised - to that of Academic Support - which is non-specialised**, due to the insular nature of mainstream mathematics. The regulating principles of the discourse of mainstream mathematics remain hidden to the students in the Academic Support class, which does not possess its own form of **evaluation**. The scholarship students are only evaluated according to the rules of **mainstream mathematics** and within the same context. The Academic Support Programme does not have access to these rules and operates according to a separate set of criteria. The principles and rules of mainstream mathematics is context-dependent and does not apply to the context of Academic Support. In fact, the strong classification and framing of the mainstream mathematics classroom "**ineffectualises**" any "educational benefits" which might result from the Academic Support Programme as a consequence of its being so weakly classified and framed (to the point of non-specialisation).

It can be argued that, rather than facilitating access to the mainstream discourse, the Academic Support Programme alienates the students from mainstream mathematical discourse as a consequence of denying access to the recognition and realisation rules of the discourse of mainstream mathematics, whilst raising the expectations of the broader schooling community that Academic Support will provide the required "improvements". Whilst **in policy** the "Academic Support" is **intended to provide the means** by which assistance is granted to the black scholarship students in "upgrading their standard of mathematical knowledge", **in practice it limits access** to mainstream mathematics discourse. Its function is consequently contradictory.

#### **EXTRACT 6.**

1. **DS:** What other difficulties do they come to you about in maths?
2. **Jane:** Word related stuff, in other words, where they are missing from
3. the bridging side - um, I think there needs to be more communication of
4. **what** is needed to be taught and **how** it's needed to be taught. I can't
5. bridge maths that they might have missed if I'm going to teach in the
6. wrong sort of fashion.
7. **DS:** What is the wrong sort of fashion?
8. **Jane:** It needs to be clarified, that.
9. **DS:** Sorry, I'm not following you exactly?
10. **Jane:** If it's going to be word - related stuff - one can deal with, but
11. I'm not a maths teacher and I haven't taught maths. We do discuss
12. maths when we have chats and whatever - but you can bring in ways.
13. There's multiplication or division, or change of subject. I think that I
14. automatically explain that in what I think is probably a different way to
15. the department. I think that there has to be more communication.
16. **DS:** You think that's a problem? Teaching it in a different way?
17. **Jane :** I don't know. I have tended to avoid that. I think the maths
18. department is somewhat .... they would consider that to be taught in
19. the class - fundamental.
20. **DS:** What are you saying?
21. **Jane:** They are going to be in the fourth set, OK? Those boys, they are
22. all going to be most likely in the bottom set.
23. **DS:** Why?
24. **Jane:** Because of their experience.
25. **Pam:** And also you must remember it's poor teaching. 50 in a class
26. and they have got teachers who aren't qualified properly.
27. **DS:** So they automatically - they are going to be in a poor set? When
28. you say you need to have more communication with regard to that,
29. how?
30. **Jane:** We need the maths department to say what they think about
31. what needs to be taught and how. Not just the language based stuff, if
32. they want anything other than that.
33. **DS:** So far ?...
34. **Jane:** You had it when you gave extra lessons. They haven't done that
35. since. I'm not sure if that's been suggested, but that needs to come in
36. my class. I don't know, I concentrate more on projects and ...
37. **DS:** What were you told in your function? What do you believe?

38. **Jane:** Bridging.  
 39. **DS:** Bridging in the science - related fields - is that what it is? As  
 40. opposed to Pam?  
 41. **Jane:** Ja, science, geography, biology.  
 42. **DS:** And maths?  
 43. **Jane:** Ja, and any general experience, general knowledge. It gives  
 44. people a chance to explore, express themselves.  
 45. **DS:** What were you told? What was your brief?  
 46. **Jane:** I can't remember!...bridging, ...to tackle certain subjects,  
 47. whichever I feel needs it and its very broad.  
 48. **DS:** Yes, have you been left alone to do that? What has the feedback  
 49. been?  
 50. **Jane:** I haven't had much feedback but there's been no complaints.  
 51. **Pam:** I think it's quite hard to get feedback because you can't say how  
 52. well the boys would have done if you hadn't taught them, but you can  
 53. obviously compare them to the previous years. I don't have enough  
 54. hard info to know, unfortunately, that we've made a difference. I  
 55. haven't actually looked at the stuff to know how the boys would  
 56. normally be doing, but I think we provide a type of cushion effect so  
 57. that previously they would have been thrown in at the deep end, but  
 58. now we're giving a sort of inflatable.  
 59. **Jane:** And I think they are understanding things. I would assume that  
 60. they are little bit more self-confident... possibly.  
 61. **Pam:** ...that's how I came in and Jane was to get study methods and  
 62. skills for the other subjects- science, maths, geography etc. But it was-  
 63. that is why there's been a shift in policy and in fact Max (Vice  
 64. Principal- academic) is keeping stats- he's quite keen on his stats-  
 65. about matric results and all their marks. I suppose later he will be able  
 66. to see a pattern where these boys have seen improvement.

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In replying to the question, in line 1, of what the students "come to (her) about" with regard to their "other difficulties in mathematics", Jane states: "word-related stuff", in line 2. The use of the term "stuff" indicates generality and lack of clarity to the issue, broadening the concept of "word-relatedness" so that it is non-specific. The use of the term "word-related" points to the construction of the language deficit which "bridging" is supposed to assist in. By speaking of it as a "bridging" problem, in lines 2 and 3, it is constructed as a **gap** in the students' knowledge of mathematics which needs to be **filled in**, and not as an indication of their lack of **access** to "upper stream" discourse of mathematics. Immediately thereafter, though, Jane speaks of her **own** lack of access to either the rules of "lower stream" mathematics or the regulating principles of "upper stream" mathematics and of her frustration in not being able to make principled connections between the contexts of Academic Support and mainstream mathematics. This is pointed at in lines 10 to 15. Although, the scholarship students are spoken of metaphorically by Jane as

vessels which need “filling” up, by referring to “where they are missing from the bridging side”, in lines 2 and 3, she speaks of **herself** as needing a **prescription** from the mathematics department as to how to do this. Jane is requesting a set of **rules** or procedures from mainstream mathematics to **transfer** to the discourse of academic support. Here, the discourse of mainstream mathematics is spoken of as all-encompassing and as being able to transcend contexts, but in the same breath it is spoken of as being singular, separate and context-dependent. The strong voice of mainstream mathematics is spoken of as **the** mathematical discourse which has the power and authority to dictate the rules and terms of another discourse in another context, but which, at the same time, due to its insular nature, does not provide access to its rules and principles. Jane says, in lines 3 to 6: “...I think there needs to be more communication between **what** is needed to be taught and **how** it’s needed to be taught. I can’t teach maths that they might have missed if I’m going to teach in the wrong sort of fashion.” She speaks of the discourse of mainstream mathematics paradoxically here, as a **body of knowledge** which can “be missed” and “made up”, having a distinctive voice of its own, and then as a **process** which needs to be taught, but not in “the wrong sort of fashion”. This “wrong sort of fashion” is not the mathematics department’s “fashion”, so that mainstream mathematics possesses a dominant voice over Academic Support. This dominant voice of mainstream mathematics “illegitimises” and nullifies the voice, as far as it exists, of mathematical discourse found within Academic Support.

The discourse of the Academic Support Programme is, on the one hand, spoken of as a forum for filling in gaps, correcting deficits. But on the other hand, it is spoken of as a process of transferring the rules of mainstream mathematics to Academic Support to define the discourse in that context. It is the mathematics department, in control of mainstream mathematics, which must “clarify” what “the wrong fashion” of being taught is, through “communication”, and must therefore also “clarify” the terms under which the discourse of mathematics can be granted any legitimacy in the Academic Support context.

It is interesting that, for Jane even the “wrong sort of fashion” needed “to be clarified”. She seems to have no certain indication of what is the “right” way

nor the “wrong” way of teaching the students mathematics. In essence, she does not “know” what constitutes **the way** - the mathematics department’s way - of teaching the scholarship students mathematics, and so does not have access to either the rules or the regulating principles of mainstream mathematics (even if she might have access to the regulating principles of the discourse of mathematics as constituted within the tertiary educational context in which she gained her academic qualifications). She goes on to speak of how she needs **guidance** from the mathematics department as she has never taught mathematics and is “**not a mathematics teacher**”. By this, she is suggesting that the teaching of mathematics is the exclusive preserve of the mathematics department as is **being** a mathematics teacher. It is, therefore, the mathematics department which defines the terms of what it **means** to be a mathematics teacher. By excluding herself from this category, Jane is pointing at her alienation from the mathematics department and, importantly, from mainstream mathematics at the school. She is **constructing herself as subordinate** in relation to the mathematics department and this highlights her expressed sense of ineffectualness in assisting the scholarship students according to the “requirements” of the department. If it is “word-related stuff”, she says she can “deal with it”, **in line 10**, as this refers to part of the students’ language deficit. It is sufficiently non-specific and external to mainstream mathematics discourse, as defined by the mathematics department, for her to be comfortable enough to “deal with”. This points at the fact that the rules of the discourse with regard to language are sufficiently loose and non-specific for it to have some legitimacy and voice in AS. AS however, has **no voice** with regard to mathematical discourse as constituted within mainstream mathematics, (either as distributed to the lower sets - in which esoteric domain mathematical discourse is proceduralised, and where these sets are localised within the public domain of mainstream mathematical discourse; or as distributed to the upper sets - where generalising strategies apply and where the esoteric domain of mainstream mathematics discourse is more discursively elaborated, as will be seen later in the analysis). Here, the dominant voice of mainstream mathematics “ineffectualises” that of Academic Support so that it **prevents** access to the regulating principles of its discourse.

The lack of voice of the Academic Support Programme, is exemplified by the comment, **in lines 11 and 12**: “we do discuss maths when we have chats and

whatever... ". Mathematics, in this context, is "discussed" and "chatted about" and "whatever", it is not "taught", and certainly not according to the dictates of the mathematics department. What form these discussions take on and the nature of them is not expressed, but the suggestion is that they are of a very non-specific, ad hoc nature where little or no rules apply.

Jane speaks about different approaches to teaching "aspects" of the discourse of mathematics as framed by the mathematics department, and immediately suggests, in lines 14 and 15, that she teaches these in a different way to the mathematics department. Since AS has no access to the rules of the discourse of mainstream mathematics at the school, it has no prescription as to how the discourse must be transmitted or recontextualised. Here, "difference", as in difference of teaching approach, implies **subordination** as it is the mainstream mathematical discourse which carries the dominant voice.

When Jane is asked if this different approach to teaching the students mathematics is problematic, she answers, in line 17: "I don't know. I tend to avoid it...". By this, she not only points at her **lack** of access to the regulating principles of mainstream mathematics, but her **prevention** from access to these principles as a result of the strong framing of the discourse of mathematics by the mathematics department. The message which is conveyed through her statement of **avoidance** is one of control - control over AS discourse by that of mainstream mathematics. These codes of control, which act as barriers to communication, are as a result of the strong framing of the discourse of mainstream mathematics through the power invested in the mathematics department as a "singular discourse". This highlights her sense of alienation and "threat" as a consequence of the "**codes of silence**" which emanate from the singular discourse of mainstream mathematics. What is being conveyed here is the **insulation** as a consequence of the strong classification of mainstream mathematics that prevents access to its rules. One might presume that this "avoidance" extends to the actual "teaching" of "mathematics" under the auspices of Academic Support, and that no teaching of mathematics, as framed by the mathematics department, takes place at all. A **dislocation in the potential flow** of the discourse of mainstream mathematics to that of the context of AS has taken place. This is as a result of the dominant voice of mainstream mathematics which grants no legitimacy to the discourse of

mathematics within the AS context. It could be said that Jane has been “socialised” into “silence” and “avoidance” as a result of the **control codes** which support the boundary relations between the two discourses.

This dominance and strong framing can be seen in the comment, in **lines 18 and 19**, which followed directly: “I think the maths department is somewhat ... they would consider that to be taught in the class - fundamental.” It was evident that an interruption in the message being communicated took place here: “I think the maths department is somewhat... ”, but it was obvious that my role as teacher within the mathematics department, (as well as, possibly, the perceived threat of consequences of criticising the mathematics department within the school), interfered with my role as interviewer here. Jane’s comment was then rephrased: “...they would consider that to be taught in the class - **fundamental**”, (own emphasis), so that it carried a more euphemistic tone. It was also left vague, possibly with the intention of diminishing any critical tone to the comment. Of interest is the use of the term “fundamental”, which suggests something which is absolute, immutable and essential. This refers indirectly to the teaching style that takes place within the mathematics department, as reinforced by the wording “in the class”, meaning in the **mathematics classroom**. (Another inference which can be made here, is that, by comparison, the Academic Support class is not really a **normal “class”** in the usual sense of the term, within this schooling context, so that “in the class” would automatically refer to the mainstream classroom as opposed to the Academic Support classroom, again pointing at the dominance of mainstream discourse over AS.) Since the discussion was about the “right” and “wrong fashion” of teaching mathematics, the comment points to the authority which the mathematics department holds with regard to content and expression. As a consequence of strong framing, both content and expression of the discourse of mathematics is controlled by the mathematics department. Methodological approach to the teaching of mathematics at the school is the preserve of the mathematics department and is considered “fundamental”, (which might also euphemistically suggest “traditional”).

In **lines 21 to 24 of EXTRACT 6**, Jane goes on to talk about the students in terms of an “experiential deficit” in an attempt to justify their being placed in a low set. In her comment, Jane suggests a **causal link** between low streaming

and this “experiential deficit”. This statement is made as a taken-for-granted fact, as a “reality” which needs no justification. As a policy within the school, it remains unproblematised. Here, the students are positioned as subordinate to the “more experienced” and hence “successful upper stream” students. The AS teacher’s message resonates with that of the mainstream teachers’ in the construction of the students as disadvantaged. The students are positioned in terms of low academic status as a result of their “experiential deficit” - a deficit which is in relation to the discourse of mainstream mathematics at the school. **In lines 30 to 32**, Jane then goes on to say that the mathematics department must dictate what is required by Academic Support to meet this deficit. According to Jane’s comment, it is not the brief of the Academic Support Programme to elicit what form and nature of **remediation** that must take place - but that of the **mathematics department**. This is not only with regard to “language-based stuff” but “anything other than that” as well. In exemplifying what she means by “anything other than that”, Jane refers to an occasion in the past where I, as teacher in the mathematics department, gave a course of extra mathematics lessons to scholarship students over a period of two years whilst the Academic Support Programme was operational. This is referred to **in lines 34 to 36**. Here, my role as mathematics teacher at the school interfered with my role as interviewer. I am spoken about in my capacity as an active member of the mathematics department and as an agent of the mechanisms of control over content and expression of mathematical discourse within the mainstream. Jane thereby makes the assumption that I would have access to the regulating principles of the mainstream discourse and that the form of mathematical discourse which I would have engaged in with the scholarship students in the extra lessons at the time would have been controlled by the mathematics department of the school. She expresses the need for this form of mathematical discourse to be included in Academic Support, which the mathematics department must “clarify”, therefore reinforcing her lack of access to the principles of this discourse. It also highlights the separation in the discourse of mathematics according to the two contexts - one which deals with the rules and principles of the discourse of mainstream mathematics and which has a “form” - according to the dictates of the mathematics department, and the other, which deals with the “experiential” and “language-related stuff” in the form of “projects” - discourse framed within the Academic Support context.

Of crucial importance is the **nature** of the distribution of this knowledge to the scholarship students, by being assigned to a low stream in mainstream mathematics and by being placed in the non-specialised context of Academic Support. In **neither** case are the students granted access to the regulating principles of the discourse of “upper stream” mathematics to any sufficient degree to enable them to “succeed” in relation to mainstream mathematical discourse. The recognition and realisation rules of “upper stream” mathematics are not made available to the students and they are, as a result, held to their position of disadvantage.

The non-specialisation of the discourse for which the Academic Support Programme teachers are responsible, is conveyed in the vagueness with which Jane answers to her brief with regard to the Programme. “Bridging”, is her response, in **line 38**, but she does not elaborate on this, nor does she specify what is meant by “bridging”. Interestingly, when prompted to include the school-based subjects in the “science-related fields” which this bridging is intended to encompass, Jane speaks of “Science, Geography and Biology”, in **line 41**. She does not mention mathematics. When prompted to do so, Jane answers by saying, in **lines 43 and 44**: “Ja, and any general experience, general knowledge. It gives people a chance to explore, express themselves.” Her avoidance of the issue is evident here, possibly because Jane feels so alienated from the mathematics department as a result of its mechanisms of power and control and the dominance of its voice. This **alienation** is reflected in the **exclusion**, within AS, of any distinctive mathematical discourse, which could be viewed as being encompassed within mainstream mathematics.

When Jane **does** mention mathematics, it is to include it with “general experience and general knowledge”. It becomes completely non-specific, vague and unspecialised, in relation to mainstream mathematics discourse. It is a discourse which carries no special voice, (if at all), and which “gives people a chance to explore, express themselves”. It is a discourse which lacks direction and goal, in the context of the school culture which supports goal-directedness and the “striving towards academic excellence”. Exploration and self-expression are educational ideals which are not consistent with the strongly classified and framed discourse of mathematics as well as the broader context of the school. Here, the school ethos supports codes which construct

“success” in terms of “achievement”, “leadership” and “conscientiousness”. The instructional discourse of mathematics, embedded in the regulative discourse, carries these codes which construct subjects in terms of “success” or “failure”. A discourse within these structures which might support educational ideals such as “exploration” and “self-expression” (as opposed to “rigorous academics”), would be antithetical to the school’s ideals and culture and its voice would not be granted credibility within this school context.

This is further highlighted by Jane’s use of the term “people” as opposed to the usual reference to “boys”. “People” is a more general term, often used to signify certain political ideals regarding people’s rights and aspirations. It suggests a greater humanity, capacity and range of possibilities than the more specific, narrowly constructed term “boys”. The use of the term “people” in reference to the students, as opposed to the usual “boys”, although a subtle difference, is a **marked** one - in the context of the school, and points at an engagement with another political discourse outside of the cultural dictates of the school. The scholarship students are therefore associated with “failure” as a result of these constructions. This is as a consequence of their engagement with mathematical discourse which is **weakly** framed (in terms of “general knowledge”, “exploration” and “self-expression”).

Again, when Jane is asked to explain her brief with regard to AS, she says, **in line 46**: “I can’t remember”. There is no clarity as to what it is that she is intended to do or achieve with the students. She does, however, explain that it is incumbent on her to decide which subjects “need” assistance and which don’t, as well as the nature and extent of this assistance. She does, to some extent, have singular authority over content selection and expression, but points to its weak framing, by referring to how “broad” this is, **in line 47**. Again, her own disadvantage is pointed at in this regard as a consequence of the **inherent contradiction in expectations** of her by the school. On the one hand, the expectation of her is to isolate the “difficulties” which the AS students possess and correct them, whilst on the other hand, her lack of access to mainstream discourse precludes this. Since she has little access to the regulating principles or rules of mainstream mathematics at the school (or to the policies and decisions made within the context of the mathematics department), she would be ill-informed to make such decisions on behalf of the

scholarship students regarding content and expression of remediation. She has **some** authority **within** Academic Support over content, but **no** authority within mainstream mathematics, but it is the “standards” of mainstream mathematics that have to be met through remediation within Academic Support.

An important issue in this debate is the fact that the scholarship students are **not evaluated** within the context of Academic Support as they do not write tests or examinations here. This already grants the AS Programme **low status** in relation to the school culture. The school puts a tremendous emphasis on examinations as a form of evaluation as it is “examination-minded”, in Bernstein’s terms. Secondly, the only “hard info” or evidence of “how the boys have improved”, as a result of Academic Support, lies **outside** of the context of Academic Support. This is pointed at **in lines 51 onwards**. The students “improvement” is measured according to rules which apply to discourse within **another context** (in this case - mainstream mathematics) and **not** to that of AS. The AS teachers have no access to the rules and principles of mainstream mathematics according to which the students are evaluated. Not only are the AS students consequently disadvantaged, especially since they are “expected” to show “improvement” as a consequence of their access to remediation within AS, but the **teachers** within AS are also disadvantaged, being evaluated according to criteria **external** to the principles of their discourse (as well as, not having access to the results of these measures).

The scholarship students are spoken of in terms of how they would “normally do”, as if there was some innate capacity to their ability which the school unproblematically has access to through the school’s evaluation system. Ability is therefore, measurable, predictable and inherent to the context in which it is being measured, i.e. the scholarship students have an inherent capacity which can be measured **against** the situational features of their disadvantage, such as language and experiential deficits, etc.

Consequently, Academic Support is measured in **relation** to mainstream mathematics but **within** the context of mainstream mathematics. Academic Support has no access to these measurements as a result of the **insulation** of mainstream mathematics, which has complete control over the students examination results. Consequently, **in lines 59 and 60**, Jane can only speak of

how she “thinks” they “might be understanding things” and makes presumptions about their increased self-confidence. But the **school** presides over the nature of these measurements and has the authority to make comparisons and judgements about the “success” or “failure” of the Academic Support Programme. This is seen in the statement, **in lines 63 to 66**, regarding the “stats” which the vice-principal keeps of the scholarship students’ results up to their matriculation level. Here, a “pattern” is to be seen reflecting their “improvement”. It is the existence of ASP at the school which gives credence to this “pattern” so that the students of the Programme become the **unit of measure** against the relative contexts of Academic Support and the mainstream, (in which AS could be considered to act as the “research variable”, in relation to mainstream mathematics, which acts as the “control”).

The use of the terms “inflatable” and “cushion” as analogies of the discourse of Academic Support, found **in lines 56 to 58**, reinforce the “weak” image of the discourse and suggest a patronising tone in relation to the scholarship students. It points to the weak classification and framing of the discourse which is spoken of in terms which suggest little internal structure or no specialisation to the discourse. It is a discourse which has no self-directed goal, but exists only for the purposes and ideals of other mainstream discourses. It is merely a “cushion” for the strong framing of other more strongly classified discourses.

The suggestion, **in lines 61 and 62**, that Jane’s function, in terms of Academic Support, is “study methods” and “skills” in the “science-related fields”, indicates some **proceduralism** to the discourse. An emphasis on “skills-based learning” (a term more recently bandied about in the SA educational arena) suggests an algorithmic and process-orientated approach to learning. Reference to Academic Support as “study-methods” and “skills” reflects the school’s policy towards AS discourse and student expectations. Although it does not reflect classroom practice, it does, in terms of its statement, subordinate the scholarship students in relation to the mainstream discourses, which are considered more “academic” in their emphasis at this school. Consequently, Academic Support, as a discourse, carries low status, and the scholarship students, as a result of the nature of the distribution of this discourse to them, are positioned accordingly as a result.

Consequently, it can be said that the strong classification and framing of mainstream mathematics subordinates that of Academic Support, and in the process, accentuates the scholarship students' position of subordination within mainstream mathematics, in which they have been assigned to low sets. The extent to which this occurs and the alienating effects of being in a low stream within the strongly framed context of mainstream mathematics is encapsulated in the following comment made by Jane, (despite her hesitation, use of euphemism and oblique references in her attempt to deflect meaning as a consequence of a "consciousness" of my dual role as mathematics teacher and interviewer).

**Jane:** There is something about the maths department that highlights their difficulties...I can't think of it. Maths is considered to be a very, very important subject. If you're no good at it you haven't got it!

**DS:** Where does that come from?

**Jane:** You tell me, you're the mathematician (laughs).

**DS:** I'm not for the interview.

**Jane:** What I'm saying is that it comes from careers, parents, everything. There is the social pressure about maths ability. That's what, that's just the way it is. The maths department is...um...ja...I mean, I think that maths does ...builds a kind of pressure.

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### 3. MAINSTREAM MATHEMATICS TEACHERS' DISCOURSE.

The statements being analysed here refer to mathematics teachers' dialogue documented in field notes over the research period. These notes were written verbatim as a result of conversations in corridors, staff rooms and mathematics department meetings. As a consequence of my dual role as mathematics teacher and researcher and the relations of power invested in the mathematics department of the school, I did not request a formal interview with any of my mathematics department colleagues. I was certain that my proximity to the mathematics department would not have provided a sufficiently "neutral" interviewing context where I would have been able to elicit any worthwhile responses. Also, a formal interview of this nature would not have been considered "protocol". I documented relevant statements made in informal conversations with department members or during formal discussions at department meetings. This provided me with access to more "representative" information in a less contrived setting than a formal interview.

### 3.1 The Marking Out of Positions.

#### 3.1.1 Scholarship entrance examinations and the streaming system.

It must first be understood, as mentioned in chapter 4, that the students are differentially positioned on entry to the school by writing a separate "scholarship entrance paper" to the other students who write an "academic entrance paper". The candidates write one examination in English and one in Mathematics. The results are, by "average standards" within the school, considered "weak" and the students are spoken of as "not achieving well" in the scholarship paper. Four or less candidates are selected as being "the best" of an already "academically disadvantaged" group, which is spoken of as carrying a "language deficit". In essence, they are considered "the best of a bad bunch" (and are often spoken of in that light). A mathematics teacher in the department, explaining the context of their entry into the school, commented:

The thing is that they write the entrance paper, and no matter how easy you make it, they all still do abominably. They have won a scholarship but failed the actual examination. Their standard is so poor. They are the best at their schools, but they come in here at rock bottom.

Here, it can be seen that the students are measured according to criteria set by the mathematics department, in terms of the way in which mainstream mathematics constitutes "academic standard". They are constructed in terms of "failure" at the moment of entry into the school. Their position is a **paradoxical** one in that they are represented as "successes" in relation to their previous schools (as they have **won a scholarship**), but are "failures" in relation to mathematical discourse within the current school. This is concretised by their achieving low marks for the entrance examination - an examination which is set, marked and controlled by the mathematics department. These results become the measure by which their being placed in "low streams" and "requiring Academic Support" becomes justified by the school. Their "low" entrance results serve to both "justify" and "support" this policy within the school, which remains unproblematised. This is reinforced in the teacher's comment above. They have "failed" mainstream mathematics **before** entering it and are automatically placed in low sets accordingly, thereby symbolically associated with "low ability".

### 3.1.2 Deficits and differences, and the construction of disadvantage.

It is noteworthy that there is resonance of voice between that of the AS teachers and mainstream mathematics teachers regarding many of the constructions of the scholarship students and these can be categorised similarly. For the most part, the scholarship students are spoken of in similar ways, excepting that the constructions made by some of the mainstream mathematics teachers often tend to be less “subtle” and more “blatant” than those of Academic Support. The categories of “language deficit”, “experiential deficit”/“poverty”, “educational deficit”, “emotional and behavioural problems” remain, as do the issues of class, race, culture, minority groupings and ability. “Disadvantage” as it relates to a broader historical circumstance in which the concepts of race, class and culture are embedded, is an important category in the construction of the students as representative of “their” socio-economic and cultural group.

As a result of the strong classification and framing of the mainstream mathematical discourse, the constructions of the scholarship students might be considered more “obvious” and be classified as a **visible pedagogy**, compared to those of Academic Support which might be classified as an **invisible pedagogy**. This is accentuated in a comment made by a mainstream mathematics teacher in reference to the scholarship students and introduces several categories of construction relating to “behavioural problems”, and “experiential” and “cultural deficits”:

It is such a battle to get the scholarship boys to bring all their things to class. They are so forgetful. They are forever leaving their pencils or books at the house. It's because they have never really had to work hard at anything in their lives before and this is completely new to them to have to put in some effort. At their previous schools hardly any learning took place, so nothing much was expected of them. They are just not used to pulling their weight.

The comment, refers to the scholarship students' as an amorphous group and they are associated with “lack of effort” and “slothfulness” as characteristics of this grouping. Their expressed “lacks” are attributed to historical circumstance about which certain assumptions pertaining to race, class and culture are made. These constructions, in effect, support and provide reasons for the students “failure” in mathematical discourse. By this, the department is

exonerated from blame for the students "failure" to comply with the requirements of the system, so that this "failure" is as a result of something possessed by the students themselves - such as "lack of strength of character" or "inability to cope with pressure", etc., rather than a function of school ethos, (or of the divisive effects of codes of race, class and culture which emanate from the regulative discourse of the school, recontextualised within the instructional discourse - in this case, that of mathematics).

Implicit in the above comment, are certain presumptions about the students' past experiences. In the construction, they carry with them the **historical baggage** of their past schooling experiences, as interpreted by this mathematics teacher. (It is noteworthy that none of the teachers of mathematics at this school have had first-hand experience of teaching mathematics in a so-called "township" school - the context from which the scholarship students are purported to have been sourced.) The dominance of voice of the mathematics department is evident here which possesses the unproblematised authority to judge current students in relation to their "other"/previous schooling experiences within a "different" cultural ethos.

Constructions which subordinate the students more specifically according to race are also made. In the following comment made by a mathematics teacher, the scholarship students are spoken of as an amorphous, **minority group** and as subjects which lack distinction and a separate identity, but carry with them, as their single most distinguishing feature, their **race classification**: "Oh, yes... the scholarship boys - I struggle to know them apart. They all look the same to me, all being black."

Here, the condescension is evident. The students are not distinguishable from each other, except from "other" students - other "white" students. Race becomes their only physical distinguishing feature, suppressing their personal identity and individuality. It becomes the focus by which they are compared as a minority group to the other more typical student within the school. It serves to construct them in terms of a binary opposite to what is the "usual" and "typical" student. What is being reinforced here is that, whilst the **average student** at this school possesses an **individual identity**, **each scholarship student** represents their **group**.

Comments regarding the scholarship students lack of ability in mathematics abound. The range of reasons given extend from **developmental** (where reference is made to their lack of access to nourishing food as toddlers which affects their mental development), **experiential** (where reference is made to their lack of access to educational toys, or their lack of exposure to equitable schooling and other educational facilities, or their deficit with regard to life experiences), and **language-related** issues (where they are spoken of in terms of a language deficit).

The students are frequently spoken of in terms of "**behavioural problems**", where they are seen as not complying with, or not able to comply with, the demands of the schooling system. Some of the terms used here in reference to the scholarship students are, that they are "bucking the system", "not coping", "having emotional problems", "putting in a pathetic effort", "like jelly", "not cutting it", "carrying a chip on their shoulder" and are "slothful". A teacher that had been involved with the Scholarship Programme in the past, particularly with the entrance examination and selection process, and had taught mathematics within the school, (although not a mathematics teacher within the department at the time of the research), spoke to me of scholarship students in the past who had been "bad choices" and a "bit of rubbish" as he related an incident where a few students had been involved in theft within the school. Here, the students are spoken of as possessing behavioural attributes which are deemed not to be consonant with the societal values to which the school subscribes. This incident was related as an **example** of the "difficulties" which the scholarship students experience on entry to this school and how they often do not "fit in".

Constructions of the students in terms of an "experiential deficit" are frequent. Another such example refers to a comment made by a mathematics teacher:

Why do you think our black boys, our scholarship boys are so quiet in class? What do you think the matter is with them? They never contribute anything. (Susan) says that it is because of their development as babies, the way they have been deprived. She says that the problem with their 3D spatial difficulties lies with the fact that their mothers had them strapped to their backs till the age of two or three while she worked, and so all they had to look at was this flat piece of material - all 2D stuff for hours on end.

What is interesting here, is the assumed correlation which is made between the students being "quiet" in class and an "experiential deficit". At no time was it suggested that the "problem", as it is constructed as such, might lie with the school ethos and that the divisive sociological effects of certain codes, emanating from the school culture, might "silence" the students in question; that they might, as a differentiated group, experience alienation from the discourse of mathematics embedded within the regulative discourse of the school. The fault is spoken of, automatically, as lying with the students and their deprived developmental experiences, whilst the voice of the mathematics teacher presides over the nature of this deprivation. The causal link which is made between the students' purported "visual-spatial" problems and "child development" problems is spurious and left unsubstantiated. The students' "disadvantage" is firmly rooted in their past experiences which are culturally and racially defined, so that they carry with them this historical baggage with which they are identified. Any difficulties they might (or might not) experience are then constructed in terms of "their" socio-cultural identity which the school has the authority to define. It is an "identity" which, is distinct, and kept separate, from the school ethos, and which has been recontextualised by the dominant culture of the school so as "to suit" the constructions which are consequently made of the scholarship students. It is an "identity" which enables the students to be spoken of, within the school, as a differentiated group, but which denies them other distinguishing features of their humanity - that is to say, that it allows them a subject position which associates them with this cultural "identity", and restricts them to this subordinate position.

Comments referring to the scholarship students **lack of mathematical ability** also abound. Comments referring to the students as "struggling", "weak students", "slow", "academically poor" are often used in discussion amongst mathematics teachers. An example of such a comment which associates the scholarship students with low mathematical ability is: "Well, that was a pathetically easy exam. Even the scholarship students managed to get some marks for it."

What is common-place are comments which associate students in **low streams** with **low ability**. The scholarship students are placed in low streams for reasons of their purported "language problems" and "educational

disadvantage". They then become spoken of in terms of "low ability" as members of a low stream along with other "low stream" students. Their construction of "failure" is consequently consistent, on an academic front, with students of "low ability". They are subordinated accordingly in relation to "upper stream" students for whom constructions are often made by mathematics staff in terms of "successful students". These constructions include descriptors such as "conscientious", "diligent", "dedicated", "eager", "quick", "participatory", "intelligent" and "shows mathematical potential".

I will now further establish that as a consequence of the students' being positioned as subordinate through the construction of disadvantage, their access to the esoteric domain of mainstream mathematics becomes limited. The scholarship students position of subordination, then, is in relation to the distribution of discourse which is made available to the lower sets.

### 3.2 Distribution of Discourse.

Critical to the debate on the construction of the scholarship students as disadvantaged, is an examination of the language used by mathematics teachers associated with the students access to knowledge within mainstream mathematics at this school.

#### 3.2.1 Control of content and expression: mainstream mathematics.

Much debate ensues within the mathematics department over the issue of **control of pacing** of mathematical discourse between the various sets within a standard, particularly in standards six and seven where the selection, sequencing and pacing of mathematical content is highly controlled and strongly framed. Consequently, the differentiated distribution of discourse to the various sets achieves its main emphasis in the area of **expression** of content. This is to say that it occurs more **obviously** in the transmission process within the separate classrooms than in the way in which the discourse of mathematics is constituted **outside** of the classroom, i.e. in the compartmentalising of the mathematics syllabus. A differentiated restriction of mathematical content (in the form of "the syllabus") does take place, but through the mechanism of the streaming system, where the teachers of the different sets become the **agents** of such a differentiated distribution through

expression of content (more so than the way in which the mathematical knowledge in the form of "the syllabus" is officially apportioned).

The policy of the mathematics department at this school, is to evaluate all the sets in any one standard on the same "section of the syllabus" on a frequent (usually weekly) basis. This is more particular to Standards Six and Seven and it occurs less frequently in the higher standards. Such forms of evaluation are called "common tests" as they occur throughout the standard and are set by one of the members of staff responsible for teaching one of the sets in that standard. The **different** sets in a standard write the **same** "common test" at any one time, so that, officially, the same "amount" of the syllabus has "to be covered" beforehand by each of the sets within the given time frame. This is to say that the sets are expected to "cover the syllabus" at the "same pace" as each other. Here, as an example, is an extract of dialogue from a debate which ensued within the mathematics department over the continuation of this policy. Many such debates of this nature took place:

**Teacher A:** The problem is that the lower sets cannot keep pace with the set 1's. They just can't absorb the stuff at the same rate. You can't expect them to cover 20 pages of the text-book in 3 days. It is not like the top sets - you can do it all in one day and then move onto more interesting work - let them play around a little with it and see what mathematics can come out of it. Extend them. Not so with the bottom sets. Here they struggle with the basics so you have got to just force it into their heads. And there is no time to reinforce the stuff, so it just goes right over their heads.

**Teacher B:** Well, what you must do is just stick with the very basics, teach them the essential rules and then just do lots of examples. You mustn't try to do anything elaborate or fancy. You mustn't worry about the frilly bits. No fringes. You have just got to grind away with the basic algebraic skills, step 1, 2 and 3 and all that. That is what they need to get the basic marks.

**Teacher C:** But, how can we hope to cover Pythagoras in 3 days? What I have found with my bottom set is that I just show them how to do it on the calculator, which buttons to press, so that they know how to do something, but they don't really know what they are doing - they don't understand it and it is not really the way to teach. It is just so that they can get some marks and not feel so dreadful about themselves.

A sharp distinction between "able" and "unable" students (as binary opposites) is made here, and their corresponding roles of "slow" and "fast" learners is clearly defined in terms of their access to knowledge. On a **superficial level**, it

appears that all the sets in a standard have access to the "same knowledge" as a consequence of their "keeping pace" with each other through the way in which the syllabus is compartmentalised - according to "sections" which correspond with "periods" of time. By examining the language of these comments from Teachers A, B and C, in the way in which they construct the students in the various streams as "successes" or "failures", it is possible to make the connection with how mathematical discourse is differentially distributed to the different "types of learners".

In the statements, the students in the "bottom sets" are associated with "slow pace" in relation to "top set" students, inability to "absorb" information at the same rate, "struggling with the basics", needing to have the knowledge "forced into their heads" and "requiring" constant "reinforcement". They are also spoken of in terms of "lack of understanding" and low self-esteem ("feeling dreadful about themselves"). Consequently, mathematical discourse is constituted differently according to "type of learner". Mathematics is spoken of as "stuff" for the "bottom sets", whereas it is spoken of as "interesting work" for the "top sets". The connotation with "stuff" is that mathematical discourse, for "bottom" setters is material which has parameters, a **transferable object or set of objects which has limits and bounds**. For the "top" setters, "work" is more of a **process or concept**. The connotation with "work" is one of an action which is limitless, a striving through effort. "Interesting work" has positive associations of achievement through effort, imagination, extension of mental capacity and satisfaction.

Different forms of **expression** of mathematical discourse takes place as a result. With "top" setters you can let them "play around a little" and "see what mathematics comes out of it", i.e. working with ideas and concepts, whereas the "bottom" sets require "grinding away" and must be "shown how to do it" and told which "buttons to press" on the calculator: a set of prescribed facts which must be absorbed. The transmission of mathematical discourse to the "top" sets allows for more scope, has greater possibilities, is multidimensional, is not absolute but more open-ended. It is more "interesting", and is less controlled by the teacher. The transmission of mathematical discourse to the "bottom" sets is mundane, routine-orientated, uninspired, pedestrian, limited, singular or absolute and highly controlled by the teacher.

A different distribution of mathematical discourse is pointed at. The “top” sets are “extended”, do “fancy” and “elaborate” work, and deal with “frilly bits”. For them, mathematics has “fringes” beyond the confines of the mathematics which is made available to the “bottom” sets. For the “bottom” sets mathematics is a set of rules, procedures, algorithms which have little understandable basis. This can be seen in their having to be taught “just the essential rules”, the “very basics”, the “basic algebraic skills”, just “steps 1, 2, 3, etc.” The “understanding” **belongs to the teacher** and the “lower stream” students’ “understanding” is **controlled by the teacher**. They have no access to the regulating principles of the “upper stream” discourse and the relationships between and within mathematical topics within this “upper stream” realm remain hidden from them. They are granted only that of the discourse which will achieve them “some marks”, i.e. they are only granted access to rules and “facts”. “The marks” have become the main objective of the “bottom” sets exposure to mainstream mathematics and they are apportioned information in a way which will provide “some marks” and not for the knowledge in itself. They are not provided with the opportunity to engage with the discourse in any meaningful way, or to be allowed to find the principled connections between and within the topics of mathematics. This remains the **possession** of the teacher (by whom they are evaluated). Here, the relations of power and control are evident in the distribution of discourse. The authority and judgement of the mathematics department with regard to the distribution of “lower set” discourse is absolute, restrictive and highly controlled, whereas for the “upper sets” it is more permissive, open-ended, concept-dependent and less controlled by the teacher. The recontextualising of mathematical discourse in a differentiated way corresponds with the differentiation of student positions and is determined by relations of power and control between and within discourses at the school.

### 3.2.2 Discursive and procedural elaboration.

It can therefore be said, that for the “top” set students **esoteric domain** discourse of mainstream mathematics is **discursively elaborated**, where the regulating principles of “upper stream” mathematics at the school are made explicit. This discursive elaboration makes principled connections between and within mathematical topics so that access is both permitted and provided to

this discourse. These are **generalising strategies** which apprentice the “top” setters into the esoteric domain of mainstream mathematics as a dominant voice. For the “bottom” set students esoteric domain discourse of mainstream mathematics is **procedurally elaborated** and these students are initiated into the **public domain** of mainstream mathematics. Consequently, they are alienated from “upper stream” discourse. Their voice is subordinated in relation to the more dominant voice of “upper stream” mathematics students. Here, the procedural elaboration of the “bottom” set students hides the relationships between and within topics of mainstream mathematical discourse within the esoteric domain and obscures the regulating principles. For them the discourse is “abbreviated” and rule-bound. Access to the discourse of “upper stream” mathematics is not granted to the “bottom” sets and they are thereby alienated from the discourse and constructed as subordinate as a consequence. They are embedded in the mundane, and are **localised** within the public domain of mainstream mathematics.

#### 4. CONCLUSION.

Access to the discourse of mainstream mathematics is highly differentiated and hierarchical, but this is made to appear **less visible**, on a policy level, by controlling the “syllabus” content in such a way that all sets “are taught” the “same sections of the syllabus at the same time”. Statements of some of the mainstream mathematics teachers point at an unequal distribution of discourse across the sets in such a way that, in the process of **privileging** one form of mathematical discourse above another, some students within the higher sets are **advantaged** mathematically over those in the lower sets. The “lower set” students or “bottom sets” are thereby differentially positioned in relation to the “upper set” students. The “lower sets” are constructed as lacking in ability and are therefore assigned to a position of subordination. By being taught how to “press buttons” and “do it” on “the calculator” these students are being alienated from the esoteric domain of mainstream discourse where, for them, the discourse is procedurally elaborated, and they are localised within and initiated into the public domain of mainstream mathematics.

Interestingly, the comment that **Teacher C** makes, in the previous dialogue with colleagues, in relation to the exposition of mathematical discourse to the

"bottom sets", that this is "not the way to teach", suggests that this process might not be deemed "teaching" at all and can be constructed as something other than the usual more positive associations of the word "teaching", (perhaps more like mere "training"). It suggests some dislocation or deficiency in the transmission process, an over "abbreviation" of concepts to the detriment of the students' understanding. Consequently, it points at the denial of access to the regulating principles of "upper stream" discourse.

The scholarship students, by being placed in the "bottom sets" of mainstream mathematics by virtue of their "low" academic results in the scholarship entrance examination, are constructed as subordinate to the more "successful" "upper stream" students, **in the same way** as the other "lower stream" students. This "reality" alienates the scholarship students from the esoteric domain of the discourse and limits their access to the regulating principles of this discourse. This becomes read as "lack of ability" in mathematics and holds the scholarship students to a subordinate position in relation to the more "successful upper stream students". This is then "substantiated" through the schooling process, by their continued "lack of achievement", i.e. "poor marks". This is despite their having been denied access to the principles of the "upper stream" discourse as a consequence of the differentiating mechanisms of streaming. The "low results" then "justify" the "low streaming", and the mathematics department possesses the unquestioned authority to decide where to place the scholarship students - inevitably in "low" sets. The students are **positioned as disadvantaged** as a result of the streaming system, but this becomes read as **their innate disadvantage** through the school's evaluation process.

The position of subordination is supported by constructions of the black scholarship students which embrace race, class and culture in such a way that **difference** is translated into **deficit** and **separation** into **subordination**. The categories of "language deficit", "experiential deficit", "emotional and behavioural problems", "lack of experience", become read as "disabilities" within the context of this stratified school, "disabilities" which disempower the scholarship students, limit their access to discourse and hold them to positions of subordination. They become the elements by which disadvantage is constructed, supported and legitimised in relation to mathematics discourse at

the school. Their differentiated position in relation to other "more successful" students at the school, reinforces difference, legitimising and supporting it within the context of the hierarchy of positions. The codes or messages which support this hierarchy of positions produce and reproduce themselves so that no position of advantage is available to the scholarship students and they are disempowered through their lack of access to the regulating principles of mainstream discourse. The divisive nature of this process is such that, advantage begets advantage and **disadvantage begets disadvantage**. The scholarship students are constructed as disadvantaged and consequently are held to this position of subordination.

The Academic Support Programme at the school provides little in the form of effective "remediation" for the spoken of "problems" and "deficits" which the scholarship students are said to possess. This is as a consequence of the weak classification and framing of AS discourse in relation to mainstream mathematics discourse and as a result of the mainstream's dominance over AS. As a singular and insular discourse, mainstream mathematics discourse provides no forum for the transfer of its principles to that of AS.

The Academic Support Programme does, however, have the effect of reinforcing the position of subordination by acting as a vehicle for the differentiating process (a differentiating ritual in itself) at the school. This is as a consequence of the scholarship students being physically and otherwise separated from other students whilst in the Academic Support classroom where they are given "different" educational treatment. They become positioned as "different" to other "typical" students here, being spoken of as having "different needs and requirements" within the context of the school and this then translates into a position of "disadvantage". Their position of "disadvantage" has a physical and contextual representation. Academic Support carries "low status" in the "social division of labour of discourses" at this school and the scholarship students association with it, as well as their distinction from the rest of the students, positions them in terms of "low status" accordingly.

Finally, it can be said that, as a result of the dominance of the school's socio-cultural ethos, the Black Scholarship students that come into this cultural context are granted a distinct cultural "identity" which they are said to "possess". This "identity" possesses an inherent capacity which can be **measured** by the school against the situational features of the students' disadvantage, (such as language and experiential deficits etc.). This "disadvantage" relates to a broader historical circumstance in which the concepts of race, class and culture are embedded. "Disadvantage" becomes an important category in the construction of the Black Scholarship students as representative of "their" socio-economic and cultural group "identity".

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## CHAPTER 6

### AN ANALYSIS OF STUDENT DISCOURSE.

#### 1. INTRODUCTION.

The intention of this chapter analysis is, as it was in the previous chapter, to examine the construction of the subject within language. This will be done by examining the utterances of the black students of the Scholarship Programme and the various ways in which they position themselves as acquirers, as well as how they position their teachers and peers. In other words, through an examination of the interview transcripts, the analysis will concentrate on the statements of scholarship students regarding themselves, interaction between them and their teachers, other students in the classroom and within the school. Here, the focus is on the mathematics classroom and that of the Academic Support Programme in assessing how the scholarship students position themselves/are positioned in relation to other demarcated subject positions within the context of mathematics discourse at this school.

#### 2. THE MARKING OUT OF POSITIONS.

Certain positions are marked out by student talk, which sometimes do and sometimes don't resonate with teachers' talk (which is described in the previous chapter). Whilst the mainstream mathematics and ASP teachers tend to speak of the scholarship students in terms of latent **deficit** and **difference**, as observed in Chapter 5, the students themselves tend to speak more of **alienation**. I will now address the various ways in which the students mark out subject positions for themselves, their peers and their teachers, as well as indicate areas of resonance and contradiction.

##### 2.1 Language Difference.

The issue of language difference is posed almost immediately in the interview situation and is spoken of as being significant in eliciting feelings of alienation in the scholarship students. It is spoken of frequently in the interviews. Language is spoken of in different ways and, for the purposes of analysis, can

be separated into two categories, "institutional" and "instructional", although these do intersect in the area of instructional discourse.

### 2.1.1 The language of the institution.

Since English is the language medium at the school as well as the primary language of instruction, the scholarship students speak of themselves as being at an "institutional disadvantage" as a result of the language difference. Being mother-tongue Xhosa speakers in the main, they are "expected" to acquire a knowledge of English at the "accepted level of what the school requires", as part of their enculturation into the school. This "accepted level" might not necessarily be in terms of how the language is constituted at the level of instruction, but how it is used and spoken by the majority of students within the school - the jargon and lingo, the nature of the conversations, what is included and excluded (content selection), the social comportment - which carries with it all the codes of culture and class associated with what it means to be a student at this school.

Not only do the students speak of themselves as experiencing loneliness and alienation, but they point at **language difference** as being connected to **cultural difference** and speak of the "silencing" effects of this. This comes to the fore in the following excerpt from the interview transcripts:

#### **EXTRACT 1.**

1. **DS:** (Interviewer): What did you feel Derrien... that first week ..or that
2. first day... what was your first impression?
3. **Derrien:** I wanted to go home.
4. **DS:** You wanted to go home?
5. **Derrien:** Yes, ma'am.
6. **DS:** But you said you had been so excited to come to this school.
7. **Derrien:** Yes, ma'am. I was excited, ma'am, and when I came here I
8. just wanted to go back home to my mom.
9. **DS:** with your mom?
10. **Derrien:** when she left me here.
11. **DS:** when she left you here at the school... so ...so let's talk about ...
12. so what were you going through... what did you actually feel?
13. **Derrien:** You know, like, I felt like there was no-one to talk to...
14. **DS:** There were all the Standard 6's, but explain this, why did you feel
15. there was no one to talk to?
16. **Derrien:** It's like... it was hard for me to talk.
17. **DS:** Why?

18. **Derrien:** the language, ma'am.  
 19. **DS:** the language because you were Xhosa?  
 20. **Derrien:** Yes, ma'am.  
 21. **DS:** OK, so did you think ... what were you ... you can speak English,  
 22. so...  
 23. **Derrien:** And like I was scared of like mistakes, ma'am ... a wrong or  
 24. stupid mistake, ma'am.  
 25. **Marcus:** When I first spoke, ma'am... they laughed at me, ma'am.  
 26. **DS:** who laughed at you?  
 27. **Marcus:** the other guys, the Standard 6's  
 28. **Derrien:** other white guys.  
 29. **Marcus:** Yes, ma'am.  
 30. **DS:** They laughed at you? Why, Marcus?  
 31. **Marcus:** I was saying something wrong, ma'am.  
 32. **Sam:** Like if you say, ma'am, like... um ... you make a mistake on easy  
 33. things you were supposed to say, then they gonna make a big deal out  
 34. of that, ma'am.  
 35. **DS:** Do they still do that?  
 36. **Sam:** Not all of them...  
 37. **Marcus:** Some of them...  
 38. **DS:** Do they make a big deal out of the fact that you...but, don't you  
 39. say that you can speak Xhosa? Hey?  
 40. **Sam:** (laughing) They don't want to learn Xhosa, ma'am.
- 

Here, the scholarship students speak of experiences of alienation and exclusion as a consequence of their "lack of competence" in English as spoken by the "other" students. They speak of emotions of fear, loneliness, home-sickness, embarrassment and humiliation. They speak of a sense of isolation and of barriers to understanding. Demeaning behaviour towards them on the part of the "other boys" who are "white" takes on connotations of race as well as class and culture. Interestingly, it is not just competence in the English language which alienates them from the "other white boys", but English as spoken by the "other white boys" at this school. (See lines 18 to 28). As Sam says in lines 32 to 34, "if you make a mistake on easy things you were supposed to say, then they gonna make a big deal out of that, ma'am." The manner in which English is spoken by the majority of students at the school, refers not only to the selection of language components, but to social practices and social comportment. The dominance of these cultural codes which regulate what can and can't be said, when and how, is evident in Sam's comment. In response to his comment, one might ask: "Who determines whether the mistake was 'easy' or not, and who determines what 'you were supposed to say'?" Here, the scholarship students' voice is subordinated by the voice of the "other boys". Having access to English discourse as spoken

by the "other" students, and what to say to gain acceptance by the other students in the school, act as dominant social and cultural codes which regulate what gets said. Consequently, barriers to cultural access are formed. The connection between language as a determinant of culture and class, and the extent to which cultural codes are embedded in language, is highlighted in this extract. The fact that the "other boys", who mocked the scholarship students, are spoken of as being "white", is not coincidental, as it links race with culture over the issue of language. Through the more dominant voice of "the other white boys" in the school, the scholarship students' voice is subordinated and they are constituted as being "different" as a consequence of their race, culture and language. These "differences" carry **codes of class** and exclude the scholarship students from the dominant culture of the school, granting them a subordinate position in relation to it.

The scholarship students' being mocked for saying a "wrong" or "stupid thing" is an indication of their lack of access to English as constituted by the "other" students in the school, as well as their lack of access to the cultural code which regulates what gets said and when. Their "silencing" could be interpreted as their subordination of voice and the process of acquiring messages which are culturally alienating. These messages, produce and reproduce boundaries and carry with them a construction of failure which is assigned to the scholarship students.

Again, referring to themselves as having made "stupid mistakes" resonates with the voice of the mainstream mathematics teachers (who speak of them, in Chapter 5, as lacking in ability in mathematics and possessing impoverished intellectual development), subordinating their own voice. The comment that the "other boys" would not want to learn to speak Xhosa, substantiates their subordination, where Xhosa would possess reduced status relative to English as spoken by other students in the school. The fact that the comment was preceded by a laugh, was an indication to me that my question was redundant. It might be argued, that a knowledge of Xhosa would not facilitate access to the more dominant discourse of English as spoken within the school and to the cultural codes which regulate what is "accepted" language use/compartment. It would, therefore, render the learners' voice equally as subordinate.

What is of interest, is the way in which different scholarship students complete the same story on each other's behalf. It is Derrien who speaks of being ostracised for "incorrect" language usage and content, but Marcus and Sam who complete the story, confirming it and inferring that the same story applies to them all. Here the scholarship students are speaking as a group which represent within the Xhosa language, their race, class and culture, which is spoken of as not being consonant with the dominant culture of the school. They indicate, in their responses in the interview situation, that they experience cultural alienation from this school and are at an "institutional disadvantage" by **being** and **speaking** Xhosa. The comment that "the other boys" do not want to learn Xhosa, points at the barrier or separation between the Xhosa culture and that of the dominant culture of the school, where no possibility exists for Xhosa's assimilation into that of the school's. The scholarship students speak in a way which suggests that, by being associated with the Xhosa culture and language, they are consequently alienated from the school culture and achieve a position of subordination as a result. The scholarship students speak as a single unified voice, reinforced by the way in which they complete each other's story as if it belongs to all of them as a group. They speak in a way which assumes being bound by a common cultural/language affiliation. It is a voice alienated by the voice of "the other" students, which carries a message of "cultural difference" and domination.

It is noteworthy, that in the interview situation, I ask the question "because you were Xhosa?", (**line 19**), as opposed to "because you speak Xhosa?", a comment to which the reply was "yes, ma'am". As interviewer, I was using terminology which, in my opinion, would have most commonly been used in this circumstance, "knowing" previously that Xhosa was both the scholarship students mother-tongue as well as their "tribal affiliation", thereby constructing them, simultaneously, in terms of language and culture myself. This is an indication of where my role as teacher, and the "knowledge" I would be privy to, interfered with my role as interviewer.

### 2.1.2 The language of instruction.

In the following extract from the interview with the Standard 6 scholarship students, the students point at language difference as it impacts on and is

constituted within mathematical discourse. They speak of it in a way which suggests that their “lack of competence” **interferes** with their “understanding” of mathematical discourse at the school.

**EXTRACT 2.**

1. **DS:** (Interviewer): So, what are you saying ... the language is a big
2. thing?
3. **Derrien:** Yes, ma'am... like last year... like I used to get, like, higher
4. marks in the previous school in maths and, like, at this stage it's too
5. tough...
6. **DS:** It's?
7. **Derrien:**...too tough ma'am.
8. **DS:** Why do you think it's tough in the \*maths class here?
9. **Derrien:** I don't know, ma'am.
10. **Marcus:** We can't understand properly, ma'am ... like, ... how can I
11. say...
12. **Derrien:** Sometimes I can't understand the work in class on, like, ...
13. **Marcus:** ... the tests...
14. **Derrien:** ... sometimes we fail. Sometimes I just can't understand the
15. work ... and, like, when the test comes, I just, like, I don't, like, ... um
16. ... learn enough.
17. **DS:** You feel you haven't learnt enough? Is it, er ...
18. **Marcus:** Like, understanding the formulas and stuff (.....)
19. **Derrien:** Usually in tests they first, um ... like, give you a statement
20. and you have to work it out, ... um, work out what the sum is first and
21. then you can work it out ... er, what it was... so you waste time on
22. finding out what it means, like...because ma'am, the language is, like,
23. complicated.
24. **DS:** OK
25. **Derrien:** and I still can't understand.

(\***maths class** refers to mainstream mathematics, as opposed to mathematics within Academic Support. **Maths class** is common terminology in the school, referring to the mainstream mathematics class of whichever standard or set.)

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At the beginning of this extract, the issue of language difference is posed as being a crucial and primary problem and is spoken of as hindering understanding and, consequently, performance in mathematics. One of the scholarship students, Derrien, speaks of an insufficient command of the language of instruction, drawing a correlation between this and the work being “too tough”. Here, language difference is spoken of as a **deficit** emerging outside of the discourse of mathematics which impinges on mathematical discourse **causing** lack of understanding. Derrien speaks of being unable to gain access to the regulating principles of mathematical discourse due to its reliance on a command of English. (See **lines 1 to 12**). In other words, he is

speaking of not comprehending the meaning behind the language components used as indicators of mathematical concepts and ideas. Derrien thereby constructs mathematical discourse as possessing a component of the English language which stands outside of what constitutes mathematics but which impinges on it, having a causal effect on “success” and “failure” in this subject. Consequently, Derrien and Marcus speak of their alienation from the discourse of mathematics whereby the principled connections of the discourse are not made, as a result of an existing deficit in their competence in English.

At this stage, the scholarship students position themselves as being subordinate to more “successful students” who have access to English and the language resources necessary to the discourse of mathematics within the school, which assist in making principled connections between mathematical ideas, concepts and topics. They speak of their subordination in terms of their “lack of success” which is reflected in “poor performance in tests”, as a consequence of a language deficit. They construct themselves as being disadvantaged in this area. This takes the form of “institutional disadvantage”, at a primary level, in relation to the language of the institution, as well as “instructional disadvantage”, at a secondary level, in relation to the discourse of mathematics.

In **EXTRACT 2** above, the scholarship students raise the issue of evaluation - failure in tests and examinations - as a means of **reflecting** or **exemplifying** their construction in terms of language disadvantage. Examining the extract, it is noteworthy that the issue of performance in tests and examinations arises along with the issue of language difference. One of the scholarship students, Derrien, points to the measurable difference in his mathematics results between his previous school and this school as an indicator of the language disadvantage.

### 2.1.3 Examination Performance.

It is also evident that performance in examinations is prioritised throughout the interviews with the Standard Six scholarship students and, in this construction, their voice resonates with the ASP teachers interviewed and the other mathematics teachers within the school, as discussed in Chapter 5. It exposes the emphasis of the school culture on measured performance. It is

notable that the mainstream mathematics teachers place a greater emphasis on performance in their comments than do the ASP teachers, indicating their dominance of voice over the ASP teachers' voice, in this area. Mainstream mathematics teachers' voice is **particularly** dominant in this area. Mainstream mathematics teachers in the school often comment on the scholarship students' "lack of success" or how they are "experiencing difficulty" by referring to their test/examination results as taken-for-granted indicators. It also highlights the association of "educational problems" with examination performance, legitimising the view that such problems are quantifiable and directly reflected in written examinations.

In examining the dialogue in **EXTRACT 2**, particularly **lines 1 to 18**, the issue of poor performance as a reflection of an existing deficit comes to the fore. The language which the students use to describe their circumstance points at a connection between language disadvantage and poor performance in evaluation, and they thereby construct themselves in terms of failure.

## 2.2 "Lack of understanding" vs. "lack of effort".

To return to **EXTRACT 2**, **lines 12 to 18**, a contradiction arises in the statements given regarding failure in tests. Derrien says: "...sometimes we fail. Sometimes I just can't understand the work...and, like, when the test comes, I just, like, I don't, like, ...um...learn enough." The suggestion, on the one hand, is that Derrien's failure is as a result of lack of understanding of the work, whilst on the other hand, and in the same breath, it is as a result of lack of sufficient study. It appears that the scholarship students' voice is resonating with that of the mainstream mathematics teachers', with regard to the issue of "insufficient effort". It resonates, in the latter part of Derrien's comment, with the mainstream teachers' construction of the scholarship students as being "slothful". The issue of understanding and learning are merged so as to be seen in the same light. This has the purpose of masking the reasons for failure, transferring the responsibility for its occurrence from the teacher to the student. The scholarship students' failure in mathematics is no longer as a result of something which occurs in the classroom, but it is taken outside the classroom and made the fault of the student himself. This can be substantiated by comments made by mainstream mathematics teachers, (as discussed in

Chapter 5), referring to the scholarship students' lack of effort and "slothfulness", a construction of them which supports and justifies the reasons for their failure from the teachers' point of view. The voice of mainstream mathematics teachers is dominant in this area.

The contradictions inherent in the students' statements indicate the extent to which their voice has been subordinated with respect to mainstream mathematics teachers', and they construct themselves in terms of failure as a consequence of their "lack of effort". On the one hand, they speak of their difficulty in gaining access to the discourse of mathematics, and on the other hand they speak of not having "learnt enough". The voice of the scholarship students carries, in part, the dominant cultural codes transmitted by the voice of the mainstream mathematics teachers which results in contradictions in the language of the scholarship students.

### 2.3 The Discourse of Mathematics and Streaming.

Importantly, the scholarship students position themselves subordinately to other "successful" acquirers of mathematics in the school. They speak of how this relates to their access to the discourse of mathematics. The following excerpt from the interviews with the Standard Six scholarship students highlights this:

#### EXTRACT 3.

1. **DS:** So what is it about the test that ... er ... that ...
2. **Marcus:** They ask different things, ma'am.
3. **DS:** They ask different things from?
4. **Marcus:** Yes, ma'am, you expect something like, from ... you don't
5. expect ... they ask tricky questions.
6. **DS:** You don't expect tricky questions?
7. **Marcus:** Yes, ma'am. I always thought, like, they would be questions
8. you deal with in class.
9. **DS:** Similar questions to the ones you do in class?
10. **Derrien:** Usually in tests they first, um ... like, give you a statement
11. and you have to work it out, ... um, work out what the sum is first and
12. then you can work it out ... er, what it was... so you waste time on
13. finding out what it means, like...because ma'am, the language is, like,
14. complicated.
15. **DS:** OK
16. **Derrien:** and I still can't understand.
17. **DS:** So, the language is complicated and you are trying to find out
18. what...
19. **Derrien:** The sum means.

20. **DS:** The sum or the statement would actually mean before you ...  
 21. **Derrien:** Work it out ... because in class you just work it ... you just  
 22. work it out in numbers only, er, you used to working in numbers only.  
 23. **DS:** In class?  
 24. **Derrien:** Yes, ma'am. In class, you work in numbers, not like questions  
 25. ma'am, not like words.  
 26. **DS:** OK?  
 27. **Derrien:** They just give you sums and you got to work it out and for  
 28. tests, they just give you, er ... word sums, but you must know what  
 29. they mean and want.  
 30. **DS:** Don't the teachers do word problems or deal with problems with  
 31. those statements and what they mean in class?  
 32. **Derrien:** Yes ma'am, yes but, um ... in tests they are usually true life  
 33. questions and, um ... they get very complicated.  
 34. **DS:** OK, so it's got a different slant to it which you are not expecting  
 35. because it's not really what you've done in class? ...  
 36. **All:** Yes, ma'am.  
 37. **DS:** OK, I understand and ... er, ... Sam, what can you say about that?
- 

The scholarship students, Derrien and Marcus, speak of a **gap** between the discourse of mathematics as constituted within the "lower stream" classroom context and that which requires evaluation in tests. They speak of how the content and expression of the discourse in the lower sets has been sufficiently selective, in relation to the discourse within the context of evaluation (i.e. under test conditions), so as to obscure the discourse and hide the meanings. Derrien and Marcus speak of being unable to find the principled connections between the discourse as framed by "lower stream" mathematics and that of the examination context. Marcus speaks of being "asked different things" and not what was "expected" - "tricky questions". He says: "I always thought, (...) they would be questions you deal with in class." Clearly, the scholarship students' comments are pointing at the unequal distribution of message. They refer to the discourse of mathematics as being constituted differently within the two contexts, and consequently point at not having been granted access to the regulating principles of the discourse necessary to make the connections between the two contexts. The principles of the context of evaluation lie **outside** of the "lower stream" classroom as the tests are set to cover "the same topics", but for **all the sets** including the "upper stream" sets which have access to the regulating principles of discursively elaborated discourse; and more often than not, they are set by "another teacher from another set". For the scholarship students, the differences between the discourse of mainstream mathematics framed by the "lower stream" classroom and the discourse

framed by evaluation, lies in the way in which mainstream mathematics discourse has been distributed, (which I will analyse more thoroughly in the next section). It refers to the differences of message within mainstream mathematics discourse which is differentially distributed across the mathematics sets, so that the scholarship students, as an acquirer voice, receive a message of being “unsuccessful” as a consequence of being constructed and positioned as “lower set” students.

In the **EXTRACT 3**, Derrien speaks of the nature of the differences in approach between the discourse as framed by mainstream mathematics, as constituted within the lower sets (sets4/5/6), and that of the evaluating context - the tests, by referring to working “in numbers only” (**line 22**), in class (during teaching periods) and not in “words” or in “word sums” as constituted in the tests (evaluation periods). Here, differentiation in the expression of mathematical discourse, is inferred. In the classroom, localising strategies are used which initiate the students into the public domain of the discourse of mathematics. By “working in numbers only”, the mathematics content is being proceduralised and access to the principles of the esoteric domain of the discourse is not granted to them, so that these meanings remain hidden and obscured.

Comments such as “for tests, they give you (...) word sums, but you must know what they mean and want”, (**lines 27 to 29**), indicate the difference in access to the regulating principles of the discourse which “they” - the teachers have, and which the students, in the lower sets particularly, do not have access to. The way in which the evaluating context is discursively elaborated are found in comments such as (**lines 12 to 14**), “you waste time on finding out what it means, (...), because (...) the language is (...), complicated”, and (**lines 32 and 33**), “in tests they are usually true life questions and (...) they get very complicated”. What is required in tests and examinations is generalising strategies, where the content is discursively elaborated. In the “lower set” mathematics classrooms, localising strategies apply, where content of discourse is proceduralised. What is being reflected here, is a **disjuncture** between the two contexts of the “test” and the “lower stream” classrooms, as a consequence of the discourse of mathematics being constituted differently within each context. This refers to an uneven

distribution in mathematical discourse which alienates the scholarship students from the discourse, and assists in positioning them subordinately in relation to “upper stream” acquirers of mathematics discourse within the school.

The transmitter voice of the mainstream mathematics teachers, consequently distributes a different kind of voice across the sets in such a way that the acquirer voice of the scholarship students achieves a construction of “unsuccessful students” along with others in the “lower streams”. It is this uneven hierarchical distribution which will be addressed next.

### **3. ACCESS TO MATHEMATICS DISCOURSE.**

#### **3.1 The Distribution of Discourse: Mainstream Mathematics.**

The language of the following extract, which is a continuation of the interview transcript from the previous extract, exemplifies the alienation of the scholarship students and their construction of themselves as subordinate to “successful” acquires, in relation to mathematics discourse at this school, as a result of the uneven distribution of mathematical discourse across the mainstream mathematics sets:

#### **EXTRACT 4.**

1. **DS:** OK, so it's got a different slant to it which you are not expecting
2. because it's not really what you've done in class?
3. **All:** Yes, ma'am.
4. **DS:** OK, I understand and ... er, ... Sam, what can you say about that?
5. **Sam:** You can't really get into it because the sets and stuff, because in
6. maths and stuff in the last school we were all in one class and now,
7. like, the clever guys are all in one class...and you, like, could compete
8. with each other...like, you know, you now try to get into set 1 and you
9. don't even know what the guys in set 1 do. Like in my last school, you
10. try to compete with the person and like, you know he's here and like,
11. you could do better than him. But now you don't know what goes on
12. there and you will never know if you'll ever get to cope there and you
13. never know what to expect ever, but last year you were the same with
14. everyone and you first compete with each other and, like, that's what I
15. preferred to the sets and stuff here.
16. **DS:** You preferred that to the setting system?
17. **Marcus:** Here, you don't have the same things, ma'am, in maths.
18. **DS:** You're saying the different sets?
19. **Marcus:** No ... the teacher setting the maths test, ma'am, like, she or he
20. will set the things ...
21. **Derrien:** ... according to her class ... not to other classes.

22. **DS:** How does that make you feel ... I mean, what do you think about  
23. that?
24. **Marcus:** A bit worried, ma'am, because ... you ... don't understand,  
25. like your class teacher don't teach you all those different things..
26. **Derrien:** and like, when, like, a teacher, like, in class says how you  
27. understand things, then, like, the other teacher in the other class don't  
28. know what's, like, going on in the other sets. Like, they don't  
29. understand how we do our work, ma'am, like how we understand in  
30. class. They just set the paper ...
31. **DS:** The teacher who sets the test you say doesn't know the way we  
32. teach in a particular class?
33. **Derrien:** Yes, ma'am.
34. **Marcus:** Maybe our teacher miss something.
35. **Derrien:** I mean, like, we understand, like...like, when we  
36. in class...like...the language in class, ma'am, like, for me its sometimes  
37. too hard, like, ma'am, to understand. And the other teachers that  
38. doesn't know what's happening with the language ...
39. **DS:** You are talking about the scholarship boys?
40. **Marcus:** Yes, ma'am...difficult words and stuff in the question.
41. **DS:** ...and the other teachers might put difficult words in the question?
42. **Marcus:** ...so you cannot understand.
43. **DS:** So you cannot understand what's going on? And you are saying,  
44. the other teacher is not aware of...
45. **Marcus:** ...the boys who don't understand.
46. **Derrien:** ...and like the teacher who just sets the paper ... and like ...  
47. he thought like ... the other set must have done this section...
48. **Sam:** Um, maybe the teacher wants to give the test because, so that it  
49. mustn't be easy to his sets or her sets.
50. **All:** Yes, ma'am!
51. **Sam:** He's trying to make it difficult for ....
52. **DS:** For their set so that they are not conscious of ...
53. **Sam:** and ... and ... of the other classes, ma'am.
54. **DS:** ... of the other lower sets?
55. **Sam:** Yes, ma'am.
56. **DS:** So what are you saying by that?.
57. **Sam:** In the lower sets it gets difficult, ma'am, and it takes much more  
58. time to do the work, ma'am.
59. **DS:** Are you saying that's for everybody in the lower sets or  
60. particularly for you?
61. **Sam:** Sometimes for me...also some other guys in the lower sets also  
62. can't work like that.
63. **DS:** Do you think it is any different or worse for you?
64. **Marcus:** No, ma'am...you don't have the upper sets, like the upper  
65. sets, like Set 1...they don't have to do the formulas, ma'am, they just  
66. have to do the answer. They like calculate all the work on the  
67. calculator and they have got the answer already.
68. **DS:** Do you mean they don't have to show their workings?
69. **Marcus:** Yes, ma'am..
70. **DS:** Oh, okay ... what set are you in Simon?
71. **Simon:** Set 4.
72. **DS:** Set 4? (Turning to Marcus) And you are in?
73. **Marcus:** 6.
74. **DS:** and you? (turning to Derrien).
75. **Derrien:** 5.

76. **DS:** So when you say the lower sets you mean the scholarship boys in  
 77. the lower sets or ...?  
 78. **Marcus:** and some of them are white boys, ma'am.  
 79. **Simon:** ...some of them....  
 80. **Marcus:** But it is different for us, ma'am.  
 81. **DS:** Different?  
 82. **Marcus:** Yes, ma'am, it's different.  
 83. **DS:** Why is it different?.  
 84. **Marcus:** But, ma'am, if you prepare it won't be much different ...but  
 85. the problem is ... for the test ... like knowing what to learn from the  
 86. textbook ... and you get worried, ma'am, when you learn and you don't  
 87. know what is gonna be in the test.  
 88. **Derrien:** ... and sometimes, like, ...in the first days you don't do like ...  
 89. you don't catch up in class, ma'am, like you don't concentrate in class,  
 90. like, and the time goes past, like, it's hard to catch up in your  
 91. understanding.

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The initial comment by Sam, in **Extract 4, lines 5 to 15**, vividly expresses his frustration at his lack of access to the regulating principles of the discourse of mathematics as constituted within the "upper streams". Sam speaks of being able to "compete" with "other boys" in his class at his previous school, where all students had equal access to the discourse as framed within that context, but he speaks of his alienation from the discourse, at this school, as a consequence of its compartmentalisation and its being differentially distributed across the mathematics sets. At this school, the students do not have equal access to the regulating principles of the predominantly discursively elaborated discourse of upper stream mathematics, and Sam points at his alienation from this discourse by speaking of "never know(ing)", in **lines 11 to 13**, whether he will be "able" or "not" to gain access to those principles, to enable him to "compete" with the "clever boys". Sam's construction of the "set one" students as being "the clever guys", emphasises his alienation from them as a group. By implication, by not being in set one, you are not a "clever guy". Sam does, however, make contradictory comments. On the one hand, Sam is positioning himself as subordinate to those in the "upper sets", particularly set one, and constructs himself as "less able". But, on the other hand, he speaks of the problem as lying with the access to the regulating principles of "upper stream" mathematics discourse. In this way, his construction of himself as disadvantaged is contradictory. On the one hand, his disadvantage is spoken of as being **latent** - a lack of ability in mathematics compared to the other "clever guys", whilst on the other hand, it is **context-driven** - a consequence of prevention from access to the esoteric domain of the mathematics discourse.

The latter implies being held to a subordinate position through the streaming system - the physical separation from the means of access to the discourse of mainstream mathematics as constituted within the upper streams, where esoteric domain mathematics discourse is discursively elaborated.

Clearly, there is resonance of voice between the constructions of the scholarship students and the mainstream mathematics teachers. By referring to the "clever guys", Sam is establishing a construction of a "successful student" and assigning this construction to the set one/upper stream students. By definition, he is constructing himself and the other scholarship students as "unsuccessful students" by pointing at their exclusion from this group as a consequence of being a "lower stream" student.

These constructions follow that of the mainstream mathematics teachers whose voice distributes message of the criteria for "success" or "failure" in the same way. What it means to be an "upper stream student" (although the demarcations are not absolute), carries connotations of "able", "intelligent", "hardworking" and "successful", whilst the message which is distributed to "lower stream" students, (which encompasses the scholarship students), carries with it the construction of "less able", "lacking in intelligence", "slothful" and "unsuccessful". At the same time, and in contradiction, the scholarship students speak in a separate voice which does not resonate with the teachers', when they speak of their alienation from the discourse of discursively elaborated mainstream mathematics. The two voices serve as binary opposites to each other - the mainstream mathematics voice placing the "onus" on the **scholarship students**; the other non-resonate voice of the scholarship students, inferring that the crucial problematic lies with the **school context**.

In lines 13 and 14, Sam speaks about, "last year you were the same with everybody", referring to his experiences at his previous school located in one of the local townships, and contrasts it with his experience of not being "the same" at this school. Marcus correlates this with not having "the same things in maths", (line 17). The distribution of hierarchical positions within the school

from dominant to subordinate, physically represented by the streaming system, correlates with the differentiation of constructions of “successful” and “unsuccessful students” and the concomitant distribution of mathematical discourse in the same uneven way.

The hierarchy of the streaming system also impacts on the distribution of message to the teachers as well. As a result of the streaming, the classroom contexts are separated out. Consequently, the scholarship students refer to a differentiated exposition and elaboration of mathematical discourse by the mainstream teachers through content and expression, thereby positioning the teachers according to this hierarchy as well.

This is emphasised in the degree of distance between the various streamed classroom contexts and the examination context. This disjuncture between the contexts is highlighted in the interviews where the scholarship students point at their classroom teachers’ lack of access to the regulating principles of the context of the test, i.e., their lack of control over the system of test/examination setting. The dilemma as to what to emphasise or de-emphasise or what requires elaboration in the “section of work” that requires current evaluation in a “standardised test” (for all the sets), is not made available to the scholarship students’ teachers, which the scholarship students point at, and this can be extrapolated to the teacher setting the current test as well - who lacks access to the differentiated principles of the discourse framed by each of the separate classroom contexts of each set. This is evident in Marcus’s words in **line 34**: “maybe our teacher miss something”, and in the Derrien’s comment in **lines 26 to 30**: “when (...) a teacher in class says how you understand things, then (...), the other teacher in the other class don’t know what’s, (...), going on in the other sets. (...) they don’t understand how we do our work (...) how we understand in class. They just set the paper...”.

The scholarship students also point at the supremacy of the examination context (context of evaluation) over that of the “lower stream” classroom context, where a gap exists between expression and content of the tests versus that of the classroom context. An example of the power relations

between the context of evaluation - test setting - and the separate streaming contexts across the various classrooms, is pointed at in the comment by Derrien in **lines 46 and 47**: "the teacher who just sets the paper (...) he thought (...) the other set must have done this section..." and Sam continues in **lines 48 and 49**: "maybe the teacher wants to give the test because, so that it mustn't be easy to his sets or her sets". He continues in **lines 51 and 53**: "He's trying to make it difficult for...the other classes." This speaks of distancing and alienation from the discursively elaborated discourse of mainstream mathematics. Instead of being apprenticed into the discourse, rather by "making it difficult for the other classes", the students in the lower sets are being alienated from it. It also speaks of the dominance and control of the context of evaluation over the lower stream classroom, pointing at the "examination-mindedness" of the school ethos as well as its differentiating distribution of message.

In the hierarchy of mathematical discourse, the discourse framed by the examination context is dominant along with, for the most part, that of "set one", where both contain discursive elaboration. Lower stream discourse is associated with procedural elaboration towards the public domain of mathematics, obscuring the discourse and preventing access to the regulating principles of the discourse framed by the examination. This occurs to a differentiating degree across the sets.

Marcus also indicates differentiation in evaluation, (the criteria for allocating marks based on content and expression of the discourse under examination conditions), between the upper and lower sets when he says in **lines 64 to 67**: "Like the upper sets, ...like Set 1...they don't have to do the formulas (...) they just have to do the answer." The mechanisms of power and control within the context of evaluation assist in maintaining the hierarchy of distribution of message, as it refers to content and expression, across the streams. The upper streams, in terms of content and expression of mathematical discourse, are privileged over the lower stream students who must "show their workings". This points at the differentiation of message, (classroom practice), where discursive elaboration is **assumed** within the "upper stream" discourse, whilst procedural elaboration is **expected and even**

**demanded** within “lower stream” discourse. The transmitter voice of mainstream mathematics teachers differentiates message across the hierarchy of “upper stream” and “lower stream” students’ voices, so that, for the upper stream students, generalising strategies apply to the elaboration of mathematical discourse, whilst for the lower stream students, encompassing the scholarship students, localising strategies apply.

In the extract, it is noteworthy that when I, as interviewer, speak of the “scholarship boys” and the “lower sets” synonymously in **lines 76 and 77**, Marcus’s response is: “and some of them are white boys, ma’am”, indicating an “awareness of” or “sensitivity to” being constructed, as “scholarship boys” and all its associated constructions of class, race and culture, in terms of “disability” and “disadvantage”.

It is also relevant that soon after this comment, Marcus makes the comment in **line 80**: “But it is different for us, ma’am” (referring to “us” as scholarship students in relation to the “other white boys”), but then when asked: “Why is it different?”, he changes his approach and qualifies his statement by saying, in **line 84 to 87**: “But, ma’am, if you prepare it won’t be much different ...but the problem is ...for the test...like knowing what to learn from the textbook ...and you get worried, ma’am, when you learn and you don’t know what is gonna be in the test.” Here, my role as mathematics teacher interferes with my role as interviewer and affects the message being transmitted. Marcus again indicates a “sensitivity” to or “consciousness” of being constructed as “different” - as disadvantaged! My language, in the context of the extract, resonates with that of the transmitter voice of mainstream mathematics teachers, and Marcus consequently switches his message so that it does not resonate with the teachers’ voice. Essentially, the message being transmitted by Marcus, in **lines 84 to 87**, is one of lack of access: instead of “the problem” lying with the scholarship students’ “deficits”, it is transferred onto “the school”, where Marcus again speaks of lack of access to the regulating principles of “upper stream” discourse framed by “the test” (i.e. what to learn from the textbook for the test). Here, “the difference” is no longer **latent disadvantage** which he is said to possess, but the **differentiation in distribution of message**. It refers to the lack of access to the principles of discursively

elaborated mathematical discourse. It is **disadvantage constructed within the school context**, the recontextualising principles of which are latent to the forms of power and control over its internal structures and its context-specific discourses. Nevertheless, although the dual roles of the interviewer interfered with the message being transmitted, the nature of the interview context, which was sufficiently divorced from the classroom context, allowed the **space** for the scholarship student's (Marcus's) voice to be transmitted or "heard".

In essence, **EXTRACT 4** highlights the crucial issue, that for the scholarship students, having been placed in lower sets, they are initiated into the public domain of the discourse of mainstream mathematics via localising strategies and have not been granted access to the regulating principles of this discourse as framed by the discursive elaboration in the "upper stream" discourse of mainstream mathematics. As a consequence, this has had a disabling effect on their performance under test/examination conditions which evaluate them in accordance with criteria which have not been made available to them. That is, on the extent to which they have acquired access to discursively elaborated esoteric domain mathematical discourse and how they can make principled connections between and within mathematics topics. The discourses of the examination and the lower stream classroom are separate. The former contains esoteric domain discourse which is discursively elaborated and which has elements which resonate with "upper stream" discourse. It is discourse over which the mathematics department has complete access and control and is constituted from mainstream mathematics in a way that only those who have acquired the regulating principles (and the recognition and realisation rules) of the discourse might have access to. By contrast, "lower stream" mathematics discourse indexes motivation within the public domain where esoteric domain text is procedurally elaborated. Here, access is provided to mere rules rather than to the regulating principles of the discourse, thereby alienating the scholarship students from discursively elaborated mathematical discourse as constituted within the mainstream.

The distance between "the test" context and that of the "lower stream classroom", and the dominance of "the test" context over that of the lower stream discourse, assists in obscuring the discourse so that principled

connections between the two contexts cannot be made. As a consequence, the regulating principles of the discourse of the examination lie outside of and dominate that of “lower stream” mathematics.

### 3.2 The Distribution of Discourse: Academic Support.

In the following extract, the scholarship students again speak of their alienation from the esoteric domain of the “upper stream” discourse of mainstream mathematics, but more specifically within the context of the Academic Support class. What is also pointed at here, is the alienation of the Academic Support **teachers** from access to the discourse as framed by mainstream mathematics. This is from the point of view of control over expression and content of the discourse within the classroom, as well as the context of evaluation (content and expression of test setting, writing and marking):

#### **EXTRACT 5.**

1. **DS** : Tell me about what you do in your special classes with Ms F?
2. What do you do with Ms F?
3. **Marcus**: You have to say what are your difficulties in other subjects,
4. ma’am, and so we can do that things on the topic that you find
5. difficult.
6. **DS**: OK.
7. **Marcus**: ...in the subjects.
8. **DS**: OK, what do you do with Ms F with regard to maths? Let’s look at
9. maths...
10. **Marcus**: She’ll tell us how to do the flow chart, ma’am, for maths and
11. say if one boy understands everything and you like let him help us,
12. ma’am.
13. **DS**: Oh, OK...
14. **Marcus**: If she don’t know what’s happening...like...
15. **DS**: If she doesn’t understand the work you’re doing?
16. **Marcus**: Ja, then she’ll let the other boy explain on the board ...
17. **DS**: what you’re doing?...
18. **Marcus**: Yes, ma’am.
19. **DS**: and...does it help?
20. **Marcus**: Yes, ma’am.
21. **DS**: A lot? When you tell her what your difficulties are, what do you
22. say about maths? You said that Ms F asks what are your difficulties.
23. **Derrien**: Ja, sometimes she can ask you like ...sometimes, she can ask
24. you how you’re coping with the language...
25. **DS**: She’ll ask you how you coping with the language? OK...
26. **Marcus**: And she says we must tell her if there are difficulties.
27. **DS**: So do you?

28. **Marcus:** Yes, ma'am.  
 29. **DS:** OK, what do you tell her about maths?  
 30. **Marcus:** Sometimes ma'am, you say one of our boys who understands  
 31. things to explain, ma'am.  
 32. **DS:** One of our boys: you mean the black scholarship boys?  
 33. **All:** Yes, ma'am.(...)  
 34. **DS:** OK, Marcus let's get back to what you were saying. You were  
 35. saying to her can one of the boys explain and who...is there somebody  
 36. that normally explains or does...?  
 37. **Marcus:** No, ma'am...but...  
 38. **Derrien:** So we can understand better.  
 39. **Marcus:** Yes ma'am... who understands and she can add on  
 40. something.  
 41. **Derrien:** She can add something, ma'am.  
 42. **Sam:** She can make it simpler from the one who understood on the  
 43. board.  
 44. **DS:** OK, it can be made simpler? All right...  
 45. **Sam:** and like ...since we are in different sets ma'am, sometimes she  
 46. says like everyone must come with their own idea like how you are  
 47. working in class, like so those who can see.  
 48. **DS:** Say again, I can't follow you Derrien.  
 49. **Derrien:** and those like in the upper sets ma'am, ...like she can tell  
 50. them to try in class to help us like the techniques how they work so we  
 51. can like understand.

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It is noteworthy, that when asked what is covered in the Academic Support ("special") class, the students respond by referring to difficulties in **all the subjects** or "**in the other subjects**". Mathematics is not specifically mentioned! When prompted to speak on what mathematics is covered, the students speak about "drawing flowcharts" (which is not incorporated into the mathematics curriculum) and about eliciting assistance from any student in the class who might have a "better understanding" than another. The scholarship students point at Ms F's (Jane's) lack of access to the discourse of mainstream mathematics, i.e. she neither has access to the regulating principles of "upper stream" mathematics (as constituted within the mathematics department), nor does she have access to the rules of the "lower stream". They point at this, in **lines 14 and 16**, by speaking of: "if she don't know what's happening ... (...)...then she'll let the other boy explain on the board". This indicates an attempt on the part of the AS teacher, to gain access to the discourse as framed by the mainstream classroom through the only means available to her - the scholarship students **themselves** who have been present in the mainstream classroom, albeit the "lower stream". Here, the students' comments indicate an attempt on her part to try to read the principles or rules of mainstream

classroom discourse by recontextualising elements of the discourse which the students might bring to the ASP classroom.

This is pointed at in the comment, in **lines 39 to 43**, that “she can add on something” thereby “making it simpler from the one who understood on the board”. Her physical separation from the mainstream mathematics context and the mechanisms of power and control which assist in maintaining the separations between discourses of mainstream mathematics and ASP, deny her access to the principles of the discourse (both the examination context as well as the mainstream sets). Not only is this ASP teacher’s voice thereby subordinated by that of the mainstream mathematics teachers, but so are the scholarship students’ as well, in consonance with their teacher.

Also in **EXTRACT 5, lines 23 and 24**, the scholarship students speak of how their ASP teacher asks them questions about how they are “coping with the language”. What is being pointed at here is the construction of the students in terms of a language deficit by the ASP teachers (already previously discussed in the last chapter). It is noteworthy that assistance or “support” for these students necessitates speaking of them in terms of “their difficulties” and in terms of “how they are coping with the language”, placing the “problem” on the students, and the school carrying no responsibility for the construction of these “difficulties”. Here, the ASP teachers’ voice resonates with that of mainstream mathematics teachers’, and the students point at this resonance which constructs them in terms of disadvantage.

Also of note, is the reference by the scholarship students to themselves as “our boys”, in **line 30**, meaning the “Black Scholarship boys”. Here, the knowledge which they possess is **communally owned** and support is granted from within this group. This sense of “belonging” to “the group” is pointed at with the use of “our boys”. It implies that it is incumbent on the boys within this group to assist each other against a common plight of “disadvantage”.

The scholarship students speak of the hierarchical nature of mainstream mathematics discourse as being reflected in the ASP classroom. They speak of it in terms of the limitations to access of mathematical discourse and the

difficulties associated with being given assistance in the Academic Support context. As is commented on by Derrien in **lines 49, 50 and 51**: “those (...) in the upper sets”, (referring to the higher of the lower sets of 4 / 5 or 6 in which the scholarship students are placed), “she can tell them to try in class to help us like the techniques how they work so we can like understand”. This suggests that the higher the set, the greater the access to the rules of “lower stream” discourse and the closer to possible means of access to the regulating principles associated with “upper stream” mathematics. This is, as far as this is possible within the higher of the lower sets. Referring, however, to being shown “the techniques” and how they “work”, suggests more of an attempt gain access to mere **rules** rather than to **regulating principles**, indexing motivation within the public domain of mathematical discourse. Here esoteric domain text is procedurally elaborated rather than discursively, alienating the scholarship students from “upper stream” mathematical discourse and reinforcing their subordination with respect to school mathematics.

Essentially, it points at the differentiating access to the discourse as a consequence of the hierarchy of the streaming system and its concomitant distribution of mathematical discourse - whereby the “upper sets” are apprenticed into the esoteric domain of the discourse (where mathematics is discursively elaborated), and the “lower sets” are initiated into the public domain of the discourse by means of localising strategies where esoteric domain mathematics discourse is proceduralised. The distribution of discourse is such that mainstream mathematics, with its own internal hierarchy of discourses, (whereby the discourse framed by the examination achieves supremacy over most of the classroom contexts and these, again, in a “pecking order” of streams 1-6), is dominant over mathematical discourse framed by Academic Support.

Here again, the voice of mainstream mathematics teachers distributes message in such a way that the ASP teachers’ voice is subordinate to the mainstream mathematics teachers, (despite the hierarchy of voice corresponding with the distribution of streams within the mathematics department). This is because there exists a complete separation between the discourses of mainstream mathematics and Academic Support. **No access** whatsoever is granted to ASP

teachers to either the rules or the regulating principles of **any** of the contexts - upper or lower streams - framed within mainstream mathematics. A hierarchy of voice is established by the transmitter voice of mainstream mathematics teachers which assists in distributing message which relegates the ASP teachers' voice to the lowest rung of the hierarchy. In their subordination, the ASP teachers are constructed as being "unsuccessful" along with the scholarship students they teach, as pointed at in **line 14** referring to their AS teacher: "If she don't know what's happening".

Consequently, it could be critically argued that, rather than assisting the scholarship students in gaining access to the discourse of mathematics, **their association with Academic Support**, further constructs them as disadvantaged through its **subordinate position in relation to that of the mainstream mathematical discourse**. Also, its existence and association with the scholarship students **physically and sociologically** represents "**difference**" and "**separation**".

#### 4. THE HIERARCHY OF POSITIONS.

In summation, a hierarchy can be established which places the transmitter voices of mainstream mathematics teachers as dominant over that of ASP. It could be argued, that as a consequence of the ASP teachers having no access to the discourse of examinations within any of the subjects, they achieve the lowest status in the hierarchy of transmitter voices.

Beneath this, in the hierarchy of positions, are the acquirer voices of students. Here, they are hierarchically positioned according to stream, so that set one students achieve pre-dominance over the other streams. The scholarship students achieve the lowest position on the rung, below the other lower stream acquirers.

Message is distributed to these acquirer voices from mainstream mathematics teachers so that the upper streams achieve a construction of "successful students" whilst the lower streams achieve a construction of "unsuccessful

students". Associated constructions of "successful students", amongst others, would be "able, intelligent, quick and hardworking". Associated constructions of "unsuccessful students" would be "less able, less intelligent, slow and slothful".

Whilst the scholarship students achieve the associated constructions of the "unsuccessful student" as a consequence of being in the lower sets, they attain **further** constructions as a result of their separate status as scholarship students, subordinating their voice still further. Here, they are also associated with "cultural, language, behavioural, emotional, and experiential deficits" as well as with "class and race difference". The scholarship students are consequently constructed as "disadvantaged" as a result of these "differences", carried by the dominant voice of mainstream mathematics teachers, which transmits within its message the dominant culture of the school.

##### 5. CONCLUSION: TEACHER TALK AND STUDENT TALK.

In conclusion, whilst the teachers construct the scholarship students in terms of language, experiential, behavioural and emotional deficits which refer to race, class and culture, as well as in terms of "lack of ability" in certain areas, there is a **gap** between the way in which the teachers construct the scholarship students and the way in which they construct themselves. Whilst the mainstream mathematics and ASP teachers tend to speak of the scholarship students in terms of latent **deficit** and **difference**, the students themselves tend to speak, for the most part, more of **alienation**. Contradictions occur, however, as the scholarship students "shift" voice. When this occurs, a resonance between the teachers' constructions and the students' constructions can be established, indicating the students' subordination in the hierarchy of positions.

In this regard, the construction of disadvantage is sustained by both the teachers and the students, but their differences in this construction refer to the difference in distribution of message and their position of voice as acquirer or

transmitter. Whilst the teachers construct the “Black Scholarship boys” as disadvantaged, this carries with it connotations of class, race, culture and latent “inability”, (or even “disability”). The scholarship students, to some degree, also speak of themselves in these terms. They do, however, to some degree, articulate a construction of themselves as being disadvantaged “**in relation to the school**”, where the existing internal structures, ethos and “distribution of discourse” **place** them in a position of disadvantage.

Both constructions refer to the hierarchy of positions and the distribution of message across this array. Where the students’ voice resonates with the teachers’, it indicates their position of subordination in relation to the teachers’ as a result of the power relations invested in the schooling institution, and the authorship of voice is dominated by these power relations. Where resonance does not occur, the **nature of the contradictions** further point at the students’ position of subordination, as the students again speak of themselves in terms of disadvantage, but now in relation to organisational practices of the school.

Whilst it is not the intention of this research to attempt to elicit or understand the cognitive processes behind the subjects’ utterances in attempting to determine authorship of voice, it is, however important to consider the potential of **context** in influencing language and hence the authoritative source of the voices. More specifically, the need occurs to point at the context of the **interview situation**, my dual role as interviewer and mathematics teacher within the school as having the potential to affect the nature and extent of the contradictions. I attempted to comment on this where this was particularly evident. I acknowledge the possibility of these special relationships as influencing what gets said in different locations. I also recognise that these influences could be operational, to varying degrees, throughout the dialogue.

I will now review the discussion on “language difference” in the light of the resonance of voice of students and teachers as well as the contradictions which arise, as the interview progressed. This shift from speaking of themselves as **possessing a “language lack”**, to speaking of their lack of access to mathematical discourse as a consequence of organisational practice **within the school**, was reflected, to some degree, in the sequential nature of

the interview extracts with the scholarship students. Interestingly, as the interview progressed, the scholarship students tended to “open up” more, so that they spoke less in a resonant voice with teachers and tended to speak more in a non-resonant or “separate” voice. This progression is reflected in the interview transcripts and is evident in the order of extracts in this analysis.

Although not exclusively, the students tend to speak of themselves as lacking in the area of language competence in the earlier extracts - **the cause** of their lack of access to the principles of mathematics discourse, but later in the interview they contradict this with dialogue which refers to their position in the streaming system and consequent lack of access to the regulating principles of “upper stream” discourse of mathematics. This is as a consequence of the disparity in message distribution within the discourse, i.e. how a differentiated distribution of practice takes place across the sets through the physical separation of the mathematics sets. For them, this disparity results in mathematical discourse being obscured. The differentiated exposition of mathematical discourse across the sets is a function of the mathematics department’s control over content selection and expression of mathematical discourse, in which codes of class, race, language and culture are embedded.

To review this in terms of the distribution of voice and the construction of disadvantage: occasionally, a tension exists between these voices when the students’ voice does not resonate with the transmitter voice of teachers’ which carry the cultural codes of the school. The scholarship students’ voice resonates with that of the ASP and mainstream mathematics teachers’ voices, in the students’ construction of themselves as carrying a language deficit. This resonance is not maintained in their comments referring to lack of access to mathematical knowledge. In this last regard, the students point at their disadvantage in relation to the organisational practice of streaming within the school. Later in the interview, the scholarship students speak of having discussions with the ASP teachers who ask them questions about the extent to which “their language problems” are affecting “their understanding of their work”. This construction places the emphasis of the “problems” on the students themselves and disallows alternative possibilities to exist, such as the extent to which the school context might create or compound these

"problems". Their voice is subordinated accordingly in relation to the ASP and mainstream teachers' voices, facilitating the construction of disadvantage. Consequently, whether the students speak in a resonant or non-resonant voice, the construction of disadvantage is maintained.

In revisiting the role of examination performance in the construction of disadvantage: the most concrete indicator of educational "difficulties" and "deficits" is examination results. These are seen to "reflect difficulties" and **exemplify** difference and disadvantage. Examination scores grant the students and the teachers concrete evidence by which they might construct the scholarship students in terms of failure, and relegate them a position of subordination in relation to more "successful" acquirers. It is this construction of failure which resonates with the mainstream mathematics teachers' constructions, as well as the ASP teachers'. As discussed in the previous chapter, comments connecting language disadvantage to poor performance, i.e. failure or "weak scores" in mathematics examinations, abound. "Difficulty" in mathematics, is almost always exemplified in terms of poor test results, by the teachers, (more often by mainstream mathematics teachers than ASP teachers). These two concepts are spoken of interdependently and facilitate the construction of failure. By the students referring to their "experienced difficulties" in the mathematics class as being reflected in their "failure in tests", the scholarship students, "substantiate" this construction of failure and their voice resonates with the teachers', subordinating their own voice.

In summation, the teachers construct the scholarship students in terms of disadvantage by speaking of them in terms of language, cultural and experiential deficits which refer to class and race. Although the scholarship students occasionally construct themselves as disadvantaged in consonance with their teachers' constructions, they also articulate their disadvantage in relation to schooling practice and culture. A gap occurs here between teacher talk and student talk. Nevertheless, the contradictions which arise from the scholarship students' commentary, emphasise their subordinate position in the hierarchy of subject positions.

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## CHAPTER 7

### DISCUSSION AND CONCLUSION

#### 1. BRIDGING THE BOUNDARIES?

In concluding this dissertation, I will briefly summarise some of the important issues raised in this research and attempt to focus on some of the themes and questions, so as to draw them into a coherent whole. There are several intersecting themes which cohere around the issue of boundaries: pedagogic boundaries; race, social class and cultural boundaries; boundaries of language - those produced through language differences and those which draw on linguistic resources in a selective way to construct and create difference, deficit and disadvantage; boundaries between discourses and pedagogic practices; boundaries between demarcated subject positions, and student/teacher meanings; pedagogic boundaries intended to provide bridges to knowledge and understanding, but which, instead, create and reproduce boundaries in themselves.

##### 1.1 The school context and disadvantage.

For Bernstein, power and control translate into principles of communication which differentially regulate forms of consciousness. Power relations, from this perspective: "create boundaries, reproduce boundaries....between different categories of groups, gender, class, race,...discourse,...agents", whilst control maintains these boundary relations and establishes legitimate communication appropriate to the different categories produced by relations of power, (Bernstein, 1993: 116/7). In the context of this small-scale study school, it can be argued that it is the specific agents of power and control which assist in boundary formation and regulation within and between schooling discourses. It is in the creation, maintenance and reproduction of boundaries within both the regulative and instructional discourses of the school which facilitate the construction of disadvantage and which, consequently, assist in holding the Black Scholarship students in a position of subordination with respect to mathematical discourse.

Within the school context and culture, ideological codes which refer to particular social emphases, values and sensitivities give rise to the prioritising and selective recruitment of resources within school discourses. In the study, I have argued that it is the particular school context which influences the contexts of the mathematics classroom and that of Academic Support. In Bernstein's terms, the instructional discourses of mainstream mathematics and Academic Support are embedded in the regulative discourse of the school. It is the elements of the social context - the codes emanating from the school culture - which determine the principles of communication and the nature of the recontextualising within the contexts of the mathematics classroom, Academic Support and other contexts within the school. It is argued that it is the stratified nature of the schooling ethos, the differentiating messages, practices, agents and "the ritualisation of difference" (Bernstein, 1973: 56) within the school, which facilitates the construction of disadvantage. In this regard, ritual plays a prominent role in these constructions.

For Bernstein, the symbolic function of ritual is "to relate the individual through ritualistic acts to a social order,... and to deepen acceptance of the procedures which are used to maintain continuity, order and boundary," (Bernstein, 1973: 54). The small-scale study school is described as being a historic school, steeped in tradition, and having a highly ritualised social order. It is described in terms of its many differentiating and consensual rituals which emphasise, produce and reproduce difference in the school. The many differentiating codes emanating from the social order, allows one to speak of the pervading ethos of the school in terms of "the culture of difference". Here, difference is stratified, achieving a hierarchical organisation and array of positions, so that a vertical continuum of dominance vs. subordination is emphasised in the differentiating process. In this way, difference translates into deficit and disadvantage in a more explicit and visible way in the case of the scholarship students in relation to other positions, practices or constructions. In this stratified school, difference is created and becomes pronounced by being "hierarchised". A correlation can be drawn between the differentiating functions of these rituals and codes, and the many hierarchies present in the social and regulative orders of the school. According to Bernstein, the school's culture is a reflection of norms held by dominant groups in the wider community. Ritualistic acts "facilitate appropriate sentiments towards the dominant value system of the

wider society," (Bernstein, 1973: 55). The symbolic function of ritual within this school refers to ideological codes; predominantly codes of social class reflecting the dominant culture of the schooling system, in which codes of race, amongst others, are also embedded. Since ritual constructs patterns of meaning within the social domain, it could be argued that it is these patterns of meaning which provide the resources by which subjectivity is constituted within the school; and constructions along the lines of race, class, cultural deprivation, language difference, and intellectual ability (as well as age and gender) are consequently facilitated.

### **1.2 Pedagogic discourse and disadvantage.**

In the analysis, it was argued that the power relations between the discourses of Academic Support and mainstream mathematics delimit possibilities of successful engagement in mathematical discourse, rather than expand them. For the scholarship students this means that access to the regulating principles of "upper stream" mathematical discourse is prevented, rather than facilitated, despite the existence of the Academic Support Programme whose intended role and function is to provide "bridging" in the areas of academic and experiential knowledge for the scholarship students. The purposes of the bridging programme is to "fill in gaps" so that these students' "academic standard" meets the purported standard of the school's. The strong classification and framing of the mainstream mathematics programme illegitimises and nullifies the intended "advantages" of the weakly classified and framed Academic Support Programme. This discrepancy in strength of classification and framing between the discourses refers to Bernstein's "social division of labour of discourses", where mainstream mathematics predominates over Academic Support. Rather than providing a "bridge" to understanding and knowledge, the insulations between the discourses, the "regions of silence", prevent access to the recognition and realisation rules of mathematical discourse. The strong voice of mainstream mathematics ineffectualises that of Academic Support, assisting in the scholarship students maintaining a position of subordination along with the low status of the bridging programme to which they have been assigned.

Further, the scholarship students, having been placed in low streams in accordance with the differentiated nature of streaming in the mathematics department, are associated with inability, lack and learning difficulty and their position of subordination is reinforced. Their spatial separation from other "successful" students who are granted access to the regulating principles of "upper stream" mathematics, becomes a physical and contextual representation of this positioning. The boundaries of the lower stream classroom become the boundaries which prevent access to the regulating principles of upper stream mathematics. The Academic Support Programme becomes an extension of this boundary formation by which the scholarship students are further positioned as subordinate. The scholarship students are spoken of as having "special needs" in mathematics, so that the further constructions of cultural/experiential deprivation and disadvantage, as well as language difference are indexed over others. The Black Scholarship students are positioned in terms of these constructions transmitted as criteria which are deemed educationally significant according to the school culture: these "socially constructed differences" are thereby recontextualised into "educational difference" within the school. The selective recruitment of resources, repertoires, pedagogic practices and discourse which support and assist in the constitution of these representations of "educational difference", enter into the construction of disadvantage.

### 1.3 Disadvantage realised in pedagogic discourse.

The boundaries of the lower stream and AS classrooms also give spatial reference to the demarcation of subject positions and the concomitant distribution of mathematical discourse/practice to these positions. Disadvantage is produced and reproduced in this way within the school. One of the most forceful comments encapsulating this point, and which highlights a dissonance between teacher meanings of successful students and what is possible for the Black Scholarship students in mathematics at the school, is made by the student, Sam:

You can't really get into it because the sets and stuff, because the maths and stuff in the last school we were all in one class and now, like, the clever guys are all in one class...and you, like, could compete with each other...like, you know, you now try to get into set 1 and you

don't even know what the guys in set 1 do. Like in my last school, you try to compete with the person and like, you know he's here and like, you could do better than him. But now you don't know what goes on there and you will never know if you'll get to cope there and you never know what to expect ever, but last year you were the same with everyone and you first compete with each other and, like, that's what I preferred to the sets and stuff here.

Sam's words express alienation and a sense of hopelessness. For Sam, his association with mathematical discourse at the school, is one of disengagement and disempowerment. The insulations or "regions of silence" between the lower and upper sets of mainstream mathematics, produce boundaries, delimit possibilities, constrain options, prevent access to knowledge and, hence, power. For Bernstein, it is the "dislocation in the potential flow of discourse which is crucial to the specialisation of any category" and it is "the silence which carries the message of power". (Bernstein, 1993:118). The insulations between discourses and the separation of educational practices within the school, refer equally to the differential distribution of mathematical discourse, so that different practices and discourse are distributed to different voices according to a hierarchy constructed within the school. Sam's comment reflects the alienated voice of the scholarship students to which is distributed differentiated discourse and practices which do not provide access to the regulating principles of esoteric domain mathematics discourse within the school.

The Black Scholarship students are spoken of in terms of difference and this difference carries its own messages within the school, recontextualised into disadvantage. In the analysis, I argue that the contexts of mainstream mathematics and Academic Support foreground or background different subjectivities, repertoires or positions. In these contexts, the transmitter voices of teachers and acquirer voices of students, draw upon or recontextualise the resources of pedagogic discourse/practice and other discourses within the social context of the school to elaborate and establish their positions in relation to each other and to other students (and teachers) with respect to mathematical discourse.

In the analysis, it was established that the Black Scholarship students achieve a position of subordination in relation to other "successful" students

with respect to mathematical discourse. This position is established through their being constructed as disadvantaged, linguistically, cognitively, culturally, experientially - both in terms of their previous schooling experiences as well as "life" experiences. Whilst the Academic Support and lower stream mathematics classrooms become the spatial representation of this positioning, they also serve to exemplify and effect a differentiated distribution of knowledge, discourse or practice to the scholarship students. The scholarship students are alienated from "upper stream" mathematics discourse as a consequence of being placed in the lower sets along with other students who carry constructions of unsuccessful, slow or disabled learners. For them, esoteric domain discourse is procedurally elaborated and motivation is indexed in the public domain of mathematical discourse in the school. Localised rather than generalised practices are distributed to the acquirer voice of the scholarship students. Their presence in the Academic Support classroom reaffirms their position of subordination where, through the dominance of the mainstream mathematics programme and the weak voice of Academic Support, they are granted access to mere rules rather than the regulating principles of esoteric domain mathematical discourse and practices in the school. Their construction as disadvantaged learners with respect to mathematical discourse prevents their access to discourse and practices which would be empowering, and a position of advantage is not available to them.

A hierarchy of positions is established reflecting the strong classification and framing of mainstream mathematics over Academic Support as well as the differentiated distribution of discourse and practices of mainstream mathematics streaming. According to this hierarchy, the transmitter voice of mainstream mathematics teachers is dominant over the voice of AS teachers. Student positions, as acquirer voices, are established along a continuum reflected by the sets system where the upper sets are differentially apprenticed into the esoteric domain of mathematical discourse, and the lower sets are alienated from it. For these lower sets, esoteric domain mathematics discourse is proceduralised. The scholarship students attain the lowest position of subordination on this vertical continuum as they are, not only constructed as "unsuccessful" along with lower stream learners, but are further constructed as "disadvantaged", (culturally, linguistically and

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otherwise), in "requiring" Academic Support. The hierarchy of positions of students, although, for the most part, subordinate to teachers, reflects a similar correspondence of hierarchical positions to teachers. The AS teachers' subordinate position in relation to the more dominant one of mathematics department teachers, accentuates the scholarship students' position of subordination and their alienation from esoteric domain mathematics.

In the analysis, a gap occurred between teacher and student meanings regarding what is possible for the Black Scholarship students in their study of mathematics. Quite clearly, teacher constructions of cultural and experiential difference and deprivation, race, social class and language difference became delimiting criteria in the students' access to mathematical knowledge. On occasions, the scholarship students' voice resonated with those of the teacher's in these constructions, and at other times they did not. Under both circumstances, the scholarship students' voice reflected their position of subordination - either through constructing themselves as unable mathematically or as lacking access to the regulating principles of mathematical discourse. The dissonance between the voices of teachers and students is most pronounced in relation to the issue of responsibility for the cultural and educational "mismatch". Whilst the teachers, for the most part, place the onus on the scholarship students - the school bearing little responsibility for the students' lack of mathematical success, the dissonant voice of the scholarship students places the blame on the school, thereby distancing themselves from the school's interpretation of their lack of success. For the teachers, the problem is interpreted as deficit, and the scholarship students' culture, experiences and language difference are spoken of in terms of this deficit; whilst for the students, the fault, in part, lies with the differentiated nature of the streaming system and their lack of access to the regulating principles of upper stream mathematical discourse. The scholarship students speak of alienation: linguistic, cultural and experiential as well as pedagogic, and thereby position themselves as subordinate in resonance with their teachers' construction of them. In this way the construction of disadvantage has different connotations depending on viewpoint: disadvantage with respect to the scholarship students becomes their disadvantage in relation to the school, or said differently, the

scholarship students carry a construction of disadvantage, which becomes the means by which they are disadvantaged mathematically within the school. This point could, perhaps, best be encapsulated in the understanding of the construction of disadvantage as working empirically with the "pedagogising" of difference in the small-scale study school.

## 2. FURTHER RESEARCH.

Whilst the research intention is not to provide conclusive evidence of black male students and underachievement in mathematics, it does attempt to provide an understanding of the production and reproduction of "difference", as well as the construction of disadvantage and its influence in the learning of mathematics. It is a position in which the social is granted emphasis and legitimacy in the marking out and taking up of subject positions. Social context is critical in a discussion on subjectivity, as subjectivity is constituted within specific social contexts.

It would be of interest to further research to repeat a study of this nature where the context of the school is more differentiated, rather than stratified as in this research school. This would necessitate an examination of how different criteria might shape the construction of disadvantage, if at all. It would include assessing the possibility of whether the construction of disadvantage, if it occurs, is less explicit. According to Bernstein's interpretation, the suggestion is that disadvantage in a differentiated school would produce more of an invisible pedagogy than in a stratified one. A comparison of the degree to which schools with different educational approaches and cultural contexts might influence the way in which difference and disadvantage is constituted, would be of interest.

It might be possible, in furthering this research, to look more closely at interaction in the classroom - something which was not possible in this project, (as a consequence of my dual role as researcher and teacher within the mathematics department of the school). It is possible that a close scrutinising of classroom interaction might have provided insights into racism and other social issues. These interactions were only pointed at and were second or third hand interpretations of what goes on in the classroom setting, or were my

own observations as teacher within the department. Whilst the intention of the current research was not to analyse “a reality” of what happens in the classroom, a video-taping of mainstream mathematics classrooms, an upper stream as well as a lower stream classroom, (as well as the AS classroom), might provide more explicit evidence of the differentiated distributions of pedagogic practice and discourse referred to in the analysis of interviews.

This study raises questions about the advantages of Academic Support, given similar criteria, circumstance and context to the research school. It also raises questions regarding taken-for-granted assumptions about race, social class, language and culture and how they might be socially constructed within specific school-types as well as how they might reflect the concerns and dominant values of sections of the wider community. It critically examines assumptions about how mathematical discourse is constituted, for which group of learners it is made accessible, and for whom it becomes a boundary to engagement and empowerment. It raises the issue of privilege in education: questioning the assumption that access to educational institutions of privilege necessarily provide the advantages they are purported to; and suggests, as an alternative interpretation, that these “islands of privilege” merely produce the dominant socio-economic and political value system of the outer community or, at least, those sections of society whose co-operative association with these educational ideals might serve their interests.

### **3. POSSIBILITIES OF CHANGE.**

In discussing the pedagogising of difference and the production and reproduction of disadvantage in this school, the issue of the broader historical context came into play. The extent to which attitudes, values and sensitivities are shaped by power relations, ideologies and historical happenings within the wider community, and the even larger context of the South African situation, cannot be undervalued.

The issue of performance, discussed in the analysis chapters, is closely connected with the latent emphases of the schooling culture, which reflects the concerns of the broader socio-political context in SA. The “maintaining of academic standards” is prioritised at this school which sees itself as a bastion

of excellence against a background of rapid educational change and increasing demand on limited resources within the current educational context. By failing tests and examinations at this school, the scholarship students are not meeting the "standards" which the school represents and are therefore alienated by the very institution which claims to assist them. In this way they stand outside of the institution in representing "the woes" of the broader educational context in SA at the current time.

The dynamics of the broader socio-political and economic circumstance and the influence of the South African educational system in shaping policies, attitudes, decisions and interactions between individuals, groups and agents within this school is evident. At a meeting with academic staff, the principal of this school was heard to say: "We have to seriously look at our black pupil numbers. It is not at all good for this school to be perceived as lily white in the community of today." This raises the question about motivation and intention in incorporating black students into the school and in instituting Black Scholarship and Academic Support programmes: not only in this school, but in other schools supporting a similar educational ethos. Gaganakis says:

In South Africa increased reliance on the private sector represents a way of solving the crisis in education. The fact that private schools in South Africa are admitting increasing numbers of black pupils needs to be seen as part of the new rationality of the relationship of schools to the workplace. (Gaganakis, 1990: 8)

Whilst the intention and primary goal of this research project was, in the main, to examine the construction of disadvantage and not to investigate how change might be possible, the question of change becomes an inevitable part of the discussion. How then, might change be possible? An extensive debate exists surrounding the multicultural approach. It is an initiative concerned, in the main, with changing the consciousness, attitudes and perceptions of school administrators, teachers, students and parents. Ensor comments critically on this debate and refers to Willey's criticisms:

Willey (1984) criticises multicultural policies with respect to education for placing emphasis upon cultural difference and failing to address the central issue of racism. Racism, if considered at all, is linked to the prejudices of an unenlightened minority rather than to its structural forms...There is also an assumption underlying these approaches that black students have low esteem, and that this can be rectified through a celebration of different cultures within schools. (Ensor, 1991: 100).

Gaganakis is also critical of the multi-cultural approach which she says is increasingly gaining currency as a way of understanding de-segregated education in South Africa and remarks that "much of the multi-cultural rhetoric has been transposed unproblematically to the South African context" (Gaganakis, 1990:13).

She cites examples of research in this field in the U.K and U.S.A and comments on a fundamental difference in premise between research conducted in these countries and the South African context: that most of the research done in the U.K and U.S.A has been on immigrant ethnic minorities and not on an oppressed native majority as in SA. (Gaganakis, 1990: 13/14/15). She says:

However, all of these studies have come under attack for their individualistic orientation, their "pathological conception of the black child" and their generally inconclusive and contradictory results (Stone, 1981; Mullard, 1984). A particular criticism is that "ethnic identity" is often given primacy as an explanatory category, with the added assumption that one's fundamental "identity" is established by membership of an "ethnic" group (Lawrence, 1982). (Gaganakis, 1991: 16).

In an attempt to celebrate different cultures and grant each a measure of legitimacy, the premise in multiculturalism is often on socially constructed groupings which are often not problematised. Gaganakis highlights this point. She explains that in multiculturalism, explanation tends to be located within "functionalist models" which imply adaptation to a pre-existing system, (page 16). Ensor speaks critically of multicultural initiatives as being based on an assumption that it is attitudes or consciousness which are to be changed, (page 100). Perhaps change is more deep rooted than superficial adaptations to problematic systems and needs to go further than considering change in terms of shifts in attitudes.

From Bernstein's point of view, change occurs at the level of discourse: that strongly classified and framed discourses are constantly under pressure to be weakened and that it is in the weakening of the boundaries between discourses that spaces are opened up, eliciting change. This would support the idea that change in the construction of disadvantage would necessarily have to occur in the dissolution of the boundaries of existing discourses, and since

instructional discourse is embedded in the regulative, this would be more fundamental than changes to policies and practices within the mathematics department and Academic Support Programme. It would need to occur within the entire social domain of the school which extends beyond its precincts.

Rather than viewing the difficulties of the scholarship students in terms of a change in attitudes and perceptions - the psychological propensities of individuals to effect change - the possibility of change could be viewed in more sociological terms - of how the positioning of subjects could be changed. This would accord with the focus of this research which places the emphasis on the difficulties which the Black Scholarship students experience in performance and engagement in mathematical discourse at the school, as being related to the subject positions available to these within the contexts of the mathematics classroom, AS classroom and the school. The issue of change would then require an examination of how the boundaries created by the taking up of specific subject positions, could be broadened or opened up, or, put differently, how the boundaries of possibility might be expanded.

Considering the possibilities of change, placing emphasis on the weakening of pedagogic boundaries and increasing the range of possibilities of subject positions, raises questions about the existence and organisation of an Academic Support Programme in a school such as this - whether it is workable or even possible given the criteria supported by the school context. The differentiating codes which support pedagogic hierarchies in the school might disallow Academic Support to have any other possible status than it does. By the nature of its role and function, to support mainstream mathematical (and other) discourses, it could not possibly attain a position of dominance. The question is then, would it be possible for AS to be incorporated into the mainstream mathematical programme so that the same boundaries - contextual, spatial and pedagogic - were no longer existent? Since membership to, or association with, an Academic Support Programme would be based on a set of criteria determined by the school, would not these self-same criteria become the means by which difference is created and then hierarchised, thereby facilitating the construction of disadvantage? The reflexive nature of difference being recontextualised into disadvantage is a function of the stratified ethos of the school. Would the weakening of boundaries and the

opening up of alternate positions not have to occur at the level of the social and cultural codes of the school context? These are the questions which need to be addressed in organising an Academic Support Programme. Also, incorporation into the mainstream mathematics programme would still not provide access to the regulating principles of esoteric domain mathematical discourse, given the current low streaming of those to be supported by AS. The AS Programme would then simply facilitate the prevention of access to the recognition and realisation rules of upper stream discourse in the same way as low streaming does, unless it was possible to structure AS in such a way that it transcended the boundaries produced by low streaming. Is this possible? Given the dominant value system, is it also possible to deconstruct the social issues of class, race, ethnic culture and educational experience in such a way that a position of dominance with respect to mathematical discourse is available to the black students in this school? Essentially, can a bridging of the boundaries of mathematical discourse within the school, only be achieved through the dissolution of boundaries at the level of the regulative discourse of the school - a weakening of the social and cultural codes which produce and reproduce difference and disadvantage?

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## APPENDICES

### APPENDIX 1.

#### Bernstein's Involvement Positions.

Bernstein (1975: 43-49) defines certain categories of involvement positions which have some similarity to Dowling's positions of subordination and dominance, although underpinned by differing theoretical principles. They reflect the students' positions of weakness or strength in relation to the two orders of the school. The types of involvement positions which students may hold are defined as:

- commitment
- detachment
- deferment
- estrangement
- alienation

These positions range from high involvement (in the case of commitment) in that the means are understood and the ends accepted of each order, to low involvement (such as in alienation) where the means are not understood and the ends or goals of the two orders are not accepted.

These role involvement positions are sociological in the sense that the forces shaping them are, for the most part, independent of the specific psychological attributes of the student. Of interest to the current research are the categories of deferment, estrangement and alienation.

Deferment, according to Bernstein, is the situation which exists where the student is "deferring" his/her commitments to or involvement in both orders. He/she is "watching the state of play" (Bernstein, 1973: 45). It is a form of role involvement usual in the early stages of a student's career and is more common where there exists 'a discrepancy' in outlook between the home and school (and for this research context - between the previous school and the new one) and it may apply to "working class children" (Bernstein, 1973: 45). "These children will be...a bit perplexed or bewildered, not coming down one way or another", and what is crucial here is the length of time they maintain this role. According to Bernstein, the greater length of time, the more likely the student will move towards a position of alienation.

In the role type estrangement, the student agrees with the ends of the discursive (instrumental) order, in that he/she supports the examination system in operation and the goals and ideals of the certification process within the school. The student does not, however, manage its demands i.e. the learning process and examination requirements. "It is all a bit too difficult for him", and in this sense "he does not understand the means". (Bernstein, 1973:46).

The student is, however, highly involved in the social (expressive) order, joining into school activities willingly. The student's behaviour is consonant with the image of conduct, character and manner defined by the schooling culture and, in so far as the student adheres to this image, he/she displays acceptance of the moral order of the school - a code transmitted by the social (expressive) order. Bernstein raises the following point of particular relevance to this research:

But his (the student's) failure in the instrumental (\*discursive) order at the level of means may be particularly wounding. He may be placed in a lower stream and among pupils who are only weakly involved, or who might even reject the expressive (\*social) order to which this pupil is committed and by which he lives....However, the pupil's blighted aspirations, combined with a low stream, coupled with his loyalty to the school, may make his school experience particularly painful and damaging. The problem for this pupil in a situation of estrangement is that his relationship to the school entirely depends upon his relation to the expressive (\*social) order. If that relation weakens, he may well shift and move down towards alienation. (Bernstein, 1973: 46, \*insertions - DS).

The last role is alienation. This is where the student neither understands nor accepts the discursive (instrumental) and social (expressive) orders of the school and is related to the school via conflict and "sullen acceptance". A cultural discrepancy may exist between the school and the student's family background and "the pupil in a role involvement is likely to forge strong relations with an anti-school peer group and this will serve to set up a vicious circle holding him to his alienated role". (Bernstein, 1975: 46)

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## **APPENDIX 2.**

### **Dowling's Discourse/Procedure dichotomy, and other writers.**

A similar dichotomy in modes of practice to Dowling's distinction of discourse versus procedure is identified by various writers and researchers in the social science fields. (Dowling, 1993: 53-66) These dichotomies relate to language use, how meaning is constructed, and in reference to cognition and reasoning. Bernstein makes reference to elaborated and restricted speech codes which relate language use and meaning to codes associated with social class. A restricted code relates to localised speech which is specific to context, whilst elaborated speech draws from a larger repertoire of possibilities and range of options of expression. It is generalised rather than context-dependent. Formal and practical reasoning are categories established by Walkerdine to identify and give distinction to the dichotomy in types of reasoning. For Walkerdine, practical reasoning determines the veracity of a statement in terms of its correspondence to the rules of a practice in that it is rule-governed. Formal reasoning determines the veracity of a statement in terms of the internal relations of the statement itself. (Dowling, 1993:58). Also, Luria's abstract versus situational thinking and Vygotsky's conceptual versus complex thinking identify similar dichotomies associated with modes of thinking. Dowling's distinctions have similarities with these categories, but are particularly useful in discussing the differentiated production and reproduction of discourse and how it relates to the various subject positions which are made available to the acquirer - in particular, the Black Scholarship Students.

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### APPENDIX 3.

#### Culture and the School: "The play".

The extent to which the scholarship students are held to a position of cultural subordination, and the sense of alienation which derives from a separation of "their black" culture (through the school's differentiating messages) from that of the school's, is evident in the following dialogue:

#### EXTRACT.

1. **Pam:** One interesting experience I had in my first year here - I decided
2. to spend about a month working on a small play - an old Xhosa legend
3. which they had to choose from a book and act it out and incorporate
4. some Xhosa where applicable, where the audience would understand
5. them, from the context, and then weave in some songs, maybe some
6. dancing, because it ended in a wedding feast. Then after about three
7. weeks, I found the acting got worse and worse. Having started with a
8. bang and they were just dragging their heels more and more.
9. **DS:** Was that at the beginning of the year?
10. **Pam:** No, it was the third term. And then eventually I was getting
11. nowhere, and I said: "What's going on?" Then the leading actor didn't
12. want to be the lead ... we had started off by using a long traditional
13. Xhosa name, and he said: "Can't we just call her Thandi now, 'cos
14. everyone's called Thandi ...". And then the Xhosa phrases: The one
15. boy put in a nice thing for drinking the beer, long-worded clicks, and
16. the same lead actor so-saying: "No! no! The other boys are going to
17. laugh at us. We must just use English." Then we eventually reached a
18. sort of impasse because they just wouldn't do it. They were unhappy,
19. and I asked: "What's going on? Do you want to act it for the others?"
20. "No! No! Can't we do a modern play with lots of slang and all that?"
21. They obviously felt that, basically ashamed of the Xhosa
22. culture/language.
23. **Jane:** Just being laughed at. I think that's it.
24. **Pam:** You're right.
25. **Jane:** I just feel that's something ...[....]...That group was a difficult
26. group. It would be interesting to try that procedure again...
27. **DS:** Why do say they were a difficult group?

28. **Pam:** A bunch of bolshy boys!  
 29. **DS:** Jane?  
 30. **Jane:** Complex.  
 31. **DS:** In what way?  
 32. **Jane:** Each year is complex, I was just saying that it might have been  
 33. interesting to try that with a different group....  
 34. **Pam:** But at the same time I think that if **they** sort of know who they  
 35. are and all that, and are happy with it, I can't be too hundred percent  
 36. sure how the audience would react. And I think that Jane's point about  
 37. being scared about being laughed at is very true because I think that  
 38. it's got to be noted that this school is **extreme** in terms of people  
 39. laughing at each other, you know, eroding and undermining each other,  
 40. and sort of competition in the way they undermine, in a destructive  
 41. way. I don't like it. And so I wouldn't actually suggest that they  
 42. perform something. They are quite fragile, and, ja, I think just from a  
 43. drama point of view - there's, they are more used to humour and  
 44. people dressed up in drag than a real, actual thing of drama, where  
 45. people are acting out real experiences... [...] My motivation was  
 46. because they are talented in that area - acting/singing. They could do  
 47. something really well...yes, I thought that maybe they could shine and  
 48. do something better than the average kid and get self-respect and  
 49. 'kudos' etc. - glory or credit. And I thought that because they're weak  
 50. at English but at least they can show that they're good at something  
 51. else, but it didn't work.

Interestingly, in the **EXTRACT** in lines 1 and 2, Pam speaks of the students having to choose an "old Xhosa legend" to enact, immediately associating them with a distinctive culture which is spoken of as being "antiquated" and "tribalistic" (as a result of being legendary, Xhosa and old). The play becomes the representation of the students' "culture" and we can see this in the comment, in lines 44 and 45: "...a real, actual thing of drama, where people are acting out real experiences...". The play becomes the "**reality**" and the "**reality**" is this depiction of the students' "culture".

In lines 3, 4 and 5, Pam speaks of their having to incorporate elements of the Xhosa language in a way where the audience will “understand” from the context of the play. Already, what is spoken of, is that an **adaptation** needs to take place to suit the cultural context of the audience. The suitability and acceptance of the play is **determined by the audience**, so that the “culture”, depicted in the play and assigned to the scholarship students, has become open to criticism - as it is the prerogative of the audience to judge a play. The acceptance of the students’ “culture” is **predicated by the acceptance of the play which acts to represent it**. It is **the play which is intended to authenticate “their culture”** (and not the other way around). This is spoken of in a way that assumes the **legitimate right and knowledge** of the school to represent “this culture” in a way that might suit the context of the school culture. Here, the “other boys of the school”, representing the dominant culture of the school, are placed in a position of **judgement** with regard to the scholarship students and “their culture”, as depicted in the play, which they are assumed to represent. This “culture” is dependent on the school’s interpretation and visualisation of it, (through the voice of the teacher who represents the school in this regard). Hence, the school remains the **authority** in the representation of this “culture” in terms of which the scholarship students are constructed. The school thereby achieves the positions of both **authority** and **judge** alike. The voice of the scholarship students’ is, as a consequence, subordinated by the more dominant voice of the teacher’s, which transmits the dominant codes of the school culture.

Secondly, by separating the “culture” of the scholarship students from that of the school’s, the “culture” associated with that of the students is automatically subordinated as a consequence of the **stratified nature of the**

**school.** Differentiation of this nature achieves hierarchies in a stratified school which become divisive in their implementation. The divisive nature of this hierarchy, (which grants the scholarship students a separate culture and which privileges the dominant culture of the school above the culture which has been assigned to the scholarship students), reflects itself in the **paradoxical** situation they find themselves in with regard to culture. On the one hand, the scholarship students are expected to be enculturated into the school for their ultimate success, whilst on the other hand they are expected to support a separation of "their culture" from that of the school's, which will ultimately subordinate them with respect to the school culture. If they do not **support** these distinctions, they are constructed as being "ashamed" and "embarrassed" with their "culture/language" - **value-judgements** which are made of them as a result of the **power and control which the dominant school culture exerts on other minority cultures**, heard through the voice of this ASP teacher. Further more, the students are spoken of as being "difficult", "complex" and "a bunch of bolshy boys" as a result of their **reluctance** to comply with the **differentiating process**. On the other hand, if they **did accept** the process they would "...know who they are, and all that, and (be) happy with it...". They are in a double-bind. They achieve positions of subordination through the construction of "difference", and face the invidious position of being constructed as "different" either way - either through being compliant but "culturally distinct", or through being non-compliant but "behaviourally difficult". What is spoken of here, is the students' **lack of commitment** - a fault which lies with the students themselves and not with the school, so that the school bears no responsibility for the situation. By wanting to try the same procedure with "another group" of scholarship students, the inference is that

the problem does not lie with the **process itself** but with the **nature of the group of students** who are constructed as manifesting **behavioural difficulties**.

The construction of "behavioural difficulties" surfaces again further on in the interview. The extent to which the fault is placed on the innate capacity, in this case personality or character, of the scholarship students', where the school bears no blame, is evidenced in the following comment:

**Pam:** I could think of a few boys who I'd say have not been successful where...um, maybe they haven't benefited entirely from the scholarship, the opportunity given to them, and, it seems to me to be entirely due to people's personalities, let's say character.

What is clear here, is the dominance of the school culture which transmits **codes of class**. The students are differentiated and judged on criteria deemed acceptable by the school, laying blame, where necessary, on the scholarship students themselves, and bearing no responsibility for their "inability" to meet those set criteria or to avail themselves of the "opportunity given to them". The "inability" of the scholarship students, (those in question), to conform to the school's social requirements, is deemed "failure" and the students are constructed as possessing "behavioural difficulties" as a result.

To return to the previous **EXTRACT**, the extent to which the school maintains a position of authority over the definition of culture with respect to the scholarship students can be seen in the comment, in **lines 14, 15**: "The one boy put in a nice thing for drinking the beer, long-worded clicks...". Here the cultural context around "the drinking of beer" cannot be referred to with any specific knowledge other than to refer to it as "a nice thing" and as "long-worded". These are value-judgements which stand outside of the cultural

context being described and carry with them the assumption of an authoritative perspective on this culture. It is a way of speaking of the students and "their culture" as being "**looked on**" by the culture of the school - one which possesses the prerogative to observe, evaluate and comment on what is deemed the scholarship students' culture.

What is being spoken of, as a consequence, is the school's **recontextualising** of "the boys' culture". This can be seen in the comment, **in lines 13 and 14**: "...can't we just call her Thandi, 'cos everybody's called Thandi...". Here, the students are speaking of trying to **bridge the gap** between the school culture and this definition of "their culture", by hoping to be, at least, assimilated into the **recontextualised culture** which the school might accept. This is as a result of the recontextualising being under the **auspices of the dominant culture of the school**.

The divisive nature of the differentiating processes at this stratified school is reflected in the comment about "boys laughing at each other". A **tension** exists between the students' need to be assimilated into the school for the purposes of acceptance and the school's automatic differentiating rituals as a consequence of being stratified. Bernstein says that in a stratified school, the greater the differentiating process the more divisive the effects, a concept which is fore-grounded here.

The issue of "boys laughing at each other", "undermining each other" and the "competitiveness" between students is spoken of, **in lines 36 to 40**, as being "extreme" at this school and corresponds with its "culture of difference". The strong emphasis on hierarchy and differentiation - numerous "differentiating

rituals" under the banner of "tradition", (such as the fagging system), result in messages and codes which legitimate divisive behaviour in this context. The competitiveness at the school is also supported by the "examination-mindedness" of the school and its ethos of "striving for excellence".

What is important is that, despite the fact that Pam speaks of competitiveness and the divisive effects of this as a problem in the school, she still maintains her position on the scholarship students as being a "difficult group". The fault of the problem, therefore, remains with the scholarship students and not the school. There is no flexibility about the position of the school in this regard, or about the part it might play in establishing, creating, or supporting the circumstance which results in the students being spoken of as a "difficult group". The school is seen as "neutral" in context, and the students are the object of measurement, measurement in relation to the norms of the school.

Towards the end of the comment **appearing from line 42 onwards**, Pam starts to speak of the students in terms of **compensation**. She speaks of their "fragility" and of her motivation to engage with the play as an attempt to gain them self-confidence, (as a result of the talents they are said to possess). It is intended to compensate for a **lack** which they possess in other areas. Interestingly, **they** are spoken of as having "talent" in acting and singing - "talents" which are associated with "their culture" as a **group** and not with the talents which they might possibly possess as **individuals**. This is so that they might gain respect and self-confidence over the "average kid", reinforcing the fact that they are "different" from the "average kid" as are their "culturally-defined talents". The students are subordinated in relation to other "more successful" students at the school, as their "talents in acting and singing"

achieve very low status and priority in the social division of labour of discourses at the school. The areas where they are spoken of as **possessing a lack**, are in the discourses which achieve **superior status in the social division of labour of discourses**, such as Mathematics and English, discourses which have **strong classification and framing** and possess relatively dominant voices in relation to the school context. The scholarship students' "culture" and "talents" are, as a result, subordinated concomitantly with the scholarship students themselves, in relation to students who are associated with the dominant culture of the school, so that the motivation to direct the play comes across as **patronising** in this context.

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