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Re-imagining Scientific Communities in Post-Apartheid South Africa: A Dialectical Narrative of Black Women's Relational Selves and Intersectional Bodies

by

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A thesis submitted to the Faculty of Humanities, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Doctor of Philosophy in the field of Psychology, March 2015.

DECLARATION

I declare that this thesis, titled '*Re-imagining Scientific Communities in Post-Apartheid South Africa: A Dialectical Narrative of Black Women's Relational Selves and Intersectional Bodies*' is my own work. It is submitted for the degree of Doctor of Philosophy in the field of Psychology at the University of the Witwatersrand. It has not been submitted before for any other degree or examination at any other university. All sources cited have been indicated and acknowledged by means of complete references.



Sabrina Liccardo

16 March 2015

Date

ABSTRACT

The focus of this research study is on black South African women's experiences of being science students, becoming graduates and professionals, and the ways in which they navigate institutional and disciplinary spaces that have historically been dominated by white masculinities. Women scientists are living in a critical era as the socio-cultural and political-economic landscape is transforming rapidly, affecting changes in aspects of identity and processes of identification. The individual life histories of black South African women scientists provide a telling story of a society in transformation because they experience the world as an outlier group; paradoxically positioned within an interstitial space between their dual sense of belonging to and alienation from a marginal and an elite group. The racialised gender gap in STEM (Science, Technology, Engineering and Mathematics) disciplines raises critical concerns around the political nature of scientific enquiry and whether black women will achieve equity in society and economic empowerment if they continue to be marginalised from society's power structures. Little is known about their journeys into becoming the new generation of scientists in post-apartheid South Africa. Using a narrative method to enquire into the lives of 14 young women, the aim of the study was to critically examine questions of discursive, material and symbolic elements that emerge within their narratives across temporal shifts, and how these new meanings reflect specific subjectivities, reconfigure their dynamic social identities and transform time into 'other spaces' of belonging beyond categories of social divisions.

I applied a structural analysis to the narrative form, an intersectional analysis of the narrative content in order to identify discursive themes, while a narrative analysis was applied to a portrait of one participant in order to depict the entanglement of form, content and context of a life narrative. Based on the findings, a visual representation of a 'lived life' in relation to a 'told story' (Wengraf, 2011) is proposed as a useful device to analyse the ways in which multiple, fragmented and contradictory selves are constructed through narrative. By utilising these visual diagrams as a heuristic device, I claim that there are particular features that complicate a person's narrative identity, which I have

organised into four patterns of storytelling, namely a ‘labyrinth storymaze’, a ‘simply-connected storymaze’, a ‘multiply-connected storymaze’ and a ‘weave storymaze’. It seems that failure is a defining feature that complicates, ruptures and convolutes people’s sense of their-selves through space-time.

This study presents a dialectical model for how black women scientists (co)construct them-selves as scientists through recognition from significant others, (de)construct them-selves as scientists through misrecognition and failure, and (re)construct other selves through homespaces, located at the intersection of (mis)recognition. Their (co)constructed internalised ideal of ‘academic talent’ is fraught with contradictions in the temporal flow of discursive themes in their life narratives, which account for how the intersections of ‘race’, class and gender locations coalesce into a “matrix of oppression” (Collins, 2002), positioning young black women as pawns in institutional and disciplinary spaces. The findings disentangle the mutually reinforcing relations between “epistemological access” (Morrow, 2007) and the dominant ideologies of whiteness and masculinity within STEM fields, which are in conflict with the participants’ backgrounds, thus contributing to their experiences of (c)overt discrimination, either through public humiliation, silencing of black women and/or the preferential treatment of white students from lecturers. The findings also indicate that these women resist systems of oppression through everyday homespaces in which they reconstruct new meanings and subjectivities through the narrative art that connect them to other spaces and to new “imagined communities” (Anderson, 1991). The significance of this study lies in its contribution to understanding personal and social change, particularly for marginalised groups that come to occupy positions of power in both the production of knowledge and the functioning of society.

Key terms: Transformation in higher education; Black women in STEM fields; Subjectivity and identity, Life narratives, Intersectionality; Belonging and alienation; ‘Imagined communities’; Space-time.

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DEDICATION

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CHAPTER 1:
INTRODUCTION

1.1. Background of the study

The aftermath of the apartheid government's geo-political conception of race continues to affect the schooling and higher education system. Although much has been done to transform the higher education landscape in South Africa post 1994, the participation rates (relative to population demographics), as well as graduation and drop-out rates in higher education remain extremely racially skewed. In particular, black women in Science, Technology, Engineering and Mathematics (STEM) fields continue to be grossly underrepresented. It is important to investigate the racialised gender gap in STEM fields because it raises critical concerns surrounding the country's socio-democratic transformation efforts and the advancement of science and technology. How are black women to achieve equity in society and economic empowerment if they continue to be marginalised from society's power structures? This research study examines black women's experiences of being science students, becoming graduates and professionals and how they navigate institutional spaces that have historically been dominated by privileged forms of knowledge production processes. Chapter one contextualises this research study by outlining three particular ways in which the transformation agenda in higher education in South Afirca is being engaged with, namely, through policy initiatives, 'race' and gender issues as well as globalisation and internationalisation.

1.1.1. Education under apartheid

During the 1950s to 1970s, South Africa invested heavily in the development of scientific research, new technology, and the establishment of science councils in order to 'keep up' with the industrialisation of the Western World (Mouton & Gevers, 2009). However, the drive for strategic research focused on serving the goals of the National party; the ruling white class that believed that scientific development and achievement, among other things, differentiated them (and 'white civilisation') from black people (Mouton &

Gevers, 2009). Bunting (2004) elucidates that at the beginning of the 1980s, the apartheid government's geo-political conception of race was used to form five separate geographic and legislative entities: the republic of Transkei, Bophuthatswana, Venda, Ciskei (i.e. known as TBVC countries) and South Africa (i.e. known as RSA), including Bantustans or homelands. The government gave black people citizenship of the TBVC countries, but "they were presumed to be 'aliens' in the Republic of South Africa and therefore not entitled to representation in the national parliament" (Bunting, 2004, p. 36). Thus, the only effect of the TBVC 'republics' was to entrench the disenfranchisement of black people.

Furthermore, the school education system and higher education policy framework were shaped along racial lines. The Bantu Education Act of 1953 provided the establishment of a racially differentiated system of education, which entrenched the position of privilege of bantwhite people by providing black learners with inferior education (Kallaway, 1984; Mabokela, 2000), especially in mathematics and science (Mouton & Gevers, 2009). In line with the homeland policy, higher education institutions (i.e. universities and technikons) were racially classified resulting in the present day 'historically white universities' (HWUs) and 'historically black universities' (HBUs). Historically white (English and Afrikaans-speaking) universities were managed by the RSA government authority, whereas the historically black universities were aligned to (and marginalised) by the apartheid government's homeland policy. As a result of the homeland policy, Robus and Macleod (2006, p. 9) asserts that communities have not only been classified as specifically 'urban' or 'rural', but society generally has also been conceptualised in these dualist terms, creating a tension between "white space as the desirable, urban centre [with Euro-American standards] and black space as the undesirable, rural periphery dovetails with a discourse of 'white excellence/black failure' ". Today, HWUs remain privileged and elitist while HBUs remain under-resourced and disadvantaged. Due to the racial and geographic segregation, the relations between academics from diverse backgrounds (i.e. 'race', class, gender, and language lines) became polarised and ideologised (Mouton & Gevers, 2009). The racist structuring of higher education led to the widespread academic boycott and "an internally isolationist scientific culture in a system that was

compartmentalised in the extreme" (Mouton & Gevers, 2009, p. 43).

1.1.2. Transformation in Higher Education

The political shift from apartheid to democratic government in South Africa in 1994 created demands for transformation in educational and socio-economic spheres. Although much has been done to transform the higher education landscape in South Africa, the aftermath of apartheid policies has created unacceptably high levels of inequality that need to be addressed. For instance, the long-standing racist and phallocratic traditions within South African universities and STEM fields are still blatantly evident. "[T]he inherited higher education system was designed, in the main, to reproduce, through teaching and research, white and male privilege and black and female subordination in all spheres of society" (Badat, 2004, p. 4). Soudien (2010) adds that the effects of apartheid have produced, at the structural level, social and economic inequalities which are underpinned by "a complex of discriminatory political and cultural attitudes, dispositions and orientations" (p. 4). Accordingly, Soudien (2010) makes a distinction between structural and ideological approaches to transformation; the former addresses sociological relationships and representivity of groups while the latter, beliefs and assumptions. Using this frame, I will now discuss three particular ways in which transformation in higher education is being addressed, namely through policy initiatives, race and gender issues, as well as globalisation and internationalisation. Although it is clearly important to examine the ways in which university staff, curriculum, teaching and research have been affected by transformation, it is not the primary focus of this study.

1.1.2.1. Policy initiatives in Democratic SA

The Post-Secondary Education report of the National Education Policy Investigation (NEPI, 1992) was the first key policy document in the shaping of post-apartheid education (Cloete, 2004). It initiated a policy forum that produced a document called the 'red book' which is underpinned by five principles: non-racism, "non-sexism, democracy, redress, and a unitary system" (Cloete, 2004, p. 57). These principles are embodied in the

four pillars for higher education policy: “equity, democracy, effectiveness, and economic development” (Udusa, 1994, p. 57). According to the ‘red book’, the formation of policies should respond to the tensions between these pillars, especially equity and economic development (Cloete, 2004).

In a report submitted to the Minister of Education in 1996, the National Commission on Higher Education (NCHE) concluded that higher education in South Africa should to be massified in order to address and resolve the tension between equity and economic development (Cloete, 2004). This report indicated, “increased participation was supposed to provide greater opportunity for access (equity) while also producing more high-level skills that were necessary for economic growth” (Cloete, 2004. p. 59). A national Higher Education Quality Committee (HEQC) was established to monitor academic standards in the context of increased numbers of students. According to Cloete (2004), the radical proposals of the Commission for massification posed several difficulties for the Department of Education.

In 1997, the Department of Education published a new higher education policy, which articulates the government’s viewpoint on the purpose of transformation in Higher Education. This policy developed into the Education White Paper 3: A Programme for the Transformation of Higher Education, which frames the problem as follows:

> “South Africa’s transition from apartheid and minority rule to democracy requires that all existing practices, institutions, and values are viewed anew and rethought in terms of their fitness for the new era. Higher education plays a central role in the social, cultural, and economic development of modern societies. In South Africa today, the challenge is to redress past inequalities and to transform the higher education system to serve a new social order, to meet pressing national needs, and to respond to new realities and opportunities. It must lay the foundations for the development of a learning society which can stimulate, direct and mobilise the creative and intellectual energies of all the people towards meeting the challenge of reconstruction and development” (Department of Education [DoE], 1997, p. 3).

The government set specific goals pertaining to equity and responsiveness and it also defined performance measures that needed to be achieved in student enrolments and outputs. However, there were several problems regarding limited resources with implementation and many of the following goals were not entirely met: enrolment by race group and gender, responsiveness to development needs, and throughput and output (Bunting, 2004). Consequently, in 1999 the Council on Higher Education (CHE) reviewed the institutional landscape of 'higher education in the 21st century' and compiled a report titled 'Towards a New Higher Education Landscape' (2000) which documents the prevailing problems in the system (Cloete, 2004). This report prompted the National Plan for Higher Education in 2001 focused on implementing the policy goals of the White Paper (Cloete, 2004).

The National Plan for Higher Education (2001) reports that although there are policies and legislation aimed at addressing the challenges of globalisation, greater effort was required in order to implement the policies and legislation. For instance, one would question whether the higher education sector is optimally configured to meet its objectives, as there is an increasing shortage of many critical skills in South Africa. Particular areas in which skills are scarce or decreasing include computer science, engineering, pharmaceuticals, and physics (Council on Higher Education, 2009; Department of Labour [DoL], 2006; Kahn, 2008). This highlights the need for increased participation of black people and all women in STEM fields. As South Africa is in the process of large-scale infrastructure development, the lack of engineering skills is particularly concerning (Kraak, 2008).

The shortage of critical skills issue has fallen within the mandate of the Department of Science and Technology (DST), which is the driving force behind South Africa's science and technology research agenda. DST has developed a new science and technology policy framework and implemented several initiatives with the aim of restructuring scientific institutions (Mouton & Gevers, 2009). These strategic documents include the White Paper on Science and Technology (1996), the National Research and Technology Foresight (1999), the National Research and Development Strategy (2002), and the Ten-

Year Plan for Science and Technology (2010-2018).

1.1.2.2. Race and gender issues in STEM fields

In South Africa, the racialised gender gap in STEM fields raises critical concerns surrounding the country's socio-democratic transformation efforts and the advancement of science and technology. The economies of industrialized countries around the world have become increasingly dependent on computer technologies, which have progressively increased the lucrative or economic value of the male-dominated STEM fields. While men are afforded more economic ownership, prestige and power in the labour force, black women's access to these kinds of capital are limited. Black women will not be able to achieve equity in society if they are marginalised from society's power structures, including STEM fields and associated economic empowerment. Accordingly, the inclusion of black South African women in STEM fields is important for socio-economic development and for new intellectual and political possibilities. It is further important to critically examine the political nature of scientific enquiry, because the possibilities for science will be limited if only men and white women ask questions and interpret the results. Problem-solving activities and innovation in science and technology are driven by a diversity of perspectives in which scientists construct knowledge through discussions about their postulations and interpretations of results. "The ability to see questions and answers from many perspectives will help make scientific explanations more robust and complete" (Clark Blickenstaff, 2005, p. 3).

Although the post-apartheid transformation project is committed to the principles of non-racism, non-sexism, and acknowledges people's right to education and freedom of association, there is not yet a 'critical mass' of black people and women in STEM fields. I will now discuss the higher education participation and graduation rates. I have chosen to report statistics from the year 2007 due to the fact that the participants in this study enrolled at university in that year. The National Plan for higher education in South Africa (Department of Education, 1997) indicates that the target participation rate of the raced student body profile for the public higher education system was set at 20% for African

black students. However, as depicted in table 1 below, white and Indian student participation rates continue to be overrepresented in the system, constituting 54% and 43% respectively, whereas African black and coloured students comprise only 12% of the participation rates.

Table 1: Participation rates in higher education by race (2007)

'Race'	**20-24 year olds in the county**	**Students enrolled in higher education**	**Participation rates**
African Black	3 918 890	476 768	12%
Coloured	416 355	49 069	12%
Indian	122 412	52 596	43%
White	334 150	180 463	54%
Total	4 791 807	750 896	16%

Source: Council on Higher Education (2009. p. 20)

Furthermore, when we view enrolments by institution type (i.e. University of Technology, Comprehensive Universities and Universities), the racial imbalance becomes even more marked. In 2007, the universities of technology enrolled 77% African Black, 11% white, 8% coloured and 4% Indian students; whereas traditional universities enrolled 50% African Black, 7% coloured, 8% Indian and 39% white students (Council on Higher Education, 2009). Graduation rates among African black students continue to be the lowest. In 2007, 63% of African black students enrolled in the public higher education system but only 57% graduated. This proportion is small compared to the 30% of white graduates, despite forming 24% of enrolments. Moreover, graduates are disproportionately white and male in the SET fields. In terms of field of study, graduates are disproportionately white in science, engineering, and technology as well as in the human sciences and social sciences (Council on Higher Education, 2009). Furthermore, in the professional bachelor's degrees, only 54% of engineering students graduate within five years. Table 2 below depicts the graduation rates for the general bachelor's degrees.

Table 2: Graduation patterns of first-time entering students starting general academic Bachelor degrees in 2000, excluding UNISA

Subject area	**% Graduated within 5 years**	**% Still registered after 5 years**
Business and management	50	7
Life and physical sciences	47	13
Mathematical sciences	51	9
Social sciences	53	6
Languages	47	7

Source: Council on Higher Education (2009. p. 24)

Additionally, more white and Indian students enrol and succeed in postgraduate studies; thus, postgraduate enrolments and graduations are also differentiated by race. Of the 2006 cohort of doctoral graduates, 56% were white whereas 44% were African black (of which 14% were foreigners). Thus, there is a need to increase black South African participation in research and knowledge production (Council on Higher Education, 2009). Furthermore, it is noteworthy that on average, 50% of enrolled students drop out of higher education institutions within their first three years and 70% of these drop-outs come from families with low economic status (Letseka & Maile, 2008; Letseka, 2009).

Since 2000, more women have enrolled in the South African public higher education system. In 2007, 55.5% of students enrolled at universities were women, however, there are gender imbalances by field of study (Council on Higher Education, 2009). The female student population in the natural sciences across public higher education around the world is consistently lower than that of male students (Teferra & Altbachl, 2004). In 2007, 73% of women were enrolled in the discipline of education in South African universities, 59% enrolled in the human and social sciences and, 56% in business, commerce, and management. Thus, only 43% of women (and 57% of men) enrolled in science, engineering, and technology (Council on Higher Education, 2009). Moreover, participation rates within the sub-fields of science, engineering, and technology vary. As depicted in table 3 below, more men enrolled in five out of eight SET sub-fields, that is, more men than women enrolled in engineering and engineering technology (76%), computer science (63%), architecture and environmental design (63%), mathematical

sciences (61%), and agriculture and renewable natural resources (57%). There are only two fields in which there are more women enrolled than men, namely health care and health sciences (68%) and industrial arts, trades and, technology (67%). Life and physical sciences, which constitute 53% women and 47% men, indicates less difference between genders (Council on Higher Education, 2009).

Table 3: Enrolments in Science, Engineering and Technology sub-fields by gender (2007)

Field	**% Women**	**% Men**
Industrial arts, trades, technology	67	33
Architecture and environmental design	37	63
Agriculture and renewable natural resources	43	57
Mathematical sciences	39	61
Life and physical sciences	53	47
Computer science	37	63
Health care and health sciences	68	32
Engineering and engineering technology	24	76

Source: Council on Higher Education (2009. p. 24)

In 2007, women constituted 59% of the graduating population. However, more men graduate in the science, engineering, and technology fields, although the margins were relatively small (Council on Higher Education, 2009). The proportion of graduates in education and human and social sciences is skewed toward women. For instance, there were over 70% of women graduates in education and 60% of women graduates in the human and social sciences (Council on Higher Education, 2009). Generally, although more women than men enrol for postgraduate studies, there are also gender imbalances among postgraduate programmes. In 2007, only 40% of women in science, engineering, and technology enrolled for a doctoral degree and of the 2007 cohort of doctoral graduates, 42% were women (Council on Higher Education, 2009). The lack of black graduates in South Africa not only affects the racial profile of academic staff in the public higher education system, but it also means there are few role models with whom young aspiring scientists can identify. Furthermore, Qambela and Dlakavu (2014) asserts that the labour market is racialised, classed and gendered (skewed toward men and white women). According to a survey on graduate pathways to work, “[e]mployment by race

continues to reflect apartheid-era patterns of discrimination" (Cape Higher Education Consortium [CHEC], 2013, p. 13). Unfortunately, the proportions of black women that comprise the aforementioned enrolments and graduates have not been documented in the Council on Higher Education of 2009. This necessitates a need for an intersectional analysis of the social locations of race, gender and class.

Neither race, nor gender alone can explain the workings of power and privilege within South African society because gender relations and racialised discourses are enmeshed with the changing structures of class, and when we examine social divisions through the lens of South Africa's racist and sexist relationship with scientific knowledge, it further obfuscates the meanings within these social categories. The production of scientific knowledge is rooted in South Africa's historical, cultural, and political legacies. Accordingly, being a black woman in the sciences in South Africa entails more than individual ability and interest, requiring the crossing of multiple social locations. Colonialism and apartheid located black people at the lowest point in the fabricated racial hierarchy. As the structure of society informed white and black people's place in the class structure, racial considerations became internalised in class. In other words, inequality is reflected in the class structure (Seekings, 2003; Wolpe, 1990). Wolpe (1990) writes:

> "Once it is accepted that racial considerations enter into the structuring of class relations, and these class relations influence the structure of the racial order, then it is no longer possible to distinguish between race and class on the basis that the former is an exclusively political phenomenon and the latter an exclusively economic one" (p. 58).

Black women in particular were situated at the lowest and most disadvantaged position in the racial, classed and gendered structure of society and the denial of their basic right to travel and seek employment locked them in a cycle of dependency on men for their livelihood. Furthermore, the system of traditional law and culture reinforced the apartheid policies. Andrews (2001) writes:

> "Under traditional law and culture, women were denied a host of rights: the right to own land, the right to custody of their children, and the right to be chief or elected as chief. These laws and policies, bolstered by an apartheid ideology that

> insisted on the second-class status of women within African society, cemented their inferior status; this legacy will continue to haunt women for many generations" (p. 2).

However, Yuval-Davis (2006) elucidates that the categories of social locations and corresponding positions of power are fluid and are continually contested in different historical contexts. Social locations not only allude to people's positionality in the intersections of social divisions but also the positionality of categories along an axis of power in society, which changes with different historical moments and contexts (Yuval-Davis, 2006). Currently, black women scientists are living at a critical time in South Africa as the socio-political landscape is changing rapidly, effecting changes in many dimensions of identification, particularly 'race', class and gender. In this study, the notion of intersectionality or "the relationships among multiple dimensions and modalities of social relations and subject formations" (McCall, 2005, p. 1771) has formed a central category of analysis in determining how these participants' science identities have been constrained within their location in "matrix of oppression" (Collins, 2002).

1.1.2.3. Globalisation and internationalisation

Globalisation and the information technology revolution has given rise to a 'knowledge society' that is based on the belief that science, technology, and innovation are the driving forces of economic and social development (Thorlindsson & Vilhjalmsson, 2003). Accordingly, scientific knowledge is considered to be a defining differential of contemporary society as the capacity to circulate information from national to global spaces with the aid of technological infrastructure is arguably the premier source of economic growth (Nowotny, Scott & Gibbons, 2001). The former Minister of Science and Technology in South Africa (2008), Mosibudi Mangena declares:

> "We envisage a society that uses its knowledge systems and human capital to solve problems in our country and on our continent, while exploiting economic opportunity in a sustainable way. This plan is built on the assumption that South Africa must continue to make more rapid progress in critical related areas of

> societal transformation [and] the government's investments in science and technology ... to eliminate poverty" (DST, 2007, p. 4).

Historically, South Africa has been a resource-based economy particularly dependent on mining and farming, exporting raw materials and it is yet to become a knowledge-based economy (DST, 2008). South Africa's prospects for improved innovation, competitiveness and economic growth is seen to be largely dependent on science and technology. "The government's broad developmental mandate can ultimately be achieved only if South Africa takes further steps on the road to becoming a knowledge-based economy, in which science, and technology, information, and learning move to the centre of economic activity" (DST, 2008, p. 7). The 'knowledge-based economy' is dependent on the skill and knowledge generation capacity of its human resources, in order to position itself successfully in the global environment. Accordingly, universities are critical role-players in the 'knowledge-based economy' as they act as generators of new knowledge for regional and national economic development. "Society through its government agencies is increasingly influencing academic priorities through state funding mechanisms and research areas are being prioritized by the market and corporate funding" (Kwiek, 2008, p. 32).

Internationalisation of higher education is an ambiguous, complicated, multi-dimensional, and fragmented process (Frølich & Veiga, 2005; Knight 2008). A response to globalisation has also been contextualised as an integral part of strategic planning initiatives in universities internationally (Allen & Ogilvie, 2004; Knight & de Wit, 1997; 1995; Kehm & Teichler, 2007; Rouhani, 2007; Sehoole, 2006; Teichler, 2004; van der Wende, 2001). Globalisation relies on higher education to produce the knowledge and skills to serve the economy and enhance global competitiveness. "If knowledge is the electricity of the new informational international economy, then institutions of higher education are the power sources on which a new development process must rely" (Castells, 1993, p. 4).

Knowledge is becoming crucial in shaping power as access to information and university

education are “critical sources for class formation, wealth creation, and establishing the networks needed for social mobility” (Carnoy & Castells, 2001. p. 23). In order for South Africa to increase its competitiveness in the global environment and shape the national economic and political space, particularly global investment and production, the government endeavours to organise knowledge for the globalized economy. “[T]he better the state can ‘reintegrate’ its disaggregated workers into a smoothly functioning knowledge-based society, the higher the potential return to global capital in those national [sites], and the more rapid the economic development at those sites” (Carnoy, 2000, pp. 11 - 12).

In this way, science is a critical part of political debate although it is often unclear to what extent knowledge and power relations are dictated by economic and global policies (Mama, 2003). As globalisation is unevenly experienced around the world, it can thus be viewed as “power-geometries of space-time” (Massey, 2005, p. 30) that have accelerated the space of flows in that “material arrangements ... allow for simultaneity of social practices without territorial contiguity” (Castells, 2011, p. 19). In South Africa, racist ideology “has developed alongside certain processes of capitalist accumulation” resulting in racist, classed and gendered constraints (Stevens & Lockhat, 1997, p. 5). South Africans are located in a class structure that is interdependent with the country’s racialised history. Although the legislated system of apartheid has been dismantled, ‘racial’ capitalism remains intact (Alexander, 1992; Goldberg, 2009; Stevens & Lockhat, 1997). For instance, the past practices of racist and sexist discrimination has affected the type of work people do, who owns assets and who can command high wages for their labour. White South Africans have generally retained their positions of privilege as conferred by their class position. Although there is a growing ‘middle-class’ and ‘black elite’, the majority of black people are imprisoned to an ‘underclass’ of poverty, unemployment and social exclusion (Seekings, 2003). Access to and engagement with scientific knowledge in South Africa is not only gendered but the intersectionality of ‘race’ with the formation of class structures is central. Indeed, as Mama (2004) points out:

> “African perspectives remind us that this is an organisation of knowledge that has

> been deeply complicit in imperialism, and financed through capitalist expansionism and military interests. Nonetheless the irrefutable Western dominance of the world's educational systems has seen this particular organisation of knowledge and its accompanying methodologies internationalised and exported, effectively globalized" (p. 24).

Clearly, knowledge and information are distributed vunequally which continues to perpetuates social inequalities. Those who aspire to acquire new knowledge and belong to communities of practice need to become part of these "ideological state apparatuses" (Althusser, 1970). Knowledge or culture could be viewed as a form of capital (Bourdieu, 1986). Scientific knowledge increases social mobility and contributes to class and wealth formation. The concept of "cultural capital" can be defined as "instruments for the appropriation of symbolic wealth socially designated as worthy of being sought and processed" (Bourdieu, 1977, p. 488). Bourdieu (1986) posits that cultural capital can exist in three forms: in the "embodied state" (i.e., attitudes, preferences, and behaviour), the "objectified state" (i.e., cultural goods or resources), and the "institutionalised state" (i.e., educational qualifications). It is argued that groups of people with privileged "habitus" (Bourdieu, 2005) have the political clout to organise, distribute, and use knowledge to shape power relations, attract global investment and determine what norms are 'desirable' in particular contexts and disciplines of knowledge. This study explores the ways in which the transmission and accumulation of particular forms of cultural capital perpetuate social inequalities within STEM fields, higher education and society at large.

1.2. The transformation agenda at the University of the Witwatersrand

The implementation and application of the transformation agenda is now presented in relation to the changing institutional structures of the University of the Witwatersrand, Johannesburg (hereinafter referred to as Wits). Since its inauguration in 1922, Wits has been viewed as a university committed to non-discrimination. Although, Murray (1997) argues that the institution did not actively challenge the apartheid practices in the 1960s and 1970s. In the early 1970s, for example, black and white students had to sit in separate

sections during institutional gatherings and although black students did study at Wits, they were not allowed to use many of the university's facilities (Murray, 1997). During this time, Wits positioned itself as a liberal institution and promoted a liberal education tradition that was largely influenced by European trends (Murray, 1997). For instance, the History curriculum was largely European-based and the English curriculum ignored African and South African literature and instead focused on the English classics (Murray, 1997). Put differently, Wits was a bastion of White-Anglo hegemony as many of its academic staff members (predominantly white men from privileged backgrounds) were Cambridge and Oxford graduates (Murray, 1997).

In line with the post-apartheid transformation project, in 2004 Wits developed a Transformation Policy centred around equity, diversity, and excellence:

> "Transformation is a process of negotiated organisational change that breaks decisively with past discriminatory practices in order to create an environment where the full potential of everyone is realised; nurture an atmosphere in which diversity, both social and intellectual, is respected and valued and where it is central to the achievement of the institution's goals; enhance the institution's effectiveness; realise the institution's desire for excellence" (Wits, 2004, p. 4).

Transformation is a multi-dimensional and structural process that involves addressing issues of access, equity, and institutional culture. It is also a personal process as it is inextricably entangled with people's subjectivities. "Its foundation must be deeply ethical" (Wits, 2004, p. 9). The transformation strategy over 10 years (2005 - 2015) at Wits is concerned with the following five defining characteristics requiring change: " (1) achieving equity in respect of demography of staff and students (2) enhancing academic performance and improving service excellence (3) innovation in teaching, learning and research (4) transformation of the institutional culture (5) promoting and entrenching good governance" (Wits, 2004, p. 4). For the purposes of this study, the discussion that follows is focused on three relevant characteristics, namely student demography, academic excellence, and transformation of the institutional culture.

1.2.1. Student demography

The transformation of student demography is concerned with issues of access, equity, and diversity. The student profile at Wits should correspond to the demographics of the region within which it is located. Wits claims that the institution is focused on increasing the participation rates of black people and all women in postgraduate studies. “The call is thus for us to hasten the development of the next cohort of black and women A-rated researchers and world-class scholars” (Wits 2004, p. 7). Although there has been a steady change in ‘race’ and gender demographies since 1994, the proportion of enrolments and graduates in the Health Sciences Faculty and the Humanities at Wits are skewed toward women in ways that reflect the national patterns discussed in section 1.1.2.2. Women remain underrepresented in Commerce, Science, Law and Management, but especially in Engineering and the Built Environment. For instance, of the total student enrolment at Wits in 2012, 6% of women enrolled at the Faculty of Engineering and the Built Environment (Wits, 2012). Furthermore, there continues to be low retention and throughput rates among undergraduate and postgraduate black students, who take longer to graduate than white students (Wits, 2004).

The transformation discourse at Wits proposes that by increasing access, diversity of scholarship, and demographic equity; the social and intellectual environment at Wits will be enriched by the broad range of skills and values of its students (Wits, 2004). “[By increasing the diversity of the student and staff profile] it is likely to [not only] lead to a greater appreciation of diversity on campus, and a greater sense of belonging and commitment of all groups to the university [but also] the abolition of institutionalised and systemic domination of some individuals over others” (Wits, 2004). Although achieving demographic equity is crucial in the transformation of higher education, it does not necessarily change the dynamics of power relations in institutions nor does it create a sense of belonging at university for all people.

1.2.2. Institutional culture

Although Wits has publicly committed itself to transformation and eradicating past discriminatory practices, there is a gap between institutional rhetoric and the experiences of students:

> "Several studies have shown that black people and women, particularly amongst our staff, still feel a sense of alienation on this campus. This is caused by the institutional culture at Wits that is still predominantly white male and Eurocentric. If we do not address the fact that so many people have negative perceptions of and experiences at Wits, we may achieve structural transformation, but this will be superficial and unsustainable" (Wits, 2004, p.3).

Similarly, Robinson (2003) reports that white male staff members and students at Wits did not struggle to 'fit in' to the institutional culture because their own values and 'cultural capital' were aligned to those of the institution. Furthermore, the participants in these studies expressed their concern with the premium that is placed on the English language; how it has been used to assess intelligence and the ways in which language proficiency, as a sign of intelligence, has stigmatised second language speakers. Moreover, an audit that was conducted amongst all Wits employees at the end of 1999, found that an alienating institutional culture was the primary obstacle to transformation at Wits. The culture at Wits was described by its employees as white, Anglo-Saxon, Eurocentric, Protestant and "characterised by fraternities, closed circles, male, like-minded, inbreeding" (Wits, 2004, p. 23). These findings were confirmed by the most recent institutional culture survey that was conducted at Wits in 2002:

> "Wits is an institution comprising many cultures, but the dominant culture still carries the burden of apartheid history which is visible in the demographics of the institution, and the tradition of whiteness (and patriarchy) which emerges in the discourses of difference and discrimination prevalent on the campus" (Wits, 2004, p. 24).

1.2.3. Academic excellence

Transformation at Wits is "first and foremost about the pursuit of excellence - about creating a University in which each individual as well as the whole is enabled and indeed, challenged, to be excellent" (Wits, 2004, p. 5). The transformation policy indicates that Wits is committed to eradicating the racial and gendered constraints to learning and to embrace the diverse languages, cultures and "funds of knowledge" that students from various backgrounds bring to the academy. Wits claims that its focus on excellence is based on innovation in teaching and learning, the quality of its graduates and research output (Wits, 2004). As universities are critical role-players in the 'knowledge-based economy', competitiveness in higher education continues to intensify. It is evident that Wits, for instance, aspires to be ranked as a top global university: "by 2015, Wits will have consolidated its status as an intellectual powerhouse in the developing world … We aim to be ranked in the top 100 universities in the world by 2020" (Wits, 2006, p. 3).

It is noteworthy, however, that Wits attempts to achieve academic excellence through its role in internationalisation and the rhetoric of transformation. The notion of transformation and academic excellence at Wits are bound up with economic competitiveness and the producing of graduates who will bring a return to global capital in South Africa:

> "In alignment with the priorities of our country, we want to advance economic competitiveness and social transformation through research, teaching and learning activities to produce the high level and scarce skills needed to foster development … we are committed to developing more and higher quality graduates in science, engineering, technology, accounting and commerce whilst not neglecting the arts and humanities … Our determination is to integrate South Africa more powerfully into the global knowledge economy by offering world-class education to all academically talented individuals" (Wits, 2014, para 1-2).

Wits's commitment to its role in internationalisation is also reflected in the curriculum policy, which highlights the importance of both disciplinary and interdisciplinary

knowledge; “The University is concerned with research that addresses the internationalization of knowledge, particularly within the disciplinary communities, and the constant expansion of the boundaries of knowledge within disciplines” (Wits, 2006, p. 4). However, given the dominance of Eurocentrism in South African higher education, ‘international education’ needs to be approached with scepticism as it could be viewed “as old as the advent of colonialism” (Sehoole, 2006, p. 1). The challenge with internationalisation is to find innovative and flexible approaches, which are sensitive to the contextual imperatives (see, for example, Cross, Mhlanga & Ojo, 2009).

1.2.4. Transformation programme

In 2006, Wits introduced the Oya scholarship programme implemented by the Student Diversity Office[1] which coincides directly with three transformation strategies; namely, demographic equity, academic excellence, and transformation of the institutional culture. Additionally, this national programme is in line with one of the university’s strategic priorities, that is “to graduate leaders who are influential and able to advance national transformation. In particular [to] build on our capacity to meet society’s skills needs in the areas of the sciences, engineering and advanced technology” (Wits, 2010a, p. 1).

The goal of the Oya scholarship programme (2007-2012) was to provide first generation, academically talented black South African women from socio-economically disadvantaged backgrounds with the necessary financial, academic, psychosocial support necessary to aid their adjustment and throughput in the notoriously difficult STEM fields (see Appendix 1 for a detailed outline of this programme). Several studies have found that students perceive a sense of academic and social support as a key factor in their transition to university (Chen, 1999). Thus, unlike most scholarships that only provide students with the financial aid necessary to support their studies, this scholarship programme adopted a holistic approach to human development, provided them with social and cultural capital, and treated the students as multi-dimensional, creatively

[1] To protect the identities of the participants, pseudonyms have been substituted for their real names, the scholarship programme and the office.

complex, ‘thinking and feeling’ human beings. The Student Diversity Office administered the Oya scholarship programme. This Office aims to assist Wits in developing strategic partnerships in order to “locate the University in the community as a meaningful and responsive entity [that could potentially make] a significant contribution to the advancement of our society” (Wits, 2010a, p. 10). These partnerships enabled the Office to implement several programmes with the aim of increasing the success rates of talented young people from disadvantaged communities by providing them with career and counselling advice and addressing academic under-preparedness and financial constraints. It was intended that this support would enable these students to not only graduate within the minimum time and supply high-level skills for the labour market, but also aid their transformation into graduates who are able to contribute to society in meaningful ways.

Thus, as detailed in Wits’s Teaching and Learning Plan, the notion of ‘graduateness’ has informed the programme philosophy which essentially aims to encourage students to become lifelong learners and use their subject specific knowledge and critical, reflective, and meta-thinking as well as their insights and agency to create innovations that continue to transform society and enrich its values. Otherwise stated:

> “graduateness at Wits, must mean more than an ability to pass our exams ... Our students must develop understanding of - and positive responses to - matters of social exclusion such as race, class, disability, gender, and sexual orientation, as well as to the irreducible diversity of human opinion and world view” (Wits, 2010b, pp. 5–6).

Regarding the throughput rate of the programme, during 2007 – 2012, 14 (70% of) students failed their first, second, third and/or fourth year of study. Of the twenty scholarship students, one failed her first year of study and her scholarship was subsequently terminated. 19 students obtained continued funding for the maximum of four years (plus one repeat year of study for students registered in the Faculty of Engineering and the Built Environment). Furthermore, five students were academically excluded and one student dropped out of university in her second year of study. It is

noteworthy that of these six students who did not complete their degree, five attended high schools in rural areas. As of 2012, 14 (70%) of students completed their undergraduate degrees (nine of which are registered in the Faculty of Science and five in the Faculty of Engineering and the Built Environment).

The current target set by Wits indicates that 70% of students should graduate in the minimum time for the given qualification plus two years (see Wits, 2004). The scholarship programme met this target, as 14 students (70% of the entire cohort) graduated within the required timeframe. This target is well above the national target of 30% for SET (Ministry of Education, 2001) as set by the Department of Education. Additionally, 12 students went on to do their postgraduate studies. However for those students registered in the Faculty of Engineering and the Built Environment it was necessary for four of them to complete their Honours degrees in order to qualify as engineers and one student will need to complete her Masters degree in order to qualify as an architect. 10 (53% of) students completed their Honours degrees, (seven of which are registered in the Faculty of Science and three in the Faculty of Engineering and the Built Environment). Two engineering students are completing their fourth and final year of study and four (21% of) students are completing their Masters degrees.

In line with the institution's pursuit of academic excellence, only the most academically talented women are handpicked for this prestigious scholarship programme. In doing so, this programme creates a discourse of elitism (in the name of transformation), which reproduces patterns of privilege within the institution (see, for example Botsis, Dominguez-Whitehead & Liccardo, 2013). In this study, however, I focus on the ways in which identity-making is taking place among this group of women by virtue of them occupying a paradoxical position and feeling a dual sense of belonging to and alienation from an elite and a marginal group simultaneously.

1.3. Chapter Organisation

By way of concluding this chapter, a brief synopsis of the remaining chapters contained in this thesis is provided.

Chapter 2: Theoretical Framework

Chapter two presents a framework for sketching the conceptual contours of identity and subjectivity from a narrative perspective and within a hermeneutic phenomenological approach. Following Andrews, Squire and Tamboukou (2008), I believe that stories provide an interpretive entry point to understanding the intersection between psychological and social realities. The theoretical foundation of this study is underpinned by the hermeneutics of a Ricoeurian notion of the narrative self, although I also examine the discursive notions of power and the social construction of the identity. In this chapter, I argue that the temporality of self is a narrative identity as the fragments of life become meaningful when we interpret them in relation to the developing plot of our life stories (Ricoeur, 1981; 1991).

Chapter 3: Literature Review

This chapter presents a relevant review of empirical studies on the life histories of black women scientists, women in education and the raced, gendered and classed construction of identities among adolescents more generally. Although the notion of academic identity is well represented in the sociology of higher education literature and the concept of 'science identity' is receiving increasing attention, I claim that there is a dearth of studies that highlight 'race' and class in the literature on gender and science. For instance, there is little published or unpublished research that examines the lives of black South African women scientists in post-apartheid South Africa. As these young women's identities are deeply and often painfully rooted in gendered and racialised structures of society, I provide a detailed discussion of the following barriers that young black women face in their pursuit of a STEM degree by examining the politics of belonging and knowledge

production at universities: university access, background knowledge and academic under-preparedness, curriculum materials and design, pedagogy, hostile environment, assessment, role models and pressure to conform to gender roles.

Chapter 4: Methodology

This study is situated in phenomenological hermeneutics and I make a case for applying a qualitative biographic narrative interpretive methodology in the study of women scientists' narrative and intersectional identities. This study also utilises aspects of visual methodology within narrative inquiry because it is assumed that time and space intersect and fuse in objects, which enables an object to 'hold' memories of symbolic significance and reveal strategies of meaning-making employed by a particular group of women. Thus visual objects were used to trigger memories and narratives (stories) of events during the interviews. I then present the research questions followed by the method of recruitment and a brief description of the participants' backgrounds and academic records. The interview data were collected through biographic narrative interviews where the life history and lived experiences of the particular group of women is explored (Wengraf, 2011). The biographic narrative interviews were divided into three subsessions. The first session was a non-interrupted narrative of the story of their life, which was followed by a second subsession in which the participants told me about how their 'objects' represented their past, their life as university students, and where they desire or hope to be in the future. The third subsession focused on questioning of "particular incident narratives" or 'PINS' (Wengraf, 2011) arising from events, experiences, generalisations and feelings that have been mentioned in the whole story of sub-session one and triggered by the objects in subsession two. Overall, the biographic narrative interviews lasted between one hour to four hours with each participant, totalling 45 interview hours. The data are analysed and interpreted in three phases and presented in chapters five, six, seven and eight. This chapter concludes with a discussion about issues relating to ethics and reflexivity.

Chapter 5: Narrative identity processing of failure; The temporal and spatial shifts that complicate who I am

This chapter is divided into two sections. Whereas the first section examines the narrative form within each case; the second section compares narrative forms across the four cases. The four case studies presented in the first section, comprise a particular structure. Each case begins with the biographical chronology of a participant's lived life, I then present a 'Life-story Diagram' which depicts the comparison between a 'lived life' and 'told story' (Wengraf, 2001) and lastly, I adapt Ricoeur's (1984, 1985, 1988) notion of 'emplotment' as well as Gergen and Gergen's (1986) criteria of 'a good narrative form' in order to examine how the diagram and told story summary has been structured according to the following four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events and (4) discordance, concordance, and narrative identity. In the second section, I compare the Life-story Diagrams and the discussion of narrative forms and then explain why the visual representation of one's told story is a useful device to analyse intricate narrative identities. Lastly, I propose four particular patterns of storytelling, namely a 'labyrinth storymaze', a 'simply-connected storymaze', a 'multiply-connected storymaze' and a 'weave storymaze'.

Chapter 6: (Re)constructing other selves; A dialectical tension between recognition and misrecognition of one-self by an-other

In this chapter, I explain how these women (co)construct them-selves as scientists through recognition from significant others and (de)construct them-selves as scientists through misrecogntion and failure. Furthermore, these women were able to traverse barriers and (re)construct other selves through homespaces. In other words, these women self-identified with science or *performed* their identity as a 'science person' which might have led them to develop a love for science and an 'internal' motivation to excel in science. Furthermore, these women's motivation to excel was reinforced by their parents' high expectations of academic achievement. Next, I discuss how misrecognition and failure ruptures and convolutes their sense of themselves. Lastly, these women (re)construct them-selves in homespaces that reside at the point of intersection between

recognition (self-construction) and misrecognition (self-deconstruction).

Chapter 7: The intersectional identities of black women scientists

This chapter is a continuation of chapter six as it examines how misrecogntion, failure and other barriers have influenced the (de)construction of their-selves as scientists. Particular attention is paid to the temporal flow of discursive themes that account for how the intersections of 'race', class and gender locations coalesce into a "matrix of oppression" (Collins, 2002) which positions young black women in science at a disadvantage compared to men and white women. Put differently, in this chapter I discuss the complex intersections of 'race', class, gender, language, and religion in relation to their past secondary schooling, present university or working life and projected futures.

Chapter 8: A narrative portrait of one participant, Alala Celukwazi.

Chapter eight portrays a narrative portrait of one participant, Alala Celukwazi. I present the structure of Alala's life narrative as temporally told in the interview which follows the primary structural and thematic foci of chapters five, six and seven, namely how she (co)constructs, (de)constructs and (re)constructs her-self as a 'clever creative learner' and a future architect with and against the (mis)recognition of significant others. I conclude this chapter with a discussion about the ways in which Alala (re)constructs other selves in everyday homespaces.

Chapter 9: Conclusion

Finally, chapter nine concludes with a summary of findings that address each research question. The limitations and recommendations for future research as well as the implications for findings are also presented.

CHAPTER 2:
THEORETICAL FRAMEWORK

2.1. Introduction

The focus of this study is on the experiences of black South African women scientists whose individual life histories tell the story of a society in transition and the reconstruction of dynamic social identities. I am interested in questions of personal and social change, particularly relating to this group of women who are paradoxically marginalised by society's power structures but also occupy positions of power in both the production of scientific knowledge and the functioning of society. Following Andrews, Squire and Tamboukou (2008), I believe that stories provide an interpretive entry point to understanding the intersection between psychological and social realities. Thus, this chapter presents a framework for sketching the conceptual contours of identity and subjectivity from a narrative perspective and within a hermeneutic phenomenological approach. In this study, the self is theorised as a psychosocial phenomenon narrated in the dialectical interplay between our dual positions as subjects that shape the world but, in turn, are shaped by the world (Andrews, Sclater, Squire & Treacher, 2004; Hall, 1996; Mishler, 1999; Wengraf, 2011). Further, the theoretical foundation of this study is underpinned by the hermeneutics of a Ricoeurian notion of the narrative self. Put differently, in this study I argue that the temporality of self is a narrative identity as the fragments of life become meaningful when we interpret them in relation to the developing plot of our life stories (Ricoeur, 1981; 1991).

2.2. Self-consciousness and recognition by another

A verb expresses the temporality of an action, an event or a state; similarly the self is action, a function of events and the temporal fluidity of mental states (Fay, 1996). Put differently, "the self is not a thing which undergoes various state changes, but instead just *is* various states of consciousness related in a certain manner" (Fay, 1996, p. 37 [original emphasis]). As the self is conscious of itself, and conscious of this self-awareness, it has

the potential to become other than or different from itself (Fay, 1996). Miller (2014) describes self-consciousness as "an awareness of self as an internal other" (p. 43). Through internalised speech, the self distances itself from itself, assesses and reflects on new information and chooses whether to alter or change aspects of its selfhood. "The self contains within itself an essential element of alienation: its own consciousness of (and therefore distance from) itself" (Fay, 1996, p. 36). Vygotsky argues that "[t]hinking and speech are the key to understanding the nature of human consciousness" (1987, p. 285 as cited in Miller, 2014, p. 9). The self is able to distance itself from itself and recollect life stories because of the process of internal socialisation or the inner social dialogue with oneself (Miller, 2014). Drawing on the work of Vygotsky (1987), Miller (2014) explains:

> "Signs or word meanings that are shared between persons provide the link between social structures or systems and consciousness because the roles we enact are embedded with meaning. But word meanings are also the vehicles by means of which we effect changes in ourselves and, hence are able to bring about changes in the social structures and systems in which we participate. Because we are able to reflect on our own actions, both before and after the execution, and because in the course of our inner conversations we can imagine alternatives, we can choose to step out of line and even persuade others to join us" (p. 43).

Cavarero (2014) suggests that the uniqueness of a "narratable self" is not constructed in isolation from other people, but rather exists in a constitutive relation with others. Speech allows us to communicate meaningfully with others; the self is not a monologue but a conversation (Crites, 1986). Our being is our self that is (re)created in relation to and in conversation with others, through space and time. Sampson (1989) asserts "the Derridian subject can never be set apart from the multiple others who are its very essence" (p. 16). In this conceptualisation, the self is thus entangled with and shaped by its relation to and recognition from significant others as they influence the definition, evaluation and regulation of one's self (Andersen & Chen, 2002). The self is not only (co)constructed contextually where one is subjected to culture, political forces and social institutions, but also interpersonally, through significant others and intrapersonally, by inner social dialogue. Echoing this view, Josselson (1994) states that "identity is at its core

psychosocial: self and other; inner and outer; being and doing; expression of self for, with, against, or despite; but certainly in response to others" (p. 82).

Self-consciousness is social because the self requires the other to be itself. "Others are essential for the self to become a self because only through others can a self develop the *capacities* necessary for it to be a self" (Fay, 1996, p. 41, [original emphasis]). Fay argues that "your being is necessarily tied up with my being: *the being of one's self and the being of an other are interrelated*" (1996, p. 42, [original emphasis]). In other words, your-self can only be conscious of itself through being conscious of an-other's awareness of you. One's identity is based on relations with others. We are social beings, thus it is counterintuitive to examine people's lives and life stories in isolation from their sociocultural and historical context. The polytropic self is the life of consciousness "distributed through a network of relationships over time ... like the air we breathe, our common *spiritus* ... the language we share in conversation" (Crites 1986, p. 155, [original emphasis]). In other words, the self is 'heteroglossic' and 'polyphonic' in that it coexists in dialogue and in conflict with different voices of characters from one's life narrative (Bakhtin, 1981; Hermans, 1996; Hermans & Kempen, 1993). Identities are thus understood as inherently social, relational, dialogical and (re)constructed in networks of relationships with others and language in time (Crites, 1986; Fay, 1996; Freeman, 1993; Mead 1934; Vygotsky 1978, 1986). The self could be viewed as "force fields which materialise in the self-reflexive acts of self-referring occasioned by interactions with others" (Fay, 1996, p. 43). Similarly, using quantum mechanics as an analogy, sub-atomic particles are essentially interdependent as they materialise through their interaction with each other. Fay (1996) compares the self to a probability field "which limits the range of possible responses but which 'collapses' into discrete feeling and action only when prompted by circumstance" (p. 36).

Recognition is critical in (re)creating who and what we become over time. Fay (1996) explains:

> "[S]elf-conscious beings characteristically want to be recognised as persons – that is as conscious entities which are centres of agency … they also want to be

> recognised as persons of a certain sort, to be thought of as having a particular identity and particular worth. A self-conscious being needs assurance both that it exists and that it is of value" (p. 43).

Human beings are not unitary, integral entities but rather relational selves that are culturally bound (Freeman, 1993). A person's ideas, perceptions, beliefs and attitudes are essentially social because their identity is acquired through culture and interactions with others. "[Y]our indebtedness to others is even greater than this: you acquired from them not merely the contents of your psyche but also the capacities distinctive of your selfhood" (Fay, 1996, p. 40). Caverero (2014) offers an account of recognition in that the 'narratable self' exists not only by being acknowledged by the other but also by acknowledging the other. In commenting on how Caverero (2014) has offered new insights to theories of recognition, Butler (2005) asserts that "no one can recognize another simply by virtue of special psychological or critical skills … there are norms that condition the possibility of recognition, it still matters that we feel more properly recognized by some people than we do by others" (p. 33). According to Cavarero (2014), the desire to hear one's life story by another is a "fundamental feature of every narratable self" and the unity of a life story can only be devised by another (Kottman, 2014, p. xiv).

2.3. Power and misrecognition

As recognition (re)constructs one's identity, Taylor (1994) proposes that nonrecognition or misrecognition could be a form of oppression creating egregious situations. "If the people or society around them mirror back to them a confining or demeaning or contemptible picture of themselves [thus] imprisoning someone in a false, distorted, and reduced mode of being" (p. 56). Similarly, Johnson, Brown, Carlone, and Cuevas (2011) conceptualise the notion of "disrupted recognition" or "rituals of disregard" (Hooks, 2000) in that 'women of colour' in science view the recognition of their 'race' and gender as stumbling blocks to the recognition of their science identities. Put differently, society's power structures play a central role in maintaining and reproducing categories of social divisions by constructing boundaries that determine the standards of 'normality' and

access to economic, political, social, and cultural capital (Yuval-Davis, 2006; Bourdieu, 1993).

Therefore particular attention must be paid to the discourses of power (Tamboukou, 2003; 2006; 2008) that position the women in this study as simultaneously powerful (as scientists, as graduates, possibly as members of a new political elite) and marginalised (as black women from relatively poor socio-economic backgrounds). Although these young women are able to cross ideological barriers and enter institutional spaces that have historically been dominated by white men and specific privileged forms of knowledge-production processes, this may not result in the transformation of this social world but simply entail assimilation or the reproduction of dominant ways of being in the world.

Selves do not exist in their own private world, rather "each self is a self only because it is part of a community of other selves that builds up a public, social world which uses a common system of symbols … The self is an essentially social entity" (Fay, 1996, p. 47). Accordingly, the self could be viewed as a psychosocial phenomenon narrated in the dialectical interplay between our dual positions as subjects that shape the world but in turn are shaped by the world (Andrews et al. 2004; Hall, 1996; Mishler, 1999; Wengraf, 2011). In this study, the self is theorised as a discursive and embodied construction. "[W]hile there are discursively produced subjectivities, there is also an embodied sense of self continuous through the history of a particular life" (Clegg, 2006, p. 318). Before exploring the notion of embodied storied identities, I will first provide a brief discussion on the ways in which subjectivities are constructed through discursive practices.

Brah poses the question, "How do the 'symbolic order' and the social order articulate in the formation of the subject? ... How is the link between social and psychic reality to be theorized?" (cited in Hall, 1996, p. 18). In response, Hall (1996) claims that an answer to this question could be found in the (re)formation of identity which always exists in dialogue with society's power structures. As discursive practices construct and present subject positions to people, identity could be viewed as "the point of suture [or] points of temporary attachment to ... subject positions" (Hall, 1996, p. 19). Fragmented and diverse

subjectivities are in a constant process of change because they are discursively produced "across different, often intersecting and antagonistic, discoursed, practices and positions" (Hall, 1996, p. 17). Similarly, Rose (2000) proposes:

> "[Human beings] are not the unified subjects of some coherent regime of domination that produces persons in the form of which it dreams. On the contrary, they live their lives in a constant movement across different practices that address them in different ways. Within these different practices, persons are addressed as different sorts of human being, presupposed to be different sorts of human being, acted upon as if they were different sorts of human being" (p. 321).

Subjectivities are not only constructed through shared characteristics with others but also through the process of self-differentiation. Drawing on the work of Derrida (1981), and Butler (2011), Hall (1996) argues that the formation of identity is a process of self-differentiation as "it is only through the relation to the Other … what it is not, to precisely what it lacks, to what has been called constitutive outside that the 'positive' meaning of any term – and thus its 'identity' – can be constructed" (p. 17). Therefore, the dual aspects of self and other enable us to approach the question, 'What am I?' through the interplay of differences and similarities. On the one hand, the recognition of similarities or shared characteristics with other academically talented individuals, for instance, establishes the foundation for solidarity and may create a sense of belonging (Hall, 1996). Simultaneously, on the other hand, identity is also constructed through difference provided by others. As the self is always ambivalent because of otherness, the process of identification is never completed but is always in the process of articulation:

> "Like all signifying practices, it is subject to the 'play' of *differance*. It obeys the logic of more-than-one. And since as a process it operates across difference, it entails discursive work, the binding and marking of symbolic boundaries, the production of 'frontier-effects'. It requires what is left outside, its constitutive outside, to consolidate the process" (Hall, 1996, p. 17, [original emphasis]).

Shotter and Gergen (1989) argue that discursive psychologists are suspicious of the claim that narratives are able to integrate human lives. Instead, they argue that narrative

identities are performed in specific contexts and in relation to discursive conventions. Selves are thus, multiple, fragmented, often contradictory and "saturated" in that the existential self struggles in its quest to create meaning (Gergen, 1991). Following Hermans (1996), Gregg (2006), and Raggatt (2006b), in this research study narrative identity is conceptualised as "a multiplicity of stories evolving in a de-centered psychological space" (McAdams, 2011, p. 102). The aim of this study is to examine the participants' meaning-making strategies as they seek to make sense of their autobiographical past and present concerns as they transition into young adulthood. In other words, McAdams (2011b) writes:

> "People still seek meaning in their lives - a meaning that transcends any particular social performance or situation. Narrative identity need not be *the* grand and totalizing narrative that makes all things make sense for all time in any given person's life. Rather, people seek some semblance of unity and purpose as they move into and through adulthood. They aim to make some narrative sense of their life as a whole. These efforts, as limited and fallible as they may be, are the stuff out of which narrative identity is made" (p. 103, [original emphasis]).

2.4. Self-emplotment in a life narrative

The activity of life through time is enacted in our psychosocial world which provides us with a lifetime of existential and material 'data' that we embody by reflecting on memories, and intentions during moments in which the questions, *'What am I doing?'* and '*Why am I doing this?*' compel us to make sense of and meaning from "the primal stew of data which is our daily experience. There is a kind of arranging and telling and choosing of detail - of narration" (Rose, 1983, p 6). Accordingly, the "'first order' activity of lives as they are lived is mirrored in 'second order' activities of reflection, representation, accounting and storytelling" (Andrews et al., 2004, p. 7). The question, *What am I doing?'* is then answered in the form a story about '*why am I doing this?'* Our answerability takes the form of narratives (stories) which could be described as "discourses with a clear sequential order that connect events in a meaningful way for a definite audience and thus offer insights about the world and/or people's experiences of

it" (Hinchman & Hinchman, 1997, p. xvi).

Initial theories and analyses of how stories emplot human lives in time emerged during the 1980s and early 1990s (see, for example, Bruner, 1986; 1990; Gregg, 1991; 1995; 1998; MacIntyre, 1984; McAdams, 1985; 1996; Polkinghorne, 1988; Ricoeur, 1973; 1980; 1981; 1984; 1988a; 1988b; 1991a; 1991b; 1995; Rosewald & Ochberg, 1992; Sarbin, 1986; Spence, 1982). Narrative is conventionally understood as a temporal and causal sequence of events or experiences that are organized into a whole, and where each event is evaluated as meaningful for a particular audience in relation to the whole (Berger, 1997; Reisman, 1993; Tamboukou, 2013). "The triangle of sequence/meaning/representation creates here a conceptual framework within narrative research is being placed" (Tamboukou, 2013, p. 32). Temporality is what discerns narrative from other ways of meaningfully articulating identity. "[Narrative is] meaningful to the extent that it portrays the features of temporal experience" (Ricoeur, 1984, p. 3). Put simply, narrative is essentially viewed as a story with a beginning, a middle and an end in which events or experiences, that would otherwise be random and disconnected, are rearranged in multifarious directions moving across time, and resulting in a change of meaning (Chatman, 1978; Franzosi, 1998; Labov, 1972; Leitch, 1986; Martin, 1986).

Stories account for the temporal vicissitudes of human intentionality, which is the essence of narrative (Bruner, 1986; McAdams, 2001; Ricoeur, 1984). Commenting on this line of thinking, Ricoeur (1984) conceptualises intentionality as "the motivating force of the mind that animates meaning [and] If meaning comes from movement (the unfolding of words in sentences and sentences in discourse – no word has meaning in isolation), then meaning is produced and understood within time" (Simms, 2003, p. 83). In other words, as narrative depends on time and memory, plots order and connect recalled events in such a way as to establish a temporal connection between each event and (re)construct a meaningful self that is bound up with intention and purpose.

Following Tamboukou, instead of conceptualising narrative as the sequentialisation of

events, what if we thought about narrative as events and as a process? As Tamboukou explains, “[a] process as an organising plane [that] derives from a conception of time as simultaneity and duration, where past, present and future co-exist in the ‘now’ of narratives” (2013, p. 2). Narratives are productive in that they are always in the process of action and change. If we were to adopt this approach, narrative would thus be taken as “events that express *moments of being* crystallized into narrative forms” (Tamboukou, 2013 p. 2 [original emphasis]). People’s actions are compressed into particular moments revealing a “who” (Kristeva, 2001 as cited Tamboukou, 2013) that is essentially unpredictable. “In doing so, stories ultimately reconfigure the sphere of politics as an open plane of horizontal connections, wherein the past can be remembered and the future can be reimagined” (Tamboukou, 2013, p. 2). It is within these moments “wherein new beginnings erupt, new subjectivities emerge - albeit as narrative personae - and freedom can once more be remembered and re-imagined” (Tamboukou, 2013, p. 5, [original emphasis]). In writing about women’s lives, Tamboukou (2011) has theorised narratives as “portraits of moments” in relation to ‘writing from within’ that is concerned with narrative agency and closure as opposed to ‘emplotment’. However, in contrast to this view, Ricoeur (1981) rejects the “importance of interrogating the *moment* of speech and action because it obscures the ‘true constitution of time’ “ (p. 166 cited in Tamboukou 2013, p. 3). The focus of this study is on emplotment and how temporal and spatial shifts complicate black womens’ narrative identities as well as how their agency is constrained by their location within the “matrix of oppression" (Collins, 2002).

Whereas the plot of a story connects one event to another by linking a prior occurrence to a subsequent event; a narrative accounts for how one event is followed by another event under a particular set of circumstances (Polkinghorne, 1995). However, Ricoeur (1984) cautions that the “causal link between two specific events in a narrative is not the same as proposing a causal law such that the first event is both necessary and sufficient for the second event across a wide range of different contexts” (p. 75). Constructing a life story or ‘fictive history’ requires imagination when organising and interpreting unrelated experiential accounts (which are based on fallible memory) that follow the principles of ‘emplotment’ in which “sequences of events with beginnings, middles and ends, and

generate intelligibility by organising past, present and future in a coherent way" (Ricoeur, 1984, 1985, 1988 as cited in Andrews 2004, et al. p. 7).

Ricoeur defines subjectivity in terms of narrative identity which is "neither an incoherent series of events nor an immutable substantiality, impervious to evolution" (Ricoeur, 1991b, p. 32). The questions, '*What* am I and *who* am I'? are to be understood in the interplay of self-sameness and otherness. As selves have the potential to become other than 'what' they are; self-sameness or the continuous sense of selfhood through time creates a sense of 'who' one is. Narrative identity allows for a complex notion of subjectivity as "using narrative the 'self' can be located as a psychosocial phenomenon, and subjectivities seen as discursively constructed yet still as active and effective" (Andrews, et al., 2004, p. 1). Similarly, McAdams (2011b) argues "any person's particular narrative identity is a co-authored, psychosocial construction, a joint product of the person him/herself and the culture wherein the person acts, strives, and narrates" (p. 112).

Ricoeur (1991a) claims that the notion of narrative identity, which is bound up in time, integrates both historical and fictional narratives as lives become more readable or intelligible when people use narrative models or plots from history and fiction to tell life stories. As self-knowledge is an interpretation, narrative mediates the interpretation of self by using history and fiction thus "making the life story a fictive history or … a historical fiction" (Ricoeur, 1991a, p. 73). Accordingly, narrative identity is presented as "a solution to the aporias concerning personal identity" (Ricoeur, 1991a, p. 76) because it offers a way out of sameness and otherness through the narrative plot. The question of personal identity becomes obfuscated if one does not distinguish between two major uses of the term identity, that is 'identity a sameness' (or idem) and 'identity as self' (or ipse), the notion of the self, of ipseity is not sameness (Ricoeur, 1991a). Ricoeur differentiates between four senses of 'identity as sameness' (Ricoeur, 1991a). Numerical identity, according to Ricoeur, is in opposition to plurality:

> "There is the sense of numerical identity where we say that two occurrences of one thing designated by an invariable name do not constitute two different things

> but one and the same thing. Identity here means uniqueness and its opposite would be plurality - not one, but two or several" (1991a, p.42).

Whereas the first sense of identity as sameness is the notion of "identification as re-identification of the same" the second sense refers to extreme resemblance or its opposite would be difference (Ricoeur, 1991a). Extreme resemblance and difference is an indirect criterion of the first sense when "re-identification of the same is the object of doubt and argument" (Ricoeur, 1991a, p. 74). This suggests that the criterion of similarity is weak because of the distance that is created over time. Thus "continuity in the development of being" could be viewed as another criterion of identity (Ricoeur, 1991a). Discontinuity, which might be thought of as the opposite of identity, is the third sense of identity as sameness (Ricoeur, 1991a). The fourth sense is "permanence over time" which according to Ricoeur causes problems to ipseity or the self because there is a tendency to attribute substance or "some immutable substrate" to this permanence (Ricoeur, 1991a). But as Ricoeur explains:

> "the opposite of numerical identity is plurality whereas the opposite of identity-as-permanence is diversity. The reason for this discontinuity in the determination of what is identical is that *identity-as-uniqueness does not thematically imply time* as is the case with identity-as-permanence" (1991a, pp. 74-75, [emphasis added]).

Importantly, it is the notion of temporality that distinguishes a narrative identity from a discourse-based approach to the construction of identity. The point or zone in which the question of ipseity and sameness overlap, is now examined. Idem-identity contains elements of self and other whereas the interplay between the same and other is ipse-identity. The dual aspects of self and other in idem-identity enable a person to approach the question, 'What am I?' through the interplay of differences and similarities. This intersection occurs when one poses the question of 'who' in the domain of action, "Let us call ascription the assignation of an agent to an action" (Ricoeur, 1991a, p. 75). Thus the action belongs to the agent or the self who did it. Furthermore, onto this act "is grafted the act of imputation which takes on an explicitly moral signification (because) all grammatical persons are subject to ascription" (Ricoeur, 1991a, p. 75).

Ricoeur (1991a) explains that the fourth sense, ‘permanence over time’ is the point at which ipseity intersects with sameness, “what sort of permanence belongs to a self in light of ascription … this self constancy … seems to be to the permanence over time of the idem, it is indeed a question of two meanings which overlap without being identical” (p. 75). This ‘self constancy’ offers a way out of sameness and otherness because the narrative plot facilitates the mediation of permanence and change, which creates a model of “discordant concordance” (Ricoeur, 1991b, p. 32) upon which narrative identity may be constructed. Ricoeur (1988) remarks:

> “Self-sameness, ‘self-constancy’ can escape the dilemma of Same and Other to the extent that its identity rests on a temporal structure that conforms to the model of dynamic identity arising from the poetic composition of a narrative text. The self characterised by self-sameness may then be said to be refigured by the reflective application of such narrative configurations. Unlike the abstract identity of the Same, this narrative identity, constitutive of self constancy, can include change, mutuality, within the cohesions of one lifetime” (p. 246).

Self-constancy or ipseity is thus a narrative identity as “To answer the question ‘Who?’ ... is to tell the story of a life. The story told tells about the action of the ‘who’. *And the identity of this ‘who’ therefore itself must be narrative identity*” (Ricoeur, 1988, p. 246, [original emphasis]). Narrative mediates the interpretation of ‘who I am’ in the story of a life. This mediation takes the form of ‘description, narration and prescription’, which is a formula for human action (Ricoeur, 1992). It is thus narrative interpretation that provides “ ‘the figure-able’ character of the individual which has for its result that the self, narratively interpreted, is itself a figured self – a self which figures itself as this or that” (Ricoeur, 1991a, p. 80).

In figuring herself ‘as this or that’, a person is influenced by society’s notion of ‘the good life’ and the narrator situates herself in a moral identity position. In other words, Taylor (1989) argues, “to make minimal sense of our lives … to have an identity, we need an orientation to the good [and] we see that this sense of the good has to be woven into my

understanding of my life as an unfolding story" (p. 47). I claim that self-understanding creates existential knowledge which influences the practices in science and the (re)production of scientific knowledge. New cultural productions in science are created by the participants in this study who redefine what it means for them to be a black South African woman in science. Ricoeur (1984) views the hermeneutic circle as a spiral, "each time the circle is turned, the same point is passed *at a higher level*, and so the grand hermeneutical project of reaching human understanding through self understanding attains even greater heights" (Simms, 2003 p. 80, [original emphasis]). Thus new meanings in science could act as a force that turn the hermeneutical circle time and time again, taking knowledge to new heights.

There is relationship between time, narrative, memory, fiction and imagination because of the reciprocal relationship between life and narrative. As moments pass, so do the stories we tell about ourselves, there is a "continual mediation of past lives by present concerns" (Fay, 1996, p. 189). People mediate their past lives through 'recollection' which refers to the present act of gathering elements from the past that have been dispersed or lost. "[R]ecollection refers to the way we speak about history, as the trail to past events or 'past presents' … culminated in now and as the act of writing, the act of gathering them together, selectively and imaginatively in a followable story" (Freeman, 1993, p. 47). Furthermore, the stories about our past change with each present concern and projected interest in the future. The unknowable future, which is unavailable for recollection, is the lure of action and recollection but it is in the present that "'I' who recollects retrieves its own self, the present is always leaning into that vast unknown that we call the future, projecting itself into the future and that project in which it is engaged determines the way it is present" (Crites, 1986, p. 163). One way to consider the future is from the perspective of an active agent, existing in the present but in motion, plotting and projecting, pushing herself forward into the unknown where she is uncertain of the outcome (Crites, 1986).

From this perspective, the future appears as the universal solvent, in which everything that has been formed in the past (including the self-possessed self) must quickly or slowly

dissolve. “[S]o all new things come into existence out of the future, become present and pass over into the past where they achieve clear enough definition to be re-collected: understood” (Crites, 1986, p. 167). We thus participate in an agentic process of ‘emplotment’ by keeping the past, present and possible future together “in an endless [storied] dialectic [of] ‘how my life has always been and should remain’ and ‘how things might have been or might still be’” (Bruner, 2002 p. 14). Thus, social agents actively reinvent themselves in an attempt to “dominate the flow of events by gathering them together in the forward-backward grasp of the narrative act” (Fay, 1996. p. 62). In doing so, Kiekergaard stated that “we understand backwards, but we live forward” (cited in Crites, 1986, p. 165). Put differently, McAdams (2011b) explains that a narrative identity is constructed through an evolving story about past events, present concerns and an anticipated future in order to make meaning from who and why I have come to be who I am and where I am going. Furthermore, the self-defining evolving story draws on cultural and ideological norms and themes from everyday life (McAdams, 2011b).

Ricoeur (1991b) draws on a paradox as a starting point to argue for the relation between action or life and narrative; “stories are recounted and not lived; life is lived and not recounted”. In Aristotle’s ‘Poetics’ (see, for example Halliwell, 1987), the notion of emplotment refers both to fable and plot in which a plot signifies the process of integrating various elements that is completed by the living person or receiver of the story. Following Aristotle, Ricoeur posits that emplotment or the “synthesis of heterogenous elements” has three particular features. Firstly, the plot creates a unified story from the transformation of multiple events or incidences. Secondly, the plot organises heterogenous factors in such a way that particular people or characters, circumstances, interactions, consequences and contingencies make up a single story that is both concordant and discordant with the “development goal” or “evaluative endpoint” of a story (Gergen & Gergen, 1986). The plot facilitates the mediation of permanence and change which creates a “model of discordant concordance” upon which narrative identity or the character of a person may be constructed. Drawing of the work of Ricoeur (1984) Wood (2002) explains that “[t]he narrative identity of this character will only be known correlative to the discordant concordance of the story itself” (pp. 195). Thirdly, the

temporality of emplotment is either a succession that is open to a series of incidents or a configuration that has been created from the “integration, culmination and closure” (p. 22) of a story. Ricoeur writes, “If we may speak of the temporal identity of a story, it must be characterised as something that endures and remains across that which passes and flows away” (p. 22). The act of configuration should create intelligibility about the connections between ethics, joyfullness and misfortune. “It is due to the familiarly we have with the type of plot received from our culture that we learn to relate virtues, or rather forms of excellence, with happiness or unhappiness” (Ricoeur, 1991b, p. 23).

In other words, Ricoeur (1984; 1991) conceptualises a plot as the mimesis of action but goes on to separate it into three categories: *prefiguration* as “preliminary competence” (p. 54) understanding human action; *configuration* or emplotment “that make[s] a single story of multiple incidents or ... of transforming the manifold happenings into a story” (Ricoeur, 1991, p. 426) and; *refiguration* which results from the “intersection of the world of the text and the world of the hearer or reader” (Ricoeur, 1984, p. 71). Prefiguration or “preliminary competence” (Ricouer, 1984. p. 54) refers to the ability to follow and understand a story. Ricoeur (1984) writes, “to imitate and represent action is first to preunderstand what human acting is, in its semantic, its symbolic system, its temporality. Upon this preunderstanding, common to both poets and their readers, emplotment is constructed” (p. 64). Following McAdams (2011b), I would add that narrative identity is a particularly compelling psychosocial construction because it “lends a moral legitimacy to a life, linking the person’s own story up with the master moral narratives that preside within a given culture” (p. 111). The next section focuses on the formation of culture and tradition through ‘enstoried lives’ and the ways in which stories simultaneously live in the ‘world or the reader’ through action but also ‘the world of the text’ through imagination (Fay, 1996; Ricoeur, 1984).

2.5. Personal histories and cultural memory

Over time, individual memories extend into a web of meanings that bind the material/symbolic, social/personal, and historical/psychical. This network of

interconnections coalesces in individual life narratives (Kuhn, 2002). The intertwining of personal and public histories that form cultural memory creates the terrain of people's "historically effected consciousness" (Gadamer, 1982, p. xv). Stories are thus to be understood through their "cultural locus" (Denzin, 1989, p. 73). Narrative interpretation is pivotal in order to understand human action because in our lives we not only live our narratives, but we also understand our lives, selves and places in the world in terms of narratives. The ongoing practice of storytelling is narratively shaped by contingency and creativity of meaning-making, "stories are thus not just about practices, but of them" (Fay, 1996, p. 193). Our lives feed into stories and stories feed into our lives continually changing our interpretation of self and the stories we tell of our psychosocial world:

> "Stories are lived because human activity is inherently narratival in character and form: in acting we knit the past and future together. But stories are also told in that with hindsight we can appreciate narrative patterns, which we could not appreciate at the time of acting. We tell stories in acting and we continue to tell stories afterwards about the actions we have performed. Our lives are enstoried and our stories are enlived" (Fay, 1996, p. 197).

Ricoeur (1991b) argues that stories are not only recounted but "also lived in the mode of imagination" (p. 27). The act of reading connects what Ricoeur calls the 'world of the text' to the 'world of the reader' resulting in the reconfiguration of one's experience. This act or play of "sedimentation and innovation" (Ricoeur, 1991b) in different historical contexts, unleashes endless possibilities of interpreting these worlds and ourselves in new dynamic ways. Ricoeur (1991b) posits that hermeneutics or the art of interpretation lies in between the 'internal configuration of a work and the external refiguration of life' thus emplotment is not only the work of the text but also the work of the reader. The 'world of the text' projects a new world of possible experience, "a *proposed world* that I could inhabit and wherein I could project one of my ownmost possibilities" (Ricoeur, 1981, p. 142, [original emphasis]).

The appropriation of a work through the act of reading unfolds the horizon of the proposed world of experience in imagination to my own action; therefore, I, at once

belong to both worlds or horizons (Ricoeur, 1991b). This understanding of a text could be viewed as the "fusion of horizons" (Gadamer, 1982, p.xxxi). The struggle between "sedimentation and innovation" that constitutes tradition can thus be applied to our self-understanding (Ricoeur, 1991b). We are similar to characters in narrative fictions because they also act under earthly conditions, which "is not to be understood as a planet but rather as a mythic name of our being-in-the-world. Why is this so? Because *fictions are imitations … of actions* (and interactions)" (Ricoeur, 1991a, pp. 78-79, [emphasis added]).

Drawing on the thoughts of Ricoeur, Bradbury and Miller (2010) propose that a narrative text constitute human action and could be a framework for meaning in which we mediate self-understanding through distanciation, explanation and appropriation: "[T]his dialectic of distanciation and appropriation can be applied in the reading of texts [but also] we can treat our lives, ourselves, the human life-world of action as a kind of text: read them, interpret them, appropriate their meanings across a distance" (p. 694). Ricouer (1981) writes:

> "[W]hat I appropriate is a proposed world. The latter is not *behind* the text, as a hidden intention would be, but *in front of* it, as that which the work unfolds, discovers, reveals. Henceforth, to understand is *to understand oneself in front of the text.* It is not a question of imposing upon the text our finite capacity of understanding, but of exposing ourselves to the text and receiving from it enlarged self, which would be the proposed existence corresponding in the most suitable way to the world proposed" (p. 143, [original emphasis]).

Ricoeur substantiates this claim by arguing that just as the meaning of a text can be detached from its author's intention resulting in its own consequences, the reference of a text is independent of its original context. The distance between 'world of the text' and the 'world of the reader' is overcome when the reader makes what was unfamiliar about the text familiar or by appropriating the meaning of the text (Ricoeur, 1981). Ricoeur (1981) explains that the meaning of human actions and social phenomena could be construed in numerous ways due to the fact that "language is metaphorical and because

the double meaning of metaphorical language requires an art of deciphering which tends to unfold the several layers of meaning" (p. 211).

Tradition could be viewed as a text that provides a critique of ideology at work in tradition and reveal "self-understanding by means of understanding others" (Ricoeur, 2005, p. 16). I claim that the dominant forms of "cultural capital" (Bourdieu, 1986) that serve to exclude people, are forms of prejudices or 'fore-meanings' (Gadamer, 1982) inherited from tradition. Gadamer (1982) proposes that tradition serves as the terrain for understanding and provides a 'horizon' or larger context of meaning from which we may view the world. Through tradition, we inherit prejudices or "fore-meanings" (Gadamer, 1982) that constitute our being and informs understanding (Gadamer, 1982). "Prejudices are not necessarily unjustified and erroneous, so that they inevitably distort truth. In fact, historicity of our existence entails that prejudices, in the literal sense of the word, constitute the initial directedness of our whole ability to experience" (Gadamer, 1982).

Gadamer (1982) insists that prejudices, which are open to change, should be continually subjected to critical examination, "True prejudices must still finally be justified by rational knowledge" (p. 242). Thus, instead of disregarding our prejudices as biases, we should rather focus on "becom[ing] conscious of the biases informing our inquiry, appropriate the tradition to which we belong, and apply consciously fore-understandings to the historical realities confronting the interpreter" (Shalin, 2010, p. 11). Accordingly, we continually participate in producing, determining, and creating new ways of belonging to tradition through the play of "sedimentation and innovation" (Ricoeur, 1991b). "Tradition is not simply a precondition into which we come, but we produce it ourselves, inasmuch as we understand, participate in the evolution of tradition and hence further determine ourselves" (Gadamer, 1982, p. 261).

Gadamer (1982) views understanding as the "fusion of horizons" between past and present, self and other. This fusion of 'horizons' creates a new context of meaning. The process of understanding involves a dialogue between oneself and the other. There is always an element of distance between self and other, past and present, oneself, and

tradition. ‘True’ education must allow both for new students to enter existing traditions but also to challenge them and create new trajectories of knowledge or ways of doing things. It could be postulated that existing patterns of power and privilege in education are reproduced through the ‘prejudices’ or ‘fore-meanings’ (Gadamer, 1982), which are sedimented and fossilized (Vygotsky, 1978) in traditions of knowledge and in pedagogical and other institutional practices (see, for example, Liccardo & Bradbury, 2014). Bauman’s (2013) ideas about ‘liquid modernity’ notwithstanding, the power dynamics of existing knowledge systems, particularly in the sciences, means that higher education is often in the business of what Essed and Goldberg (2002) call “cultural cloning”. According to Essed and Goldberg (2002), ‘cultural cloning’ is a “systemic reproduction of sameness [that is] deeply engrained in the organization of contemporary culture, in social life generally, and in the racial, gendered and class structures of society, in particular” (p. 1067). I will now discuss the racialised patriarchal tradition that exists within STEM fields.

Feminist critiques of science have challenged the foundations of science in numerous ways (see, for example, Keller, 1977; 1983; 1987a; 1987b; 1987c; Keller & Longino; 1996; Gilbert, 2001; Haraway, 1988; 1989; 2000; 2013; Harding, 1986; 1987; 1989; 1996; 2003; Longino, 1989; 1990). These critical theorists believe, along with other researchers, that scientific enquiry is masculine in its structure, epistemology and methodology (Eisenhart & Finkel, 1998; Harding, 1991; Noble, 2013; Scheibinger, 1989; Seymour & Hewitt, 1997; Tuana, 1993; Fowler & Wilson, 2004; Heynen, 2012; Spaeth & Kosmala, 2012). Many have also linked scientific enquiry to whiteness (Campbell, Denes, & Morrison, 2000; Harding, 1993, 1998; Seymour & Hewitt, 1997). Furthermore scientific culture is clouded by an ideology of meritocracy (Eisenhart & Finkel, 1998; Johnson, 2001; Seymour & Hewitt, 1997; Traweek, 1988).

It is noteworthy that some science disciplines are more masculine than others. Saraga and Griffiths (1981) argue that the two particular tasks that are most valued in a male-dominated society, namely improving economic production and developing weapons, have masculinised the sciences that are most strongly identified with these tasks. With the

rise of the knowledge economy and the increasing threat of ‘bioterrorism’ (the release of biological agents with the intention to cause illness or death), it is clear that science continues to be used to further political agendas because the kinds of questions scientists ask and how they interpret results is swayed by political and social power (Clark Blickenstaff, 2005). The study of cultural production or the ‘‘meanings developed by groups in their everyday activities’’ (Eisenhart & Finkel, 1998, p. 44) is critical in understanding the development of identity because it explains how particular groups, in their everyday practice of counter meaning-making, may subvert sociohistorical legacies. These young women in this research study are renegotiating the culture of science by their personal reflections on what it means to be a black woman scientist in South Africa. Commenting on this line of thinking, Hughes (2001) explains that, “dominant discourses of science as abstract and inflexible are open to reformulation and reinterpretation, offering possibilities for widening the range of scientist subjectivities available and creating new identity positions for those often excluded from science” (pp. 278–9).

As science is based upon positivist objective rationality from the enlightenment period, it sets up binary opposites that support the masculinity (and whiteness) of science. Feminist theory (and critical race theory) is concerned with deconstructing the hierarchical binary oppositions that underpin Western culture (Barret & Phillips, 1992). Phallocentric patriarchies and dualistic traditions persist, which privilege the masculine and follow the logics of “domination of women, people of colour, nature, workers, animals - in short, domination of all constituted as others, whose task is to mirror the self” (Haraway, 1991, p. 177). Haraway (1991) notes, “[t]o be One is to be autonomous, to be powerful, to be God … Yet to be other is to be multiple, without clear boundary, frayed, insubstantial. One is too few, but two are too many” (p. 177).

In a radicalised patriarchy the difference between a set of dualities is constructed as binary opposites: objective versus subjective, rational versus emotional, culture versus nature, whiteness versus blackness, mind versus body, subject versus object, self versus other, and male versus female. The hierarchal system of false polarities is created so the positive terms, which dominate the binary, are linked to one particular sex; thus, man (the

‘One’) is valued over woman (its negative ‘other’). Males are situated in privileged positions of domination in a patriarchal social system and scientific culture as they occupy the space of objectivity, reason, culture, whiteness, subject, self, and sameness whereas women are set aside to occupy the space of subjectivity, emotion, nature, blackness, body, object, other, and difference. It has been argued that ‘noble tasks’ are monopolised by “star architects” (Heynen, 2012), who have traditionally been gendered (white) males, through their cultural capital; thus they form part of the “State Nobility” (Bourdieu, 1998). Echoing this view, Cixous (1981, p. 44) contends that if we are to transform culture we need to destabilise the binary opposition that is founded in the man/woman couple:

> “In fact, in every theory of culture, every theory of society, the whole conglomeration of symbolic systems - everything, that is, that’s spoken, everything that’s organised as discourse, art, religion, the family, language … it is all ordered around the hierarchical oppositions that come back to the man/woman opposition, an opposition that can only be sustained by means of a difference posed by cultural discourse as ‘natural’”.

Furthermore, Biko’s (1977) Black Consciousness is a call to destabilise and break free from the shackles of a colonised mind and achieve “epistemic de-linking” or a “de-colonial epistemic shift” which “foreground[s] other epistemologies, other principles of knowledge and understanding and, consequently, other economy, other politics, other ethics” (Mignolo, 2007, p. 453). I argue that the notion of the cyborg, a “cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction” (Haraway, 1991, p. 149) is situated in this ‘third space’ as it offers a way out of the dualistic traditions that have created binary oppositions. Kristeva (1979) (as cited in Moi, 1988, p. 6) recommends that feminist critique should be situated in a “third space: that which deconstructs [and denaturalises] all identity, all binary oppositions, all phallocentric positions” and reveal the mechanisms of oppression in ideologies that are produced by phallocentric patriarchies. The aim is not to reverse or synthesise the binary oppositions, as this would maintain a hierarchal structure but rather to collapse them or find a way to accentuate their coexistence. Haraway (1991) writes:

> "Cyborg politics is the *struggle for language* and the struggle against perfect communication, against the one code that translates all meaning perfectly, the central dogma of phallogocentrism ... Cyborg writing is about the power to survive, not on the basis of original innocence, but on the basis of seizing the tools to mark the world that marked them as other. The tools are often stories, retold stories, versions that reverse and displace the hierarchical dualisms of naturalized identities. In retelling origin stories, cyborg authors subvert the central myths of origin of Western culture" (p.175, [emphasis added]).

Narratives are not only implicated in and drawn from the social world but may also be used as tools to "reverse and displace the hierarchical dualisms of naturalized identities" (Haraway, 1991, p. 175). When narratives are used to assemble varied possibilities of meaning into fixed dichotomies it creates binaries, which reduce the "potential of difference into polar opposites" (Rutherford, 1990. p. 21). Following Rutherford's (1990) insight into binarism, he writes:

> "it operates in the same way as splitting and projection: the centre expels its anxieties, contradictions and irrationalities onto the subordinate term, filling it with the antithesis of its own identity; the Other, in its very alienness, simply mirrors and represents what is deeply familiar to the centre, but projected outside of itself" (p. 22).

When identities that attempt to "break the logic of the otherness of binarism" (Rutherford's 1990, p. 22) are produced on the margins, they are unable to fully articulate their own and others' experiences. As a result, language becomes a site of struggle because political ideologies attempt to protect the status of meaning from new identities that threaten to deconstruct "those forms of knowledge that constitute the subjectivities, discourses and institutions of the dominant, hegemonic [and phallocentric] formations" (Rutherford, 1990, p. 22). Williams (1989) delineates this "struggle for a voice as being at the very edge of semantic availability" (as cited in Rutherford, 1990, p. 22). The cyborg may therefore utilise existing narratives in new ways to destroy naturalised boundaries, subvert phallocentric patriarchies, and create new ways of belonging to tradition. The

narrative construction of cyborg identity recognises the uniqueness of individual subjects, their intimacy with boundaries, and relationality with others, and the inseparability of technology as both a cultural fiction and material reality (Liccardo, 2013) (see Appendix 2 for a visual representation of the cyborg metaphor).

2.6. Space, place and the politics of belonging

Narratives are located on a 'chronotope' because they are always told in the context of a specific time and place. Bakhtin (1981) coined the term 'chronotope' translated from the Greek 'chronos' (time) and 'topos' (place) which means a 'moment' or reality in time-space (that is described by language and literature in particular), or as he elucidates: "the intrinsic connectedness of temporal and spatial relationships that are artistically expressed in literature [and in life] ... spatial and temporal indicators are fused into one carefully thought-out, concrete whole [similar to a life story]" (p. 84). Our situatedness in place influences different ways of being in the world (Brown, 2009). Place could be viewed as part of an existential quest "to understand what it means to be human" (Tuan, 2004, p. 46). Place is critical to the formation of one's identity as "the subjective sense of self is defined and expressed not simply by one's relationship to other people, but also by one's relationship to the various physical settings that define and structure day-to-day life" (Proshansky, Fabian & Kaminoff, 1983, p. 58).

People create an affective and symbolic bond with place by "attribute[ing] meaning to landscapes and in turn becom[ing] attached to the meanings" (Stedman, 2002, p. 563). Harvey (1996) notes that just as our conception of space and time informs the way in which we locate ourselves in the world today, "The history of social change is in part captured by the history of the conceptions of space and time, and the ideological uses to which those conceptions might be put" (p. 218). In this study, the notions of place and space will be conceptualised as open systems that can simultaneously incorporate and signify objects and experience, meaning and belonging:

> "[There is] a dialectic relationship between the ways in which we shape and produce the material, spatial, everyday world and the ways in which that world

> shapes and produces us, our practices, interests, identities and discourses ... This process plays itself out at multiple levels: in our subjective experience of ourselves in imagined space as expressed in art and poetry, in our ordering and codification of conceived space as expressed in plans and maps, and in the bodily movements and routines through which we perceive space" (Lefebvre 1991, pp. 38-39).

Lefebvre (1991) posits that in thinking about the production of space, one should be aware of the "logico-epistemological space, the space of social practice, the space occupied by sensory phenomena, including products of the imagination such as projects and projections, symbols and utopias" (p. 53). Harvey (2004) adds that space should be conceptualised in relation to human practice. He proposes that instead of asking, 'What is space?' we should rather question, "How is it that different human practices create and make use of different conceptualizations of space?" (p. 5). Social practices determine the co-constitutionality between space and society in that "[t]he lives, activities and social relationships of people, past and present, establish the social character of space" (Knowles, 2005, p. 90).

Commenting on this line of thinking, Cassirer (1972) describes social space as our everyday action and experience, comprised tripartite of human spatial experience he calls 'organic, perceptual, and symbolic space'. Organic space or the lived realm constitutes spatial experiences that are felt through our sense perceptions and perceptual space pertains to "the ways we process sense perceptions neurologically and register them in the world of thought" (Harvey, 2004, p. 8). Symbolic or conceptual space is also 'virtual space' that is created and built out of forms; through visual impression it produces the intangible, imaginary or conceptual images and illusions that constitute aesthetic practice (Langer, 1967). The spatiality of the world in the era of globalisation is therefore largely characterised by 'virtual space'.

Narratives often relate to oneself and an-others' perceptions of what it means to belong to particular grouping or collectivity (Yuval-Davis, 2011) and are always situated as they are

told in the context of a particular place and time. Belonging is constructed through narratives (stories) of individual and collective identities and emotional attachments (Yuval-Davis, 2011). A sense of belonging is an emotional attachment or feeling of being 'at home' in the world (Yuval-Davis, 2006). In recounting her memories from childhood, Hooks (1990) conceptualises the notion of "homeplace" as a safe empowered space and as a site for resistance where "all that truly mattered in life took place, the worth and comfort of shelter, the feeding of our bodies, the nurturing of our souls. There we learned dignity, integrity of being … there we learned to have faith" (pp. 41-42). A few published studies report that friendships among African American women are characterised by companionship, acceptance, and support toward resistance against oppressive structures (Denton, 1990; Goins, 2011; Hall & Fine, 2005). The feeling of 'being at home' is generated through social relations with others (Said, 1983; Thaver, 2006).

Yuval-Davis (2006) explains that belonging is constituted along three analytical levels; 1) 'social locations', 2) 'identifications and emotional attachments' and 3) 'ethical and political values'. There is a mutually constitutive relationship between social categories and the reappropriation of meanings during different historical moments and contexts (Yuval-Davis, 2011). First, social locations refer not only to people's positionality in space and the intersections of social divisions (i.e. 'race', gender, class, age, sexuality etc.) but also the positionality of categories along an axis of power in society, which changes with different historical moments and contexts (Yuval-Davis, 2006). Andrews et al., (2004) argues that "human subjectivity [and intersectional identities] itself is diverse, fragmented, and carries within it the pushes and pulls of various available narratives, which are contingent upon social and cultural positioning" (p. 12). Identities are related to the characteristics that people ascribe to themselves both as individuals and members of social groups. However, members of the same social category may hold different perceptions and meanings for what is required for others to be entitled to belong to a particular group. As categories of social location exist as axes of power in society (Yuval-Davis, 2011), these multiple criteria of belonging are further complicated by shifting contexts and time-periods. Accordingly, through the intersectional nature of identities, people experience multiple lines of belonging and alienation through multifaceted and

contradictory social categories which themselves intersect in 'an infinite variety of ways' (Anthias, 2006; Yuval-Davis 2011). Yuval-Davis (2011, p. 6) writes: "Our longings, or aversions, are related to our belongings in but complicated and ambiguous ways, and what social group or category we belong to does not determine our political or cultural values … And yet: the former inform the latter". This implies that there is a mutually constitutive relationship between social categories and the (re)appropriation of meanings during different historical moments and contexts. The young women in this study have inherited prejudices or "fore-meanings" (Gadamer, 1982) from the social categories to which they belong, including the pertinent categories of being young, intellectually talented, Black, woman, interested in science. However, when they critically re-interpret and appropriate these 'fore-meanings', it creates new ways of belonging to these categories.

Second, stories about collective identities coalesces in "imagined communities" (Anderson, 1991) which are rewritten with new answers to the question, *'Where do I belong?'*. A collective story could be understood as a specific type of second-order narrative. Richardson (1990) writes:

> "The collective story displays an individual's story by narrativising the experiences of the social category to which the individual belongs, rather than by telling the particular individual's story ... Although the narrative is about a category of people, the individual response to the well-told collective story is, 'That's my story. I am not alone" (p. 25-26).

Third, as subjectivity exists within social structures, power plays a central role in "the binding and marking of symbolic boundaries" (Hall, 1996, p. 17), thus belonging is also affected by the ways in which social locations and identities are valued and judged by hegemonic political powers (Yuval-Davis, 2006). Yuval-Davis (2011) conceptualises the politics of belonging as "specific political project[s] aimed at constructing belonging to particular collectivity/ies which are themselves being constructed in these projects in very specific ways and in very specific boundaries" (p. 10). Political projects present requirements for belonging that relate to social locations, identifications, and a common

set of values (Yuval-Davis, 2006). This results in contestations around community membership and its associated status and entitlements which raise a critical question, "What is required from a specific person for him/her to be entitled to belong, to be considered as belonging, to the collectivity?" (Yuval-Davis, 2006, p. 209). Thus, membership rights are about meeting these criteria of inclusion, which are stratified along margins of privilege.

2.7. Conclusion

This chapter has pinpointed the theoretical coordinates that will help me interpret these women's dual experiences of belonging to and feeling alienated from different worlds, in being both a marginalised group (young black women) and a powerful elite group (future scientists). I have argued that stories provide an interpretive entry point to understanding the intersection between self and society (Andrews, Squire & Tamboukou, 2008). Thus, this chapter provides a theoretical framework for discussing identity and subjectivity from a narrative perspective. Through the process of internal dialogue with oneself, in this chapter, I explain that the self is conscious of itself and conscious of this self-awareness, thus it has the potential to become other than or different from itself (Crites, 1986; Fay, 1996; Miller, 2014). The self does not exist in its own private world; society's power structures play a central role in maintaining and reproducing categories of social divisions. Fragmented subjectivities are in a constant process of change because they are discursively produced across contradictory and different discoursed practices (Hall, 1996). Accordingly, in this study the self is theorised as a discursive and embodied construction (Clegg, 2006). In other words, although Ricoeur's hermeneutic notion of narrative identity has been presented as the theoretical foundation of this study, it is critical to examine the discursive notions of power and the social construction of the identity. By way of concluding this chapter, I examine the intertwinement of personal and public histories that form identity in relation to the racialised patriarchal tradition that exists within STEM fields. Further, I explicate that our situatedness in place influences different ways of being in the world as our practices of meaning-making are always located in a 'chronotope' (Bakhtin, 1981).

CHAPTER 3:
LITERATURE REVIEW

3.1. Introduction

This chapter presents a relevant review of empirical studies on the life histories of black women scientists, women in education and the raced, gendered and classed construction of identities among adolescents more generally. In accordance with the aims of this research, I discuss a range of studies about youth identities and review the challenges faced by young black South African youth, their middle-class aspirations and the ways in which they are developing a hybridised identity. Drawing on several empirical studies, I discuss how education and relationality provides young black women with the tools to break the boundaries of their social location (Tamboukou, 2006). Although literature about academic identity is well represented in the sociology of higher education and the concept of 'science identity' is receiving increasing attention, there is a dearth of studies that highlight 'race' and class in the literature on gender and science (Carlone & Johnson, 2007; Scantlebury & Baker, 2007). Furthermore, accounts of young women's journeys through the process of 'being' and 'becoming' a scientist are less present. To the best of my knowledge, there is little published or unpublished research that examines the lives of black South African women scientists in post-apartheid South Africa. Further, as black women continue to be grossly underrepresented in STEM fields, it is crucial to review empirical studies on the contextual and cultural barriers that appear to block black women's pathways through these fields. Accordingly, this chapter provides a detailed account of the barriers that young black women face in their pursuit of STEM degree by examining the politics of belonging and knowledge production at universities.

3.2. Life histories and identity research

A life history method will be utilised in this research study in order to understand the processes by which these women's personal and social identities are (re)constructed. Life stories illustrate how the intersections of the self and social structure produce particular

circumstances as well as under which circumstances the self and structural conditions intersect and interact. Life history, life story, biography, personal narrative, oral history are often used interchangeably because life history research has developed into a network that spreads across a wide array of disciplines (Bertaux, 1981; Bertaux & Kohli, 1984; Denzin, 1989; Goodson, 2001; Rosenthal, 1993; Roberts, 2002). As discussed in this chapter, the term 'life history' and 'life story' refer to the telling and interpretation of a life story with the aim of understanding "the changing experiences and outlooks of individuals in their daily lives, what they see as important, and how to provide interpretations of the accounts they give of their past, present and future" (Roberts, 2002, p. 1). Over the past four decades, the international popularity of the theory of life history has grown (Atkinson, 1998; Bertaux, 1981; Bertaux & Kohli, 1984; Clandinin & Connelly, 1994; Creswell, 1998; Geiger, 1986; Miles & Crush, 1993; Plummer, 2001; Portelli, 2010; Riessman, 1993; 2001; Roberts, 2002; Runyan, 1982; Slim & Thompson, 1993; Yow, 1994). Popularity of research literature on life histories has also increased (Bujold, 2004; Delcore, 2004; Hulme, 2003; Vandsemb, 1995; Balán & Jelin, 1973; Goldthorpe, 1980; Blee, 1996; Laoire, 2000; Richie, 2001; Rogaly & Coppard, 2003; Staunton, 1990; Schaller, 2008)

Researchers have also criticised this qualitative method (Cary, 1999; Goodson, 1991; 1995; 1998). For instance, Goodson (1995) provides a critical discussion around the politics of the storying genre. He claims that oftentimes the focus in the media is on 'what makes a good story', thus the 'empowerment' of marginalised voices and aggrandizement of power is mutually reinforcing. Goodson (1995) asserts that although the common perception is that silenced voices and new discourses "will rewrite and reinscribe the old white male bourgeois rhetoric" (p. 97), new stories cannot individually address structures of power. He provides a critique for how life stories are often decontextualised and narrators are romanticised as free autonomous individuals. "The cultural logics of late capitalism valorize the life story, autobiographical document because they keep the myth of the autonomous, free individual alive" (Goodson, 1995, p. 90). In response to these critiques, this study utilises a narrative approach, which locates the self as a psychosocial construction embedded within power structures and social

milieu. By analysing the participants' life stories *in context*, it has allowed me, as a researcher, to interrogate the social world in which the stories are located. Thus, it could be argued that the life history approach may help one "to understand how subordinate groups embody and express a combination of reactionary and progressive ideologies, ideologies that both underlie the structure of social domination and contain the logic necessary to overcome it" (Giroux, 1983. p. 995).

International literature on the narrative analysis of life histories continues to make diverse contributions to knowledge on a global scale (Agar, 1980; Behar, 1990; Capper, 1999; Hall, 2003; Johnson, 2002; Krumer-Nevo, 1998; Luborsky, 1987; Patai, 1988). With the ushering in of the 'narrative turn' in the social sciences, Slim and Thompson (1993) and other feminist scholars advocate that the life history method should portray the lives of people from marginalised groups, as their voices have previously been disregarded by life writing researchers. Life history could thus contribute to greater inclusivity, especially for black South African women whose narratives have remained at the margins in the representation of reality and transformation of society.

There has been a considerable amount of literature published on the life histories of black American women scientists (Warren, 1999; Jordan, 2006; Brown, 2012) and women in education (Antikainen, 2012; Casey, 1990; 1993; Nieuwenhuis & Smit, 2009; Middleton, 1989; 1984; 1987; 1993; 1992; 1998; Pillay, 2003; Romero, 1988; Tamboukou, 1999; 2000a; 200b; 2002; 2003; 2004; 2006; Weiler & Middleton, 1999; Wieder, 2002). However, there is only one unpublished thesis on the academic histories of three black South African women scientists (as well as three men scientists), with a focus on how they obtained access to universities during apartheid and subsequently graduated with a doctoral degree (Reddy, 2000).

Thus, to the best of my knowledge, there is little research that focuses on lives of black South African women scientists in post-apartheid South Africa. However, South African research literature of relevance does exist on women's life writing (Russel, 1989; Nuttall, 1994; Slater 2000; Coullie, 2004; Lottering, 2002; Smith, 2002; Cullinan & Cullinan,

2005; Slovo, 1997). In addition to women leaders and activists (Awolowo, 2003; Phendla, 2004; Rayda, 2005; 2008), domestic workers (Suzanne, 1985, Bozzoli, 1991) and other aspects of life, for example HIV and incarceration (Squire, 2003; Dastile, 2013).

South African women's life histories or journeys toward becoming scientists provide a telling account for the process of personal and social identity development, both as scientists, and as young black South African women. In other words, these young women's identities are (re)constructed in conversation with and against social structural constraints. Having reviewed the literature on science identity, Shanahan (2009) reports that most studies have focused on individual agency to the exclusion of issues of social structure. Therefore, in conjunction with the literature on the life histories of young black women in (science) education, this chapter also explores research literature pertaining to the construction of social identities. The focus is on how the "systems of domination" create a "matrix of oppression" (Collins, 2002) which positions young black women at a disadvantage compared to men and white women. Thus, particular attention is given to the role of ideology in the social construction of difference through 'race', class and gender and the ways in which class reconfigures the experience of race and gender.

A considerable amount of literature has been published on the social construction of identities in relation to 'race', gender and class (Adhikari, 2004; Aronson, 2003; Butler-Sweet, 2011; Distiller & Steyn, 2004; Dolby, 1999; 2000; 2001a; 2001b; 2002; Erasmus & Pieterse, 1999; Hylton & Miller, 2004; Kapp, 1998; Robinson, Esquibel & Rich, 2013; Maylor & Williams, 2011; Soudien, 2008; Steyn, 2001; Sullivan & Stevens, 2010; Walker, 2005). There is also a corpus of research literature on adolescent identity development (Bagnol, Matebeni, Simon, Blaser, Manuel & Moutinho, 2010; Norris, Roeser, Richter, Lewin, Ginsburg, Fleetwood, Taole and van der Wolf, 2008; Stevens & Lockhat, 1997; Soudien, 2012; Thom & Coetzee, 2004; Vandeyar, 2008). Further, there is research literature on identity construction of people within the domain of academics (Maslak & Singhal, 2008; Toni & Olivier, 2006; Ukpokolo, 2010) and science (Brickhouse, Lowery & Shultz, 2000; Eisenhart & Finkel, 1998; Hughes, 2001; Tan &

Barton, 2008).

3.3. Youth identities

Within an Eriksonian (1963; 1968) framework, Stevens and Lockhat (1997) argue that the contradictory role expectations of capitalist and racist ideology have hindered the development of healthy self-concepts among black South African adolescents. While black adolescents are exposed to the messages and imagery that encourage individual achievement, their access to particular forms of capital that may assist them along this process are limited (Stevens & Lockhat, 1997). For instance, even though black adolescent girls may be encouraged to pursue STEM careers, institutional cultures and practices continue to contribute to their socio-economic and psychological subordination, which may do violence to their psychological development and contribute to their continued exclusion. In order to cope with their social realities, young black women in science find themselves in a position in which they may be expected to develop an identity in compliance with the dominant norms and values (of their society, university and discipline). These contradictory roles that are in line with both a capitalist framework and the process of social transformation are frequently unattainable due to the legacy of racism [and sexism] (Stevens & Lockhat, 1997). This is evident in the low retention and graduation rates amongst women in STEM fields. The assimilation of identities that are in line with dominant norms and values may marginalise and alienate young people from their own social realities. Stevens and Lockhat (1997) write:

> "This in itself constitutes a form of ideological and social oppression (Bulhan, 1985) … this process of acculturation frequently results in the historically oppressed experiencing a psychological tension related to them straddling different worlds that all become increasingly alien (Bulhan, 1980)".

In a South African research study at the University of KwaZulu-Natal (UKZN), Pattman (2007) aimed to examine how racialised groupings and identities are constructed in relation to one another. The study focused on the extent to which black, white and Indian students at UKZN socialise and integrate as friends. In terms of the method, 40 students

who were enrolled in a course about identity at UKZN (led by the author of this article, Pattman) divided themselves into seven research teams. Each research team conducted three focus groups, each comprising six people from Howard College at UKZN. The open-ended interview questions related to issues of "identifications with and dis-identifications from other students, interests, pleasures, anxieties and reflections on being students" (p. 476). The dominant theme that emerged in this research study that 'race' is inextricably entangled with student identities. The researchers in this study found that the participants conflated talking about 'racial' issues as being racist, which made it difficult for the researchers to gain insights into racialised identities. Pattman (2007) argues that student defensiveness in being questioned about 'race' points to a contradiction between 'race' as an important marker of identity and these students positioning within the 'Rainbow Nation' and the multi-racial UKZN rhetoric in which race is viewed as no longer a stumbling block to academic success. Furthermore, the research findings also point to the importance of whiteness in polarising two groups of black students; on the one hand, one group were referred to as 'coconuts' (i.e. black on the outside but 'white inside') and on the other hand, the second 'authentic' black African group that were constructed in opposition to the 'coconuts'. The Indian participants in the study contrasted their religious 'homes' with the university environment in which religion was insignificant to them. A few students viewed the university environment as 'free' and an opportunity to 'break away' from religious constraints.

Drawing from critical race theory and post-colonial theory, Vandeyar (2008, p. 27) explores the ways in which adolescents frame, assert, and negotiate their identities within the dominant institutional cultures of former Model C, white high schools in South Africa. In order to establish whether Grade 8 students felt a sense of belonging to their school, Vandeyar (2008) interviewed a total of 39 students from three former white Model C schools that were located in the city of Tshwane situated in the province of Gauteng. The raced profile of the research sample consisted of 50% white students, 42% black African students, 7% Indian students and 2% Coloured students. In addition to semi-structured individual interviews, observation and field notes were also used. Vandeyar (2008) found that despite the discourses of transformation and the changing demographics of the student body, "student identities are shaped and framed within stable

institutional cultures that remain impervious to change" (p. 28). In order for the students to 'fit in', students were expected and pressurised to "act white" and demonstrate "respect for the existing social order" (Swartz, 1977, p. 546).

Similarly, in their research study, Toni and Oliver (2006) were interested in how first-year black women perceive themselves as students at a previously white South African university. Six focus group interviews were conducted with a total of 40 black first-year female students of between 18 and 22 years of age. Students reported that their academic identities were directed by their goals in life, and that they were committed to preparing themselves for a successful career path and personal development. However, many students struggled to adapt to a new and unfamiliar environment that they perceived to be hostile and unwelcoming (Douglas, 1998; Hatter & Ottens, 1998; Henderson, 1998; Ong, 2005). They also felt their modules could be more contextualised to South Africa and they experienced racial discrimination and language difficulties. It is noteworthy that English proficiency is associated with 'whiteness' in South Africa and is the most highly valued form of linguistic and cultural capital in South Africa (Mckinney, 2007). Furthermore, research evidence has documented how women in general (and black women in particular) experience covert discrimination in the everyday classroom practices (Brooks, 1997; Luke & Gore, 2014; Thomas, 1990) and in the workplace (Boiarsky, Earnest, Grove, Northrop & Phillips, 1993; Bush, 1991; Deitch, Barsky, Butz & Chan, 2003; Etzkowitz & Kemelgor, 1994; Rantalaiho & Heiskanen, 1997; Tomaskovic-Devey, 1993).

Leibowitz, Bozalek, Rohleder, Carolissen and Swartz (2010) conceptualised an educational module for postgraduate students in Psychology and Social Work. This module, which was based on the notion of 'pedagogy of discomfort', aimed to provide students with "the opportunity to experience learning across the boundaries of institution, discipline, language, race and class, and to provide the team with data to enhance understanding of how students grapple with issues of difference" (Leibowitz, et al., 2010). The students who had enrolled in this module were also research participants in the study. This study was conducted at two higher education institutions in the Western Cape province of South Africa. With the students' permission, a total of 91 reflective

assignments were analysed in accordance with two questions: first, how did the students understand the core concepts in the module in relation to their future professions? Second, what factors encouraged their learning about difference? The findings indicate that learning about difference is not only described in cognitive terms but particularly in emotional terms. “The intense emotion evoked by the experience for some of the students, could be related to the fact that issues of identity and difference are relational, and thus learning – or unlearning – about these matters caused students to reconsider aspects at the heart of their relations with others” (Leibowitz, et al., 2010, p. 89). There were three levels in which the participants engaged with difference. In other words there were comments in the assignments that either demonstrated a denial of difference or emphasised the importance of rethinking preconceived notions or proposed ways to work through the politics of difference. Leibowitz, et al. (2010) argue that students with particular life experiences (that effected being marginalised) are better able to meaningfully engage with the subject matter. I will now discuss empirical studies about the gendered construction of identities among adolescents.

Moosa, Moonsamy and Fridjon (1997) aimed to expand on ‘Social Identity Theory’ (Tajfel & Turner, 2004) by considering the role that gender relations and ideology play in shaping identities. They interviewed a sample of Zulu-speaking township youth in Durban (20 women and 20 men) who were between 17 - 23 years of age. These interviews focused on eliciting information about the dominant groupings constituting the social identity of these young men and women. The findings reveal gender ideology was a powerful organising principle in the social identity construction of their participants. Their social identity was constructed in such as way that it reproduced existing patriarchal gender relations. For instance, in giving an account of their-selves, the young women emphasised particular issues pertaining to the private spheres of lovers, home and family; whereas the young men spoke about the public sphere outside of the home. These adolescents also alluded to the extent of gendered double standards, which meant that men had more freedom to control their lives and opportunities for independence. In terms of the hierarchical social relations between old and young, and black and white, the findings indicated that the young women were more accepting than their male counterparts of their subordinate social status as young black people in South Africa. The

young men were more bold and overt in voicing their disapproval of oppressive social relationships. Furthermore, there are several studies that account for the ways in which gender is constructed through cultural values and belief systems and how women oftentimes position themselves with an ideological gendered view of the world thus preserving the social order (Benwell & Stokoe, 2006; Lynch & Nowosenetz, 2009). Stratigakos (2001; 2008) and Troiani (2012) argue that women feel forced to negate themselves as defined by blackness and femininity in order to embody the dominant notion of an architect, thus institutions contribute to the denigration cultural and personal identities (Fanon, 1968; Hook, 2004; Jinadu, 1980; Wyrick, 1998).

Similarly, in an American study, Hazari, Sadler and Sonnert (2013) explored how students from different gender and ethnic groups self-identify with science. Using surveys, students attending 40 universities and colleges across the United States were asked whether they see themselves as a ‘biology person’, a ‘chemistry person’ or a ‘physics’ person. The aim was to conceptualise identity through the students’ self-perceptions as a ‘type of person’ interested in science. The sample consisted of 7,505 respondents, 49% were female and 44% male (7% did not report their gender). In terms of race, 67% were White, 14% Hispanic, and 8% Black. Hazari, Sadler and Sonnert (2013) found that regardless of race or ethnicity, more men than women perceive themselves as a “physics person”. Hispanic females showed the weakest science identity, which may be attributed to the pressure from home to conform to traditional gender roles, such as motherhood.

Following Posel (2001), in this study, I claim that the terms 'single motherhood’, 'household head' and 'female-headed household' are all problematic for the following reasons: 'household head' assumes that households are hierarchical; a 'female-headed household' implies that women can only head households in the absence of men; and 'single motherhood' is maritally orientated (Wright, Noble, Ntshongwana, Barnes & Neves, 2013). Thus, I will utilise the term 'lone mother' as an explanatory tool in this study. A 'lone parent' is defined as an individual who "(1) either [does] not have a partner or spouse or who [does] not co-habit with their partner or spouse and (2) [is] the main

caregiver for a child under the age of 18" (Wright et al, 2013, p. 5). However, a 'lone mother' is not to be interpreted as a mother who raises a child alone, without any form of support from friends and other family members. Wright et al. (2013) explains that according to the South African General Household Survey (GHS), 59% of all mothers are lone mothers and 90% of these lone mothers are black African. Further, there are several studies that investigate the medical and psychological discourses of motherhood (Kruger, 2006; Richardson, 1993; Mamabolo, Langa & Kiguwa, 2009; Chadwick, 2006) and how teenage mothers are motivated to complete their secondary schooling so that they may provide for their child (Chigona & Chetty, 2007; 2008; Chohan & Langa, 2011; Chohan, 2010; Grant & Hallman, 2008; Kaufman & de Wet, 2001).

Regarding the performativity of gender, as theoried by Butler (1999), Phoenix, Pattman, Croghan and Griffin's (2013) research study focused on consumption and how groups of young people from UK secondary schools 'do' gender within focus group settings. In other words, Phoenix et al. investigate the ways in which young people construct their gendered identity through consumption. The research methods adopted in the study is threefold: first, 1354 students between that ages of 12, 13, 16, 17 and 18 completed questionnaires about the products which are particularly important to them. Second, based on the questionnaire results, focus group discussions were conducted in 15 state schools located in Birmingham, Milton Keynes and Oxford, thus the sample group in this research study is predominantly white, working class young people. Third, semi-structured interviews were conducted with a maximum of 20 parents and their teenage children focused on their consumption practices, which was followed by eleven ethnographic case studies. It is reported that the young people in the focus group discussions 'do' gender by drawing on women's clothing and bodies in 'culturally intelligible' ways. Furthermore, the interviewers reinforced these gendered performances. The girls only discussed "feminine aspects of embodiment" within single-sex interview groups and in groups where there were no girls, the boys "attempted to assert hegemonic masculinity by talking about the need for parents to control their prospective daughters' clothing choice, but not boys' choices" (Phoenix et al., p. 429).

This racialised, gendered and class habitus at particular institutions could be viewed as a form of "symbolic violence" (Bourdieu, 2004) in that it not only coerces students into a system that rewards those who possess elite forms of cultural capital (i.e. white English speaking boys) but it also creates ancillary feelings of inferiority for young black girls. "[T]hus, the educational system objectively tends, by concealing the objective truth of its functioning, to produce the ideological justification of the order it reproduces by its functioning" (Bourdieu & Passeron, 1977, p. 208). Similarly, Stevens and Lockhat (1997) characterise the impact of South Africa's socio-historical context on black adolescent identity development as violent as conceptualised as "any relation, process, or condition by which an individual or group violates the physical, social, and/or psychological integrity of another person or group" (Bulhan, 1985, p. 135). Stevens and Lockhat (1997) propose that the analysis of oppressive situations should include "both overt and covert acts or omissions, which may have direct or indirect violent consequences" (p. 4). The assimilationist view of identity that is implemented by former white Model C schools and HWUs sends a subliminal message to the black student that his or her culture is subaltern (Nieto, 2000). "With identity and value systems being so intrinsically linked, this process contributes towards the strengthening of the life-chances of the protectorates of the hegemonic culture, by eroding away at the 'devalued' student's self-esteem" (Vandeyar, 2008, p. 21).

In addition, it has been argued that parents with little education and low income are less likely to have access to financial resources and information to help their children along their pathways through higher education. For instance, research evidence suggests that the financial constraints faced by first generation students make the pursuit of higher education particularly challenging (Dowd & Coury 2006; Hand & Payne, 2008; Inkelas, Daver, Vogt & Leonard 2007; Tierney & Venegas 2009). Thus, the women in this study are not only faced with having to make sense of contradictory role expectations from opposing ideologies but as first generational students, they also have limited access to economic, social and cultural capital. The increasing presence and acceptance of western economic models and ideological symbols have encouraged a shift from collectivism to individualism (Stevens & Lockhat, 1997). South African society is becoming increasingly

atomised and individualised (Stevens & Lockhat, 1997). The development of individual identity and autonomy is a particularly valued objective of higher education (Wardekker, 1995; Renn, 2004; Walker, 2006). In this context, students engage with deep bodies of knowledge that open up new modes of being and the possibility of self-construction. Soudien (2008) writes:

> "Students, in having to think about their racial identities move into a space in which their externally framed drives and aspirations – their middle-class dreams – are brought into a relationship with the character-forming influences inherent in higher education practice to develop complex attitudes to themselves, their fellow students and mentors and the institutions in which they find themselves" (p. 43).

Social class distinctively configures the experience of race and produces new personal understandings of what race might mean for individuals (Soudien, 2008). As Soudien (2008, p. 46) notes, race [and gender] takes on a "sublimated form in the university" by simultaneously working with its surrounding social factors "to produce a weakened sense of race". "[R]ace is significantly modified from an experience of helplessness and apathy to what one might understand as the mobilization of agency" (Soudien, 2008, p. 46). The main driving force for transformation is "the middle-class aspirations of black students and their families …" and not government or institutional policies and practices (Cooper & Subotzky, 2001, p. 231). The middle-class aspirations of township youth could be regarded as a form of resistance to the reality of their circumstances and as a means of gaining control over their lives (Swartz, Harding & De Lannoy, 2012). Stevens and Lockhat (1997) also note that black children and adolescents are not only victims of apartheid and its aftermath but they have also demonstrated resilience within the process of social transformation.

In a South African study conducted by Bray, Gooskens, Moses, Kahn and Seekings (2010), the young people expressed their belief in the possibility of becoming professionals, buying expensive cars, and owning houses in the suburbs. Swartz, Harding and De Lannoy (2012) concluded that youth from socio-economically disadvantaged backgrounds exhibited two different methods of belonging, namely "dreaming and ikasi

style: Dreaming represents participation in the 'New South African' narrative while ikasi style enables access to the markers of belonging in the absence of real opportunity" (p. 176). Swartz, Harding and De Lannoy (2012) explain that 'ikasi style' is a term used by South African youth as a means of rationalising their behaviour that may be socially unacceptable in order to create a sense of belonging. Vandeyar (2008, p. 87) found that adolescents in her study continually questioned their identity positions by "deconstructing the artificial boundaries imposed by the formed myth of race as a given truth, and are striving toward integration" thus giving way to a hybridised identity. Young South Africans are reclaiming their sense of agency and (re)constructing their intersectional identities (Vandeyar, 2008; Wasserman & Jacobs, 2003).

3.4. Education and relationality as a vehicle for change

Stevens and Lockhat (1997) have argued that black adolescents in South Africa are faced with contradictory roles in that whilst they are exposed to messages and imagery that motivate them to achieve social mobility; their access to particular forms of capital that may assist them along this process are limited due to the legacy of racism (and sexism). For black women in STEM fields, these contradictory roles are not only complicated by the opposing ideologies of a liberal meritocratic education and domestic femininity in South Africa but also by the racialised patriarchy in STEM. Thus by examining the lives of women in education, I will theorise how black South African women scientists work through the contradictory roles imposed on them by these opposing ideologies. In this research study, I will address the following question posed by Middleton (1987):

> "[How were women] able to move from 'faint bursts of misplaced opposition' to clearly articulated theories of human oppression and strategies aimed at bringing about educational and broader social change? How were they able to theorise these personal experiences of victimisation, discrimination, contradictions and marginality?" (p. 177).

Middleton (1987) argues that as the young women in her study had access to feminist and radical ideas, they were able to perceive their personal experiences of contradictions

and/or marginality as social issues (rather than personal inadequacies). “[Women] have apprehended both the desirability and the possibility of change in their own lives and in the lives of other women. In feminist terms, the personal becomes political” (Middleton, 1987, p. 180). Education could thus be viewed as a vehicle through which women aim to change their own lives and the lives of other people who are oppressed by dominant structures. There have only been a few research studies that have investigated the educational expectations of the youth in the third world countries (e.g., Adams, Wasikhongo & Nahemow 1987; Beutel & Anderson, 2007; Forste, Heaton & Haas 2004; Post 1990). In addition to education as a tool for change, I will now examine how emotions and relationality with significant others could enable women to break the boundaries of their social location.

In commenting on education as a vehicle for change, Tamboukou (2006) argues for the possibilities of becoming other through the unpredictable terrain of emotions and relationality. By examining the lives of three South African women during the apartheid era, Tamboukou (2006) proposes that emotions not only act as a force in the reconfiguration of social realities and subjectivities within education but also present new spaces for feminism to emerge. Tamboukou (2006) suggests:

> “that emotional learning in education is a field par excellence for the study of how economies of power and economies of desire produce realities and segmentarities, but also incite deterritorializations and open up space for lines of flight to be set into motion” (p. 5).

In her article, Tamboukou (2006) focuses on how the lives of three women become intertwined through their desire for education and how ‘race’, class and age subsequently severed these existing connections. Lily Moya was a fifteen-year-old Xhosa woman from the Transkei who attended Natal’s most famous high school. Dr. Mabel Palmer was “an elderly white academic, Fabian socialist, suffragette and then organiser of the Natal University College’s Non-European Section” (p. 2) and Sibusisiwe Makhanya was the first black woman to become a social worker in South Africa. By analyzing numerous letters written by these women, Tamboukou (2006) made several important observations.

She commented on how the entanglement of emotions and power relations affected the women in different ways. Lily is enabled to break the boundaries of her social location by her relation to Mabel and through the meeting of her passion (for education) and imagination (of a future as an educated woman). Tamboukou (2006) writes:

> "Restricted as she is within the boundaries of her locality, her race and her class, Lily can imagine that 'another future can be possible'. She wants to educate herself; in fact she becomes passionate about this prospect. In imagining her career as an educated woman, she is therefore surpassing the material conditions of her confinement and is empowered to struggle for a different life" (p. 8).

Tamboukou (2006) argues that in the relation between I and you, self and other (the narration of Lily and Mabel's stories), there is the possibility of reconfiguring a 'we'. "In this proposition, what I think is strikingly interesting, is the embodiment of the 'I/you' relation grounded as it is, on the intersection of complex and multi-levelled differences" (Tamboukou, 2006, p. 10). By leaving Umtata and escaping the restrictions placed on her by a radicalised patriarchy, Lily configures her social reality as well as her relation to Mabel and her position in [anti-racist] feminist discourses. Tamboukou (2006) argues that Mabel's white colonial middle-class background and her position at university (as a promotor of anti-racist education) influenced her response to Lily's act of escaping Umtata by attempting "to transform this caring relation into a knowledge relation, thus rendering Lily's emotional self into an object of knowledge" (p. 12). Mabel's emotional detachment from Lily's life and mental state stemmed from Mabel's scientific interest in women's lives and feminism.

Lily and Mabel conceptualised their relation to one another in a conflictual way; Lily became energetic and motivated by imagining other futures for herself through her emotional connection to Mabel whereas Mabel's rationalised connection to Lily was informed by her formal positions and responsibilities (Tamboukou, 2006). Mabel naively believed that Sibusisiwe Makhanya (a social worker) would be able to support Lily during her mental crisis because of their identification with being a black woman. The fact that Sibusisiwe did not communicate with Lily "is an effect of 'the interracial field'

being itself a site of differences, conflicts and intense power games at play" (Tamboukou, 2006, p. 15). Lily's passion for education was ultimately accompanied by her disappointment in the reality of not arriving at and giving up on her imagined future. Tamboukou (2006, p. 16) argues that although Lily's decision to drop out of college, "reterritorialized the self within class/race segmentarities", what is particularly interesting is "the 'intermezzo', the space in between segmentarities, Lily's lines of flight in becoming other".

The focus of this research study is on the young women's relational selves and how their sense of self awareness emanates in dialogue with and in struggle against significant others, particularly by their teachers and lecturers, parents and the other women in the Oya group. Research evidence suggests that high school teachers act as academic role models to high achievers and motivate them to strive for academic excellence (Hanson, 2006; Nkadimeng, 2011). According to Rotter's (1975) internal and external control of reinforcement, developing 'intrinsic' love for science is contingent on the external reward of their teachers' encouragement. Hazari, Potvin, Tai, and Almarode (2010) report that there is a positive relationship between an intrinsic motivation to learn science and productivity in science (i.e. in terms of publications and grant funding). A considerable amount of literature has been published on how women in science are 'intrinsically' drawn to 'scientific ways of problem-solving' which is critical in their academic progression (Brickhouse, Lowery, & Schultz, 2000; Carlone & Johnson 2007; Davis, 1999; Fadigan & Hammrich, 2004; Johnson, 2006; Johnson, Brown, Carlone, & Cuevas, 2011; Kubanek & Waller, 1995).

Furthermore, several studies have investigated the ways in which familial expectations influence academic performance (Sewell and Häuser 1972; Sewell and Shah 1968) and how family background and socioeconomic status are key determinants of educational expectations (Buchmann & Dalton 2002; Hao & Bonstead-Bruns 1998; Marjoribanks 2002a; 2002b; 2003; 2005; Shavit & Williams 1985). Spaeth and Kosmala (2012, p. 222) and Heynen (2012) assert that the masculine domination in architecture is often perpetuated by the "the model for generational succession" of architects which typically

involves a male role model. For instance, Fowler and Wilson (2012) interviewed 72 architects in Scotland between 1998 and 1999 and found that only one woman participant in their study had a mother who was also an architect (see, for example, Collinson& Hearn, 1996).

3.5. Science identities of young black women

Carlone and Johnson (2007) pinpoint three particular reasons as to why identity has been used as an analytic lens in science education. First, for theorists of social learning (Brickhouse & Potter, 2001; Lemke, 2001; Carlone, 2003; 2004; O'Neill & Polman, 2004) identity creates new ways of viewing teaching and learning practices. For instance, identity reveals which 'categories of people' are either promoted or marginalised by these practices. Furthermore, it explains how students come to view their position in science and how their science identities change who they are and who they want to become (Cobb, 2004). Similarly, Brickhouse, Lowery and Schultz (2000) assert that in order to understand learning in science, educators need to not only ensure students understand the content knowledge but also that they engage in science and reflect on how science relates to who they believe themselves to be. Second, if one views science as a 'community of practice' (Lave & Wenger, 1991), then students are socialised into the cultural norms and discourse practices of science (Brown, 2004; Varelas, House & Wenzel, 2005). Third, creating an inclusive culture for students with all kinds of identities may increase equity in science education. In order to better understand the under-representation of black women in science, the focus should not be on how the individual has contributed to this phenomenon but rather what is it about the culture of science that is exclusionary to the extent that it may influence black women to hide their gendered and cultural identity positions (Brickhouse, 1994).

The literature of academic identity is well represented in the sociology of higher education and the concept of 'science identity' is receiving increasing attention (see, for example Brown, Reveles, & Kelly, 2005; Carlone & Johnson, 2007; Brickhouse & Potter, 2001; Brickhouse, 2000; Eisenhart & Finkel, 1998; Tonso; 2006; Tan & Calabrese

Barton, 2007). However, there is a dearth of studies that highlight ‘race’ and class in the literature on gender and science (Carlone & Johnson, 2007; Scantlebury & Baker, 2007). It is critical to explore the ways in which the intersections of ‘race’, class, gender, ethnicity, language, and religion creates unique experiences for individuals otherwise gender will remain ‘‘a code word in science education that refers to White females’ ideas’’ (Atwater, 2000, p. 371). The relationship between one’s gendered, raced, ethnic, and linguistic identities with their science identity warrants further study. Young black womens’ raced and gendered identities are further complicated by their academic identity of their discipline. This alerts us to the fact that the dilemma is not only the exclusion of women or the masculine culture of science, but also that the continued adherence to the ideologies of a racialised patriarchy implicates the very nature of knowledge production itself. Furthermore, it is argued that personal accounts of young women’s journeys through the process of ‘being’ and ‘becoming’ a scientist are less present. As existing literature generally provides snapshot accounts of women of colour’s experiences within the field of science, research is needed on how their meanings of science and of themselves, as aspiring scientists, evolve over time (Carlone & Johnson, 2007).

By presenting case studies of aspiring scientists in the ‘liquid modernity’ of a globalised world (Bauman, 2013) this project focuses on the female journey in order to foreground the ways in which women negotiate their identities and careers in the context of male hegemony. As the concept of ‘science identity’ is ambiguous and difficult to operationalise, Carlone and Johnson (2007) conceptualised a model of science identity, which was informed by theoretical sources and ethnographic interview data. Interviews with 15 ‘women of colour’ were conducted pertaining to their experiences as undergraduate science students in a predominantly white university in the United States. They were asked how their ethnicity shaped their experiences and why they decided to persist in science. The researchers were primarily interested in how the women in their study make meaning of their science experiences and how they develop their science identities throughout their university and science careers. Their study also explored the relationship between the women’s science identities in relation to their raced, ethnic, and gender identities. In developing this model, Carlone and Johnson (2007) first delineate a

prototype of the kind of person who may have a strong science identity, that is:

> "[s]he is *competent*; she demonstrates meaningful knowledge and understanding of science content and is motivated to understand the world scientifically. She also has the requisite skills to *perform* for others her competence with scientific practices (e.g., uses of scientific tools, fluency with all forms of scientific talk and ways of acting, and interacting in various formal and informal scientific settings). Further, she *recognizes* herself, and gets recognized by others, as a science person" (p. 21, [emphasis added]).

Accordingly, their model is based on three interrelated elements of science identity, namely 'competence, performance, and recognition'. As these elements overlap, various degrees configurations of science identity are possible. Carlone and Johnson (2007) recognise that one's raced, gendered, and science identities may reconfigure one another. Furthermore, identities are also shaped by the constraints and available resources in particular contexts. They organised their results into three science identity trajectories, namely "research scientist," "altruistic scientist," and "disrupted scientist". The importance of recognition (of self and by others) as someone with talent in science was a key trend in the development all of three identity trajectories. This highlights the complex ways in which race, gender and class complicate that recognition.

A large and growing body of literature in science education has investigated role of recognition in the development of identity (Carlone & Johnson, 2007; Craig, 2010; Moje, Tucker-Raymond, Varelas, & Pappas, 2007; Stevens, O'Connor, Garrison, Jocuns, & Amos, 2008; Tonso, 2006). In their study, the women of colour reported that it was particularly difficult for them to get recognised as scientists not just because of their audience (of mostly white males) but also because of the cultural meanings of being a scientist (that were aligned with being a white male). In their research study in the US, Seymour and Hewitt (1997) found that 'women of colour' embodied values that conflicted with the masculine norms with which the science departments aligned itself. Recognition could be viewed as a mechanism for reproducing the status quo in STEM fields (Carlone & Johnson, 2007; Lewis & Collins, 2001). I will now discuss the barriers

that young black women face in their pursuit of a STEM degree by examining the politics of belonging and knowledge production in universities.

3.6. Space, place and the politics of belonging and knowledge production

Black women's experiences as science students and graduates within Higher Education Institutions in South Africa are significantly affected by institutional spaces that have been historically dominated by white men and specific privileged forms of knowledge-production processes. The dominance of particular forms of "cultural capital" (Bourdieu, 1986) at university serves to exclude young black women from the domains of knowledge that constitute the sciences. Therefore, in addition to presenting a review of literature on the identities and life histories of black women in STEM, it is necessary to also provide a discussion about why black women may feel alienated by the particular context in which they find themselves.

There is a growing body of literature about the experience of racism by black students at Historically White (English-speaking) Universities in South Africa (see, for example, Cooper, 2005; Daniels & Richards 2006; Soudien, 2008; Erasmus, 2003; Graaff 2007; Jansen, 2004; Kapp & Bangeni 2006; Makobela, 2001; Woods, 2001; Wits, 2004). Woods (2001) found that young black students were subjects of racism at Wits when they experienced intolerance for their languages and cultures by white students and lecturers. Erasmus (2003) contends that black students are left with the task of dismantling the 'burden of the racial experience' because the institutional cultures at HWUs are aligned with the languages and cultural orientations of white students.

The transmission and accumulation of dominant forms cultural capital perpetuate structures of dominance and social inequalities because cultural capital is unequally distributed in accordance with education and social class, institutionalised as legitimate and those who possess it (white male students at HWUs), are placed in a position of privilege and power in society (Bourdieu & Passeron, 1977). As people "inherit" cultural capital from their families whose social class unequally influences children's educational

prospects (Bourdieu & Passeron, 1977), black students at HWUs may experience feelings of exclusion (Jansen, 2004; Makobela, 2001) but also a desire for belonging. It is notable that (be)longing is paradoxically largely activated through the experiences of exclusion (Anthias, 2006).

Hegemonic political powers maintain and reproduce categories of social divisions by the construction of boundaries that determine the standards of 'normality' and access to economic, political, social, intellectual 'goods' (Bourdieu, 1986; Yuval-Davis, 2006). These boundaries are continually challenged by political agents but often with the intention of promoting their own positions of power (Yuval-Davis, 2006). Echoing this view, Bourdieu (1993) explains that in a 'field', such as higher education, people maintain or ameliorate their positions of power through the use of economic, cultural, social, and symbolic capital. For the participants in this study, young black women who come from previously disadvantaged backgrounds; their habitus in STEM fields at university creates ideological hurdles that make it difficult for them to navigate institutional spaces.

3.6.1. Factors effecting the under-representation of black women in STEM fields

The metaphor of a "leaky pipeline" (see, for example, Chapa & De La Rosa, 2006; Clark Blickenstaff, 2005; Espinosa, 2011; Russell, 2005; Russell & Atwater, 2005) is often used to describe the attrition rates among women students from secondary school through university and building a career in STEM. This study aims to determine the contextual and cultural barriers that appear to block black women's pathways through science. As these young women's identities are deeply and often painfully rooted in gendered and racial structures of society, it is critical to examine the ways in which dominant social structures are embedded in individual ontologies and interact with the culture of science to reproduce gendered and racial worlds and modes of being in higher education.

Clark Blickenstaff (2005) propose nine "layers in the filter" (p. 370) or overarching reasons for the under-representation of women in STEM fields that have been discussed

in international research literature since 1976. As the focus of this study is on the lived experience of young black women who are interested in science and their reasons for persevering in or leaving science, I have adapted Clark Blickenstaff's (2005) framework and contextualised the following categorical explanations to the South African context: First, I discuss issues relating to university access (Case, Marshall & Grayson, 2013; Council on Higher Education, 2009; Dennis and Murray, 2012; Engelbrecht, Harding & Phiri, 2010; Enslin, Button, Chakane, de Groot & Dison, 2006; Rankin, Schöer & Sebastiao, 2010; Wolmarans, Smit, Collier-Reed & Leather, 2010; Umalusi, 2008). Second, background knowledge and academic under-preparedness is explored (Bradbury & Miller, 2011; Taylor 1980; Mokone 2008; Potter, Van der Merwe, Kaufman & Delacour 2006). I then focus the discussion on curriculum materials and design (Tai & Sadler, 2001; Walford, 1981) and pedagogy (Eccles & Blumenfeld, 1985; Kelly, 1987; Hacker, 1984; 1991; Morse & Handley, 1985; Spear, 1987; Sadker & Sadker, 1994; Seymour, 1995; Wilkinson & Marrett, 1985). The ways in which young women experience a hostile environment is explored (Sonnert, 1995; Brainard and Carlin, 1998; Warrington & Younger, 2000). I discuss the challenges that assessment pose for teachers (Broadfoot 1996; Filer 2000; Shay 2004, 2005; Slonimsky & Shalem, 2006). Lastly, the importance of role models (Byrne, 1993; Sonnert, 1995) and pressure to fill gender roles is discussed (Fennema & Peterson, 1985; Ivie, Czujko, & Stowe, 2002; Thorne, 1993; Royer 1995).

3.6.1.1. University access, background knowledge and academic under-preparedness

The new school curricula, first implemented in the late 1990s, and the school leaving qualification or the National Senior Certificate (NSC), first offered in 2008, have raised concerns regarding first-year students' poor exam performance at university (Case, Marshall & Grayson, 2013). It has been suggested that the NSC may be partly responsible for the low graduation rates as illustrated by the following statistics. Regarding the student intake to higher education in 2000, only 32% of engineering students completed their degree in the minimum time of 4 years, whereas only 21% of students enrolled in life and physical sciences completed their degree in 3 years (Council

on Higher Education, 2009). Furthermore, in relation to the South African population between the ages of 20-24, the participation rates in higher education remain racially skewed. For instance, in 2009 only 23% of black students enrolled at higher education institutions compared to 57% of white students. Over five years (i.e. 2006-2010), Hunt, Ntuli, Rankin, Schöer, Sebastiao (2011) tracked students' NSC scores as well as their first year scores at the University of the Witwatersrand. Although enrolment numbers increased with the introduction of the NSC, first year pass rates decreased, particularly in courses such as mathematics, physics, chemistry and economics which suggests that "inflated NSC mathematics scores underlie these lower pass rates, with inflation of around 20–25 percentage points compared to the former higher-grade mathematics scores" (Case et al., 2013, p. 2). There are a number of research studies that attribute the decline in first-year mathematics and science scores to the introduction of the NSC in 2008 (see, for example, Dennis & Murray, 2012; Engelbrecht, Harding & Phiri, 2010; Wolmarans, Smit, Collier-Reed & Leather, 2010; Umalusi, 2008).

The National Benchmark Tests (NBTs) were developed in order to improve selection measures, however Case, Marshall and Grayson (2013) explains that the "focus solely on the predictive value of various selection measures is insufficient for responding to the gap, unless such a focus is coupled with changes in the educational experiences provided to undergraduate students" (p. 2). It is noteworthy that the NBTs are home to the Alternative Admissions Research Project (AARP) at the University of Cape Town which initially developed a set of tests, as follows, to improve selection measures: Placement Test in English for Educational Purposes (PTEEP), the Mathematics Comprehension Test (MCOM), and the Reasoning Test (RT). Further, Enslin, Button, Chakane, de Groot and Dison (2006) have conceptualised the 'Biographical Questionnaire' (BQ), which is used by the Humanities Department at the University of the Witwatersrand as an alternative selection tool for students who have not met the admission requirement. It is noteworthy that social class determines the kinds of schools that accept young black students who reside in township and rural areas (Ndimande, 2006).

Furthermore, academic under-preparedness provides possible explanations for the kind of barriers that black students in general, black South African women in particular, are

confronted with in their path toward a STEM degree. In South Africa, the high levels of racial and gender inequality at university highlight the continued need to respond to the "articulation gap" (Department of Education, 1997, p. 22) between the preparedness of school leavers for the academic demands of higher education programmes. The different educational and socio-economic backgrounds that students come from, manifest in unequal levels of background knowledge in preparation for university. This 'articulation gap' is wider for students who come from townships and rural schools that are characterised by the unavailability of particular subjects, less qualified teachers, ineffectual pedagogical practices and a lack of learning resources such as technical, laboratory and/or computer equipment. In order to respond to the 'articulation gap', in the late 1980s, several higher education institutions implemented 'foundation programmes' or 'extended curriculum programmes' and due to government funding in 2006, most universities were able to implement credit bearing foundational courses within extended curricula, particularly in science and engineering (Case, Marshall & Grayson, 2013). Although, a crucial limitation is that these foundation programmes were separate from the mainstream curriculum.

In their research study, Chetty and Vigar-Ellis (2012) aimed to determine the needs of science students when entering the University of KwaZulu-Natal, South Africa (UKZN). Using a quantitative research design, 95 students that were enrolled for a Science Foundation Programme (SFP) at UKZN completed a questionnaire that required them to rate the importance of 19 non-academic needs. 40 (42% of) students in this sample had come from a rural area. The majority of students (96%) reported that their most important need was career advice. Chetty and Vigar-Ellis (2012) suggest that this need may be a result of poor standard of education and the lack of support structures. The remaining four most commonly cited needs included counselling advice, financial support for university fees, accessible information regarding university admission process and information on how the SFP could assist them in their science related degrees. It has been noted that South African school learners from historically black schools perform poorly in the areas of literacy, mathematics and sciences due to poor quality secondary schooling (see, for example, Bloch, 2009; Christie, 2008). It could be argued that many black

students are offered insufficient career advice as township, rural schools and even former Model C schools may not offer particular subjects that develop prerequisite theoretical knowledge and practical skills for the STEM disciplines at university. A research study that was conducted by Kaufman (2003) at Wits indicates that first year female engineering students needed academic support in engineering graphics as these students had not taken technical drawing at secondary school.

Similarly, Mokone's (2008, p. 107) research confirms this finding as "[m]ost participants showed that at school, many girls did not take courses like technical drawing because it is seen as a boys' course. In fact teachers encouraged girls not to take such courses because they are not for girls". Ryle (1945) shows that knowing-that presupposes knowing-how, thus students who have studied prerequisite subjects, offered by their high school, have had the time to appropriate theoretical concepts through their daily experiences and experiments. In doing so, they may have developed habitual acts of practical reasoning which are particularly important for STEM fields. However, I suggest that even if schools offer prerequisites subjects for STEM degree majors, students may not be able to obtain knowledge-that without laboratory and technological resources. Moreover, students who had access to both the prerequisites subjects for STEM (the know-that) as well as the laboratory and technological resources (the know-how) but they may have been taught in particular ways that encourage rote learning instead of higher-order thinking, which subsequently obstructs their appropriation of knowledge at university. These students are faced with the additional pressure of 'unlearning' in order to understand particular phenomena and to approach old problems with new questions. It is notable that young black women who come from townships and rural schools are most likely to have experienced the aforementioned barriers to learning, namely the unavailability of particular subjects, lack of learning resources and ineffectual pedagogical practices (see, for example, Liccardo, Botsis & Dominguez-Whitehead, 2015).

Put simply, the transition from secondary and tertiary education is especially challenging for black students from both rural and urban areas because their educational and socio-economic backgrounds differ significantly from that of their more advantaged

counterparts (Gardiner, 2008; Sennett, Finchilescu, Gibson & Straus, 2003). Social acclimatisation may be particularly difficult for young women from rural areas (Farrell & Farrell, 2000). South African literature indicates that black students from both rural and urban areas continue to experience problems adjusting to university life in their second and third year of study (Soudien, 2008; 2012). Furthermore, residential students face additional challenges in adjusting to university because they leave their support network and enter a new social landscape (Pancer, Pratt, Hunsberger & Alisat, 2004). Research demonstrates that social integration and the quality of new friendships for female residential students are more valuable to them than academic integration (Buote, Pancer, Pratt, Adams, Birnie-Lefcovitch, Polivy & Wintre, 2007). Furthermore, Soudien (2008) notes that students from 'disadvantaged' backgrounds who attend elitist universities oftentimes become alienated from their communities.

Students might struggle to immerse themselves in the practical application of theory because of the university's under-preparedness in aligning its academic practices with the theoretical and practical needs of its students. The under-preparedness of mainstream higher education programmes is demonstrated in its treatment of the student intake as homogeneous instead of addressing the disparities in educational background (Scott, Yeld & Hendry, 2007). This homogenous-like intake serves to privilege or reward 'traditional' student groupings (from well resourced former Model C schools and independent schools) that have developed the background knowledge needed to succeed at university. Thus the increasing diversity of the student intake necessitates the modification of assumptions about traditional educational capital. "As long as these unitary assumptions remain dominant, the articulation problem will continue to undermine the development of many talented students … and will be exacerbated by any future growth in the diversity of the intake" (Council on Higher Education, 2009, p. 44). Therefore universities have the responsibility to broaden students' 'epistemological access' (Morrow, 2007) by offering students enhanced entry to theoretical knowledge ('knowledge-that') and practices of knowledge production ('knowledge-how'). Put differently, universities need to be responsive to "epistemological activities underpinning a systematized form of inquiry" (Slonimsky & Shalem, 2006, p. 37). In order to perform well, students must not only gain

access to established bodies of knowledge but also become inculcated within the institutional culture of learning.

It is clear that the under-preparedness of students "reflects a systemic failure by the educational system to initiate these students into the world of academic study and its implicit rules of enquiry and knowledge construction" (Bradbury & Miller, 2011, p. 8). Related to academic under-preparedness is the issue of confidence. The lack of prior experience with computers for instance, could have a negative impact on black women's confidence levels with computers. This is particularly concerning because the possession of computer programming skills is critical to all scientists, engineers and architects. In a study that required students to rate their confidence in solving problems with computers, Irani (2004) found that "women rated themselves an average of a half point less confident that their peers in [a first year course in computer science] while men rated themselves an average of six-tenths of a point *more* confident than their peers in the course" (p. 196, [original emphasis]). Moreover, Galpin, Sanders, Turner, and Venter (2003, p. 17) reported that university students without prior experience of computer programming had lower self-efficacy beliefs. These findings are consistent with the literature on women having low confidence in their computer programming abilities. Despite obtaining equal or higher academic scores than their male counterparts, women consistently report lower confidence than men and underestimate their abilities in computing (see, for example, Beyer, Rynes, Hay & Haller 2003; Clarke & Chambers, 1989; Irani, 2004; Henwood, 2000; Sanders & Galpin, 1994; Shashaani & Khalili 2001; Mitchley, Dominguez-Whitehead & Liccardo, 2014; Varma, 2002; Zappert & Stanbury 1985). Research that was conducted at Wits found that first year male students in Computer Science had higher self efficacy than their female counterparts with respect to their perceived aptitude for computing and academic achievement, although there was no difference in their marks (Sanders & Galpin 1994, p. 2). These findings raise critical concerns about women's attrition in computing. The negative affirmation of women's capabilities has implications for their participation and persistence in developing a career in STEM fields.

3.6.1.2. Curriculum, pedagogy and assessment

Curriculum materials, course design and pedagogy may also contribute to the under-representation of black women in STEM. Educators and researchers continue to deconstruct the problem of racial and gender bias in school textbooks (see for example, Walford, 1981). However, Clark Blickenstaff (2005) suggests that curriculum materials should display the contributions of women scientists that are less known. Tai and Sadler (2001) found that course design in secondary school might have a differing effect on the academic performance of men and women at university. Furthermore, the curricula in higher education are heavily informed by the European tradition and Goduka (1996, p. 26) has noted that the professors in STEM are predominantly white males who may not be prepared to address diversity in the South African curriculum. Bergström (2014) and Schon (1983) suggest that despite the reformation of architectural education, architects continue to be taught in the traditional way of emphasising individual project skills and disregarding reflective and social practicum.

Seymour (1995) interviewed a number of science students who had dropped out of various universities in the United States, and found that the teaching techniques that were used were problematic for over 90% of students. Clark Blickenstaff (2005) reported that competitive grading systems prevented students from improving their understanding through collaborative activities. For instance, there is a growing body of research literature that supports the use of pair programming as a teaching-learning strategy which promotes a collaborative learning environment and helps students, particularly women, succeed (see for example, Ross & Schulz, 1999, Williams & Kessler 2001; Werner, Hanks & McDowell, 2004). Pair programming (or peer programming) is a software development technique that requires two (or more) programmers to work collaboratively with one computer while coding (Williams, Kessler, Cunningham & Jeffries, 2000). Several studies report that women's attrition in computing may be attributed to a classroom or workplace environment that is unresponsive to women (Weinberger, 2004; West & Ross, 2002) the perception that information technology thrives in a competitive

atmosphere as opposed to a collaborative one (Werner et al., 2004); the field's lack of engagement with social discourse (Weinberger, 2004; Wilson, 2003) and, the masculine teaching methods and stereotypes associated with the field (Clegg, 1999; Clegg & Trayhurn, 2000; Fisher, Margolis & Miller, 1997; Wilson, 2003). Pair programming and similar teaching-learning strategies, grapple with the aforementioned issues by displacing the masculinized notions of an emotionally detached autonomous self with a feminist approach to science that promotes collaboration (Hanson, 2007). Within a "pair-oriented culture" (Werner et al., 2004, p. 6), gendered interactions are no longer located in male-dominated power hierarchies but rather in social relations (Hanson, 2007). These kinds of collaborative teaching-learning strategies may assist women in their career development in science because it creates an environment that is conducive to the formation of support networks and the establishment of an "identity of competence" (Irani, 2004, p. 195). This kind of inclusive culture encourages the development of social interaction skills necessary for collaborative activities. Furthermore, these support networks create a space for women to develop feelings of competence in working with computers, which consequently enables them to identify themselves with science and to create a sense of belonging in STEM fields.

In separate studies, Wilkinson and Marrett (2013) and Sadker and Sadker (1994) found that regardless of the subject or age of learners, girls receive less attention from their teachers than boys. There are some science instructors who may believe that science education is more important for boys than for girls (Spear, 1987) and/or for white people than for black people. These perceptions may have an impact on their teaching and interactions with students. Citing two research studies (Morse & Handley, 1985; Sadker & Sadker, 1994), Clark Blickenstaff (2005, p. 54) reports that this problem is "particularly pronounced in science and math classes, where teachers are more likely to be men, and the majority of students are male". Commenting on the design studio, which is a core aspect of the architectural curriculum, many researchers (Ahrentzen & Anthony, 1993; Argyris, 1981; Cuff, 1992; Fowler & Wilson, 2012; Stead, 2012) have argued that the professional practice is structured in such a way that it discourages the interrogation by others (particularly women) because the 'crit' and 'jury' treats students as 'passive

recipients' and constructs the design juries, which are typically 'white misters', as the 'masters' of architectural design.

In addition to pedagogy, I would argue that assessment may also contribute to the attrition rates of black women in STEM. In the South African context, it is evident that diversity in students' schooling background and academic preparedness complicates the challenges facing contemporary university teaching and assessment. Knapper (2001) argues that deficiencies in university teaching relate to issues around didactic instruction, the focus on lecturing as opposed to teaching, the lack of engagement between teachers and students, the inadequacy of assessment methods in measuring learning goals and the infrequent application of knowledge in solving real-world problems. Teaching and assessment could be viewed as a social practice (see, for example, Broadfoot 1996; Filer 2000; Gipps 1999; Shay 2004; 2005) that is concerned with people's habitual acts of judgment making. Although the educational development community continues to promote the formation of criterion-referenced assessment in improving teaching and assessment practice, the use of assessment criteria poses numerous challenges for teachers because the meaning of the term 'criterion' is located in space and time and changes in different contexts (Shay 2008a).

Thus the formulation of criteria is often vague, subjective, imprecise, and the lack of reference points lead to the invisibility of standards (Shay, 2008a). Shay (2008b) writes:

> "These classification acts are constituted through a complex set of disciplinary, departmental and institutional values embedded in rules and procedures … In exploring assessors' judgment-making processes it emerged that the classificatory frameworks which inform these judgments are often deeply internalized: they are the outcome of being at home in a particular 'field'. Assessors may not be fully conscious of their ways of viewing and classifying the world, and thus unable to fully articulate their judgment-making processes" (160).

These classification acts may refer to the daily or habitual acts of judgment as performed by teachers (who are situated in particular disciplines, departments and institutions) when

formulating learning goals, teaching methods and assessment criteria for specific course/s. Bourdieu and Passeron (1977) add that teachers may utilize assessment tools that reward dominant culture-related competences. It is noteworthy that although pedagogical issues are clearly important, it is not the primary focus of this study, which focuses primarily on university access and exclusion, background knowledge and academic under-preparedness.

There are few South African role models in STEM careers for women to follow, as the majority of scientists and engineers are white men. The lack of black graduates in South Africa not only affects the racial profile of academic staff in public higher education system but it also means that there are few role models with whom young aspiring scientists could identify with. One of the many recommendations from Lynch and Nowosenetz (2009) and Shackleton, Riordon and Simonis (2006, p. 579) research studies is that more opportunities should be created for young aspiring scientists to interact with other women who have been successful in the field, as "the powerful impact that women exert as role models to other women and students cannot be over-emphasised". Furthermore, research evidence suggests that the experience of mentoring is enhanced through shared cultural backgrounds and women who have experienced similar experiences of racial and gender discrimination (Reddick, 2011).

Women have historically faced restricted options of educational opportunities and social roles because they have traditionally carried the responsibilities of family and community development (Mama, 2003). Fennema and Peterson (1985) argue that sex-role identity has an effect on student achievement:

> "Mathematics is not seen as an appropriate domain for females. Therefore, achievement by a female in the mathematical domain results in her not fulfilling her sex role identity adequately. She perceives that teachers and peers have lowered expectations of her mathematical success because she is female. ... others see her as somewhat less feminine when she achieves in mathematics ... she thinks others have negative feelings about her success" (p. 25).

Stereotypes that are associated with 'feminine' and 'masculine' careers (see, for example, Clegg & Trayhurn, 2000; Fisher, Margolis & Miller 1997; Wilson, 2003) tend to influence people's attitudes toward women in STEM and the internalisation of these gender stereotypes by women could lower their self-efficacy and career aspirations. Women may find that they are in a minority in a male-dominated culture in which "gendered self-presentation and communication, rather than objective measures of ability, plays a large role in developing confidence [and perseverance]" (Irani 2004, p. 195). Several studies have reported that negative stereotypes regarding young women's abilities in mathematics lower their test performance as well as their aspirations for STEM careers over time (Nosek, Banaji & Greenwald, 2002). Bjorkman, Christoff, Palm and Vallin's (2008) theorization of gender stereotypes as socially situated could account for the high attrition of women in STEM. Singh et al. (2007, p. 516) explicate that according to this theory of gender stereotypes, "typical 'feminine' behaviour is incongruent with academic success in computer majors, where implicit social rules work to maintain traditional success in computer majors [and] traditional male-dominated power hierarchies, and where myths of academic success are inconsistent with some female roles".

3.7. Conclusion

I have discussed a range of empirical studies that focus on the raced, gendered and classed construction of identities among adolescents, particularly how the contradictory role expectations of capitalist, racist [and sexist] ideology have hindered the development of healthy self-concepts among black South African adolescents (see, for example, Stevens & Lockhat, 1997). I have also explored the ways in which education provides young black women with the tools to deal with the contradictory role expectations from opposing ideologies (Middleton, 1987). In addition to how emotions and relationality with significant others enable women to break the boundaries of their social location (Tamboukou, 2006). In this chapter, I presented Carlone and Johnson's (2007) model of science identity, which is based on three interrelated elements of identity, namely competence, performance, and recognition. Drawing on the metaphor of a "leaky pipeline", Clark Blickenstaff (2005) propose nine "layers in the filter", which I have

adapted to the South African context. Thus, I have utlised the following overarching reasons for the under-representation of women in STEM fields in order to analyse and interpret the findings within this study: university access, background knowledge and academic under-preparedness, curriculum materials and design, pedagogy, hostile environment, assessment, role models and the pressure to conform to gender role expectations.

CHAPTER 4:
METHODOLOGY

4.1. Introduction

This research study is situated in phenomenological hermeneutics and I propose the application of a qualitative biographic narrative interpretive methodology in the study of black women's science identities and narrative identities. As there seems to be little research on the lives of black South African women scientists in post-apartheid South Africa, I needed to develop an innovative research typology that would offer insights into how these women (co)constructed, (de)constructed and (re)constructed their-selves as scientists. Accordingly, this study utilises a biographical narrative method and aspects of visual methodology within narrative inquiry. The interview data were collected through biographic narrative interviews in which I explore these women's 'lived lives' in relation to their 'told stories' (Wengraf, 2011). This method of data collection has been particularly useful because the focus of this study is not on 'real' events as experienced by these women but rather on how they select, recount, (re)construct and make meaning of particular past events and experiences in their narrative accounts. As narrative analysis is concerned with intention and language, it is important to question how and why (form), what (content), and where (place-context) stories are told (Reissman, 2008). Thus the data are analysed and interpreted in three ways: First, I implemented a structural analysis of the told stories of four women in order to examine the narrative constitution of identity; Second, across all 14 cases I conducted an intersectional methodological approach of 'intracategorical complexity' (McCall, 2005) to analyse the content of their experiential narrative accounts in order to identify discursive themes that account for how the participants' science identities are constrained within their location in the 'matrix of oppression' (Collins, 2002) and; Thirdly, I conducted a detailed narrative analysis of a single case study and present a narrative portrait which disentangles the relationship between the form, content and context of a life narrative.

4.2. Biographical narrative method

Narrative social research stems from the humanist and poststructuralist traditions. The former subscribes to a holistic, person-centred approach whereas the latter is primarily concerned with narrative fluidity, contradictions and how multiple, disunified subjectivities and power relations produce narratives (Andrews, Squire & Tamboukou, 2008). The assumptions underlying the humanist tradition is that narratives or stories give external expression to internal individual states whereas the poststructuralist tradition is concerned with the ways in which narratives are socially produced. However, these traditions can be brought together by politics or "their shared tendency to treat narratives as modes of resistance to existing structures of power" (Andrews, Squire & Tamboukou, 2008, p. 4).

The notion of biography as a social construct that comprises the subject's experiential world and their social reality has been presented as a way out of the subject-society dualism (Bertaux, 1981; Kohli 1986; Schütze, 1992; Rosenthal, 1993; Wengraf, 2001; 2011). Biography is synonymous with life writing as the Greek root word for 'bio' means life and 'graphe' means writing. Biographical and life history researchers aim to portray a Gestalt sense of an individual life (Rosenthal, 1993). Although this study draws on the humanist conception of a holistic, singular subject by using a biographical narrative method to explore the lived lives and told stories of a particular group of women; narratives of identity are understood as multiple, fluid, relational, fragmented, and (re)constructed in networks of relationships with others and language in time and space (see, for example, Crites, 1986; Fay, 1996; Freeman, 1993). Thus, in this study I am not concerned with resolving the conflicting positions between the humanist and poststructuralist traditions of narrative research, instead I aim to work across these multiple theoretical divisions in order to recognise different and "contradictory layers of meaning, to bring them into useful dialogue with each other, and to understand more about individual and social change" (Andrews, Squire & Tamboukou, 2008, p. 4).

Andrews, Squire and Tamboukou (2008) explain that one of several theoretical divisions

within narrative research pertains to spoken narratives of past events (Labov & Waletzky, 1967) versus experience centred narratives (Squire, 2008a). ‘Small stories’ emphasise event-centred and socially orientated narratives (see, for example, Bamberg & Georgakopoulou, 2008; Georgakopoulou, 2007) whereas ‘big stories’ focus on the experiential richness of narrative accounts (see, for example, Freeman, 2006). Although both approaches are based on the assumption that stories give external expression to internal individual states; the event centred approach maintains that internal representations are more or less constant whereas the experience-centred approach emphasises the transformation of these representations over time and place. In this study, I investigate the ways in which small stories are socially produced within these women’s narratives in addition to the experiential richness of particular incident narratives within their life stories. It is important to examine both ’small and big stories’ because events and experiences are reconstructed through the development of a narrative identity. Thus, the focus is not on ‘real’ events as experienced by these women but rather on how they select, recount, (re)construct and make meaning of particular past events and experiences in oral storytelling as well how the form of narrative (i.e. interview text) functions to structure stories.

In examining how one proceeds from their lived life (i.e. real events) to telling their life story (i.e. reconstructed events and experiences), Rosenthal (1993) poses a critical question, “To what extent is one receiving an account of an ‘actual life’ history and to what extent is one being presented with the autobiographer’s present construction of his or her past, present, and future life?” (p. 4). Similarly, Townsend and Weiner (2011) question, “[I]f factual accuracy and objectivity in biography are no longer to be relied on, where does this leave biographical scholarship?” (p. 95). Should the biographer aim to objectively know the other and present factual information about the subject’s lived life? Alternatively, should the biographer interpret the hermeneutical openness of a subject’s life? Although, to what extent do biographers (and ideologies) appropriate subjects for themselves? The assumption that auto/biography provides a ‘real’ or ‘truthful’ portrayal of a life is fallacious because experiential accounts (which are based on fallible memory) are not an accurate description of events but rather a construction and interpretation of

reality. It is difficult to provide a coherent account of a life because the self is fluid and fragmented by the workings of memory, experience and imagination. The young women's told stories are a reflection of their ongoing strategies of meaning-making. "Rather than seeing these stories as providing access to truths, the recordings offer an opportunity to hear the self in the process of becoming through reflective narration" (Sandino, 2010, p. 178). Tamboukou (2013) argues that it is within "portraits of moments" in which the biographical subject becomes a "narrative persona" "who responds to the theoretical questions and concerns of the researcher, without necessarily validating them with [concrete experience]" (p. 4). In this study, objects and visual narratives act as "portraits of moments" that these young women use to create a "narrative persona". In questioning what permits researchers to think of narrative construction as reconstruction of events, Sandino proposes that Ricoeur (1988) focuses on reality and unreality in narrative instead of 'truth', thus "collaps[ing] the opposition of truth versus untruth, and allow[ing] one rather to understand oral histories as both *re*constructions of historical events and narrative *con*structions" (Sandino, 2009, p. 93, [original emphasis]).

Ricoeur (1981) elucidates how life story is shaped through the organisation and interpretation of unrelated occurrences that follow the principles of 'emplotment'. Thus a life story developed by a narrative account creates a dialectic relationship between subjective experience and social structure. Put differently, "Narratives do not merely describe what someone does in the world but what the world does to that someone. It allows us to infer something about what is feels like to be in that story world" (Mattingly, as cited in Riessman, 2008, p. 22). I argue that the categories Ricoeur (1984) uses in conceptualising a plot as the mimesis of action could be compared to the prefiguration of 'lived life', the configuration of the 'told story' and the refiguration of narrative identity. The 'lived life patterns' (Wengraf, 2011) are a representation of a linear progression of significant events throughout the young women's lived lives. The women's 'lived lives' could be viewed as "mimesis one" (Ricoeur, 1984) or the prenarrative to the told story because the biographical sketches simply list significant events without making meaningful connections between them. The emplotment or configuration of their 'told

stories' constitutes "mimesis two" (Ricoeur, 1984). Lastly, by emplotting their selves in their told stories, they refigure their narrative identities, which are situated at the "intersection of the world of the text and the world of the hearer or reader" (Ricoeur, 1984, p. 71). Thus "mimesis three" (Ricoeur, 1984) constitutes a narrative identity, which creates new 'worlds' or other selves.

In reconstructing a life history, the subject selects, connects and relates biographically relevant events, experiences and actions in a "temporally and thematically consistent pattern" (Rosenthal, 1993, p. 3) that correspond with a 'subjective' or phenomenal' time model (Rosenthal, 1993) as opposed to an 'objective time' model. This reconstruction occurs against a backdrop of a biographical structure of meaning because these stories are situated or embedded in a particular context, which informs the subject's present perspective. It is from this perspective that the subject selects and creates temporal and thematic connections between particular events and experiences, thinking about how the past interactions, present situations and imagined future realities influence her interpretation of the meaning of her life (Rosenthal, 1993). The interview is a product of the interactional processes or co-constructed narratives between the subject, interviewer and imaginary audience, as well as the subjects' interpretation of the thematic topic of the interview. What guides the narrator's selection of relevant stories during the interview is determined by a combination of her memory of past interactional incidences, her present perceptions and her anticipated future realities. Rosenthal (1993) writes:

> "This texture of meaning is constantly reaffirmed and transformed in the 'flux of life'. It is constituted by the interweaving of socially prefabricated and given patterns of planning and interpretation the 'normal' life, together with the biographically relevant events and experiences and their ongoing reinterpretations" (p. 3).

4.3. Visual narrative method

Meaning is not only communicated through verbal language but also through visual representations of experience. I claim that time and space intersect and fuse in objects,

which enables an object to ‘hold’ memories of symbolic significance. Objects thus instantiate chronotopes in that:

> “[t]ime takes on flesh and becomes visible for human contemplation; likewise, space becomes charged and responsive to the movements of time and history and the enduring character of a people. ... Chronotopes thus stand as monuments to the community itself, as symbols of it, as forces operating to shape its members' images of themselves” (Bakhtin, 1981, p. 7).

In this study, I have utilised ‘objects’ that have significance for these women as a way to trigger their memories and stories of particular incidents because “memory texts typically involve snapshots and flashes since the language of memory seems to be above all a language of images” (Kuhn, cited in Sandino, 2009, p. 77). There is a hermeneutic openness in the way in which visual narratives ‘work’, leaving them exposed to infinite exploration of interpretations as opposed to ‘discovering’ their truth. Just as photographs (and other imagery) create ‘events’ and ‘moments’ (Bourdieu, 1990; Harrison, 2002), the use of ‘objects’ in this study have triggered moments of events that are then narrated and reflected upon.

4.4. Research aims

This research study is inspired by the uniqueness of the “narratable self” (Caverero, 2014) the question of who in relation to what categories oneself ‘belongs’ to. I am interested in how new meanings of self-identities reconfigure the social identities of young black women in science and transform time into ‘other spaces’ of belonging or new imagined communities beyond categories of social divisions. Thus, the focus of this study is on black women’s experiences as science students, graduates and professionals within Higher Education and business institutions in South Africa and the ways in which they navigate institutional spaces that have historically been dominated by white men and specific privileged forms of knowledge production processes. I investigate how the dominance of particular forms of “cultural capital” (Bourdieu, 1986) at university serves to exclude young women from the domains of knowledge that constitute the sciences.

Thus, I am interested in the ways in which identity-making takes place among this group of women by virtue of them occupying a paradoxical position and feeling a dual sense of belonging and alienation to a marginal and an elite group simultaneously. As temporal shifts in individual stories reflect broader movements of history, so can individual life narratives provide an interpretive entry point to understanding the intersection between psychological and social realities (Andrews, Squire & Tamboukou, 2008; Crites, 1986; Ricoeur, 1981). Thus, using a narrative method to enquire into the lives of these young women, the aim is to critically examine how they (re)construct their selves through the art of narrative and traverse barriers within white and male-dominated spaces into 'other spaces'. In essence, this study explores questions of discursive, material and symbolic elements that emerge within their narratives across temporal shifts, how these come to reflect specific subjectivities and intersectional identities, and what these collective stories may be able to tell us about new "imagined communities" (Anderson, 1991).

4.5. Research Questions

This study aims to address the following research questions:

1. How do black South African women (re)construct their-selves through narrative?
2. How do temporal and spatial shifts complicate black South African women's narrative identities?
3. How do black South African women (co)construct, (de)construct and (re)construct their-selves as scientists?
4. What discourses do black South African women draw on in their talk about women's participation in STEM and in the construction of their intersectional identities?
5. How do their science identities reconfigure their experience of what 'race' and gender might mean for them or how do their science identities and other aspects of their identities intersect and complicate each other?
6. What barriers do black South African women face in their pursuit of a STEM degree and how do they traverse these barriers (or not)?
7. How do collective stories in relation with 'others' in and through time with space translate into new "imagined communities"? What does it mean for black South

African women to become the next generation of scientists, engineers and architects?

4.6. The participants

4.6.1. Recruitment into the Oya scholarship programme

The recruitment process into this scholarship programme involved “a complex blend of cognitive, affective, motivational, dispositional, socio-cultural, economic and institutional variables” (Cliff, Yeld & Hanslo, 2007, p. 31). Educators and school principals were asked by the university to nominate excellent Grade 12 learners who resided in the geographical areas of Gauteng, Limpopo and Mpumalanga, were in the top 5% of the Grade 11 class at their particular schools and achieved a minimum of 65% in Maths, Science, and English on higher grade in their Grade 11 final examinations. Nominators were required to rank and comment on the nominees’ academic achievement, motivation levels, personal qualities, involvement in community service, leadership, and English communication skills. Nominees were subsequently invited to write various selection assessments; namely, the Placement Test in English for Educational Purposes (PTEEP), the Mathematics Comprehension Test (MCOM), the Reasoning Test (RT) and the Biographical Questionnaire (BQ). Consequently, the results of these assessments informed a preliminary shortlist. Only those nominees who received a firm offer from their chosen Faculty at Wits were considered for the Oya scholarship. A total of 20 students entering the university in 2007 and 2008 were awarded the scholarships; 10 students registered in the Faculty of Engineering and the Built Environment and the remaining 10 students registered in the Faculty of Science.

4.6.2. Recruitment into the research study

A purposeful method of recruitment was adopted as I invited 17 women who were recipients of the Oya scholarship programme to participate in my study. Although there were 20 women that were initially part of this scholarship programme, I did not invite the three women with whom I had lost contact. My aim was to recruit a minimum of 10

women and maximum of 15. Tables 4 and 5 provide the biographical details and academic record for each of the 14 participants. To protect the identities of the participants, pseudonyms have been substituted for their real names. I thus phoned 17 women and verbally explained the aims and purposes of this research study as well as answered their questions. I then emailed each person a 'participant information form' (see Appendix 3) that reiterated the nature of the research as well as provided a detailed description of the research process. I provided my contact details on the participant information form for those who were interested in participating. I was aware that by asking all 17 women to participate in a biographic narrative interview, I would have collected a corpus of data, most of which I could not use for this thesis. Nevertheless, I decided to adopt an inclusive approach and provide the 17 women with an opportunity to participate in this study should they so choose. Accordingly, 14 women agreed to participate and we subsequently set up interview dates during September of 2012. Three women who chose not to participate indicated that they were busy with exams and/or vacation work. All participants are black South African women who are former students and/or graduates in the fields of Science, Engineering and Architecture at the University of the Witwatersrand, Johannesburg. One woman (who dropped out of the programme in 2009) subsequently registered at the Faculty of Natural and Agricultural Sciences at the University of Pretoria (hereinafter referred to as UP).

These young women in this study could be viewed as living at a cultural crossroads by virtue of their coexisting membership to a marginal and an elite group, thus forming an outlier group. On the one hand, the lingering effects of apartheid policies have resulted in the continued marginalisation of black women. However, on the other hand, globalisation and the transformation project for Higher Education in South Africa have simultaneously placed them in a unique position of power in society. Historically, the young women in this study have been marginalised in several ways. For instance, they are not only black women at a traditionally white university and students in male and white dominated fields but they also come from low income families in rural and township communities. However, the categories of social locations and corresponding positions of power are fluid and are continually contested in different historical contexts (Yuval-Davis, 2006).

Table 4: Participants' biographic data

Pseudonyms	**Home province**	**Home language**	**Family members**	**Secondary school**
Alala Celukwazi	Gauteng	isiZulu and seSotho	Mother (domestic worker). Late father. Two brothers	Former Model C school
Odirile Kefentse	Gauteng	seTswana and English	Mother (deputy principal). Father (deputy principal). Brother	Former Model C school
Naila Masri	Gauteng	English and Afrikaans	Mother (claims administrator). Father (unemployed). Brother	Former Model C school
Takalani Nengwekhulu	Limpopo	TshiVenda and English	Mother (educator). Late Father (principal)	Rural school
Kgnaya Semenya	Limpopo	sePedi	Mother and father (teachers). 2 brothers	Rural school
Khanyisile Baloyi	Gauteng	isiZulu and English	Father (technician). Sister. Husband. Son	Former Model C school
Mamoratwa Mannya	Limpopo	Tswana and English	Mother and father (teachers). Brother. Two sisters. Daughter	Rural school
Ethwasa Mthembu	Gauteng	isiZulu	Mother (nurse). Father (‘planner’). Three sisters	Former Model C school
Amirah Hashemi	Gauteng	English	Mother (teacher). Late father (teacher). Three brothers	Former Model C school
Nosakhele Khumalo	Gauteng	isiZulu	Mother (factory worker). Father (driver).	Township school
Kaiya Lebona	Mpumalanga	English	Mother (nurse). Father (self-employed). Sister	Former Model C school
Welile Ndebele	Gauteng	Pedi	Mother (clerk). Absent father. Son	Former Model C school
Itumeleng Nyako	Gauteng	isiZulu	Mother (clerk). Late father. Brother	Former Model C school
Ambani Rambau	Limpopo	Venda	Mother and father (teachers). Brother. Sister	Rural school

Table 5: Participants' academic record

Pseudonyms	Degree of Study	Postgraduate	2012 Status
Alala Celukwazi	Architecture	N/A	Failed repeat 3rd year in 2010 (Academically excluded)
Odirile Kefentse	Architecture	2011-2012	Completed Masters degree in 2012
Naila Masri	Civil Engineering	2011	Completed Honours in 2011
Takalani Nengwekhulu	Aeronautical Engineering	2012	Completed Honours in 2012
Kgnaya Semenya	Chemical Engineering	2012	Completed Honours in 2012
Khanyisile Baloyi	Computer Science	2010-2012	Masters in progress
Mamoratwa Mannya	Computational and Applied Mathematics	2011	Completed Honours in 2011
Ethwasa Mthembu	Biological Sciences	2010-2012	Masters in progress
Amirah Hashemi	Biological Sciences	2010-2012	Masters in progress
Nosakhele Khumalo	Biological Sciences	2010-2012	Masters in progress
Kaiya Lebona	Biological Sciences	2011	Completed Honours in 2011
Welile Ndebele	Biological Sciences	2011	Completed Honours in 2011
Itumeleng Nyako	Biological Sciences	2011	Completed Honours in 2011
Ambani Rambau	Electrical Engineering at Wits (dropped out 2009). Agriculture Sciences at UP (2010)	N/A	3rd year Agriculture Sciences in 2012 at UP

Consequently, these young women are crossing the barriers of their particular social locations, transitioning into white and male-dominated spaces and “actively rewriting the texts of their bodies and societies” (Haraway, 1991, p. 177). In becoming professionals, these women are also shifting the class positions of entire families. They are able to navigate between these spaces because the categories to which they belong exist as axes of power in society (Yuval-Davis, 2006).

In other words, these women have come to occupy positions of power in both the production of knowledge and the functioning of society for several reasons. For instance, globalisation and the information technology revolution have given rise to a 'knowledge society' that is based on the belief that science, technology and innovation are the driving forces of economic and social development (Thorlindsson & Vilhjalmsson, 2003). In this ‘developing’ context, there is a current and increasing shortage of many critical skills in South Africa. There is also a steady decline in the graduation rates of postgraduate students (Council on Higher Education, 2009). Further, the transformation programme for higher education in South Africa is particularly concerned with issues of equity, access, redress, efficiency and effectiveness. The women in this study were identified as being academically talented on the basis of excellent school results; they were accepted into STEM fields at Wits and participated in a scholarship programme. Therefore particular attention has been paid to the discourses of power (Tamboukou, 2006; 2008) that position these women as simultaneously powerful (as scientists, as graduates, possibly as members of a new political elite) and marginalised (as black women from relatively poor socio-economic backgrounds).

4.7. Data Collection: Biographic narrative interviews

The interview data were collected through biographic narrative interviews where the life history and lived experiences of the particular group of women was explored (Wengraf, 2011). A biographic narrative is a story about a person’s life and lived experience and supports a psycho-socio dynamic approach (Wengraf, 2011). By exploring locally-historically situated subjectivities, Wengraf explains that the Biographic Narrative

Interpretative Method (BNIM) aims to clarify evolving situations and subjectivities. Wengraf (2011) writes: “This is done by eliciting self-biographising narratives and interpreting them by way of ... procedures which involve thinking about the historical context of the life [and] interview interaction: a ‘situated telling of a whole story’ by an equally-situated subjectivity” (p. 51).

Rosenthal (1993) explicates that biographic narrative interviews are divided into two main parts. During the first part of the interview, the narrator provides a narrative of events and experiences from their lives, encouraged by the interviewer with “nonverbal and paralinguistic expressions of interest and attention” (p. 1). A period of questioning is followed in the second part where the narrator is asked to elaborate on topics, experiences and events that were mentioned in her main narrative. There is a reciprocal relationship between the reconstruction of the ‘biographical overall construct’ and the ‘biographically relevant experiences’ because the construct determines which experiences are relevant and the combination of these experiences form the construct (Rosenthal, 1993). The interviews were held at each participants’ favourite place at Wits, which gave them a sense of control over the interview process and made them feel more comfortable.

The biographic narrative interviews were divided into three subsessions. The first session was a non-interrupted narrative of the story of their life, which was followed by a second subsession in which the participants told me about how their ‘objects’ represented their past, their life as university students, and where they desire or hope to be in the future. The third subsession focused on the questioning of “particular incident narratives” or ‘PINS’ (Wengraf, 2011) which arise from events, experiences, generalisations and feelings that have been discussed in the whole narrative in subsession one and triggered by the objects in subsession two.

4.7.1. Subsession one: Single question aimed at inducing a narrative (SQUIN)

In subsession one, I asked the participants a “single question aimed at inducing a narrative” or a ’SQUIN’ (Wengraf, 2011). Thus, this subsession was a non-interrupted

initial narrative during which I asked them the following question, “As you know, I’m interested in the lives of science students and graduates in South Africa. In my research study, I want to understand how being a science student or training to be a scientist over time shapes the identities of black South African women. So, ‘tell me the story of your life – about all the events and experiences that have been important to you personally, up until now’ (Wengraf, 2011). The participants were asked for their whole life narrative in order to gain a general view of what has changed (or remained the same) as well as some sense of how they currently understand that change (or an element of self-theory) over their whole life (Wengraf, 2011). During subsession one, these women spoke from 20 minutes to over two hours, with the exception of two women, Kgnaya and Ethwasa, who spoke for five minutes only.

4.7.2. Subsession two: Visual narratives

In subsession two, ‘objects’ were used as a way of eliciting particular incident narrations. Accordingly it is intended that the objects, which hold symbolic significance for the participants, would illustrate a visual history of their told stories. Before conducting the interviews with the 14 participants, I asked each participant to choose and/or make three ‘objects’ that represent or reminded them of their past, their life as university students (and their workplace, if applicable), and lastly where they desire or hope to be in the future. The instruction was framed as follows, “Please bring something that is important to you that represents your past, something that represents your life as a university student (and your workplace, if applicable), and something that represents where you see yourself in the future. It could be an image, photograph or picture. It could be an object of some kind that you have made, found, seen or has been given to you. It could be something more symbolic, like a song, poem, piece of writing or music, painting or picture. Just choose three things that feel right in terms of conveying something important about your past, your present (life as a university student or your workplace) and your future”. The participants brought these objects with them to their interviews.

I thus asked the participants to tell me more about their objects, which was not only

meant to trigger memories of personal experiences and events but also facilitate a discussion on their meaning-making strategies. The objects also 'made visible' the reconfiguration of self and (re)construction of their identities through time. The collection of objects (space) and narratives (time) would hopefully project a landscape or instantiate chronotopes that represent 'monuments' to new "imagined communities" (Anderson, 1991). Subsession two lasted between 20 minutes to one hour with each participant. By the end of subsession one and two, I had a complied a list of topics the participants had raised in the chronology of their life events. The process of selecting particular topics was guided by the aims of this research.

4.7.3. Subsession three: Particular incident narratives (PINs)

The focus of subsession three is on the internal questioning of Labov-defined narratives or 'particular incident narratives' (known as 'in-PIN') arising from events, experiences, generalisations and feelings that have been mentioned in the whole story of subsession one and triggered by the objects in subsession two (Wengraf, 2011). The internal questioning of particular incident narratives helped the participants re-live the emotional experience of particular past incidents (Wengraf, 2011). For particular topics raised in subsession one and two, I asked each participant whether they remembered a particular time, situation, phase, example, period, occasion, incident, event, moment, happening or day when it happened (Wengraf, 2011). Subsession two lasted between one hour to three hours with each participant. See table 6 below for a summary of the number of interview hours recorded and a list of objects.

4.8. Transcription

In order to capture what these participants said during their interviews and the way in which it was said, the recorded interview data were transformed into a verbatim transcript of the words spoken using an adapted version of Jeffersonian (1999) transcription notation (see appendix 4). The process of transforming oral data into a textual form is in itself an interpretative task which is bound to create layers of distortion. As the

participants hold particular positions and perspectives, they purposefully construct narratives for the researcher and multiple audiences (Reissman, 2008).

The participants' recollection of past events and experiences is one step removed due to the fact that "investigators access to knowledge about prior - 'real' - events and experience is mediated [by fallible memory]" (Reissman, 2008, p. 29). Moreover, the researcher views and transcribes the oral data through a particular lens. The transcript will be *my* snapshot of *their* snapshot of reality. As Mishler notes, just as "an image reflects the artist's views and conceptions - values about what is important ... interviewers [like artists] fix the essence of a figure" (as cited by Reissman, 2008. p. 50).

The verbatim transcript is further distorted when the researcher intentionally chooses particular passages from the transcript and interweaves his or her own words with the interview text. Being in a privileged position as a researcher, I have thought carefully and reflectively on how to create this archive, as one of my roles is as follows:

> "that of an archivist, as well as a historian, retrieving and storing priceless information which would otherwise be lost. At present the archive in which this material could be copied or restored does not exist; nevertheless his greatest contribution may well be in the collecting and safe preservation of his material rather than in the use he can immediately find for it, or the way he writes it up" (Samuel, 1998, pp. 391-392).

This research study offers analytical insights and contributions to understanding personal and social change, but it also offers an archive that has taken almost one year to compile. Although this archive is inaccessible to the public domain due to ethical reasons, I may return to this data in the future with different questions. Moreover, in order to understand the imbricated levels of meaning within the interview context, I have also taken photographs of the interview locations and the participants' objects.

Table 6: Biographic interview data and objects

Pseudonyms	**Subsession 1: SQUIN**	**Subsession 1: Transcript**	**Subsession 2: Objects and visual narratives Subsession 3: PINs**		**Subsessions 3&4: Transcripts**	**Total number of hours**
Alala	52 min	Yes	Tree metaphor	3hr 30min	Yes	4hr 22min
Odirile	1hr 39min	Yes	iPod, scarf and poetry book	2hr 20min	Yes	3hr 59min
Naila	28min	Yes	Martic CD, blazer and 'friends' T-shirt	2hr 10min	Yes	2hr 38min
Takalani	45min	Yes	Academic transcripts	4hr	Yes	4hr 45min
Kgnaya	5min	Yes	.	55 min	Yes	1hr
Khanyisile	19min	Yes	Ointment, poem, African beads and theatre itinerary	2hr 10min	Yes	2hr 29min
Mamoratwa	1hr	Yes	Photos	1hr 20min	Yes	2hr 20min
Ethwasa	3min	Yes	Jacket and medicine bottle	2hr 40min	Yes	2hr 43min
Amirah	1hr 36min	Yes	Watch, degree, name tags and shawl	2hr 30min	Yes	4hr 6min
Nosakhele	2hr 15min	Yes	House, birthstone and Bonsai tree	1hr 35min	Yes	3hr 50min
Kaiya	57min	Yes	Martic CD, degree and teddy bear	3hr	Yes	4hr
Welile	39min	Yes	Aloe plant, poetry book and library card	3hr	Yes	3hr 39min
Itumeleng	20min	Yes	Awards evening itinerary, Martic badges and photos	1hr 50min	Yes	2hr 10min
Ambani	38min	Yes	Tree metaphor	2h 40min	Yes	3hr 18min
	11hr 36min			**33hr 30min**		**45hr 13min**

4.9. Narrative analysis: content, form, and context of stories

Hoskins (2010) explains that a "qualitative approach offers a snapshot in time … views expressed are often fluid and subject to change as the respondents construct and reconstruct their experiences sometimes in the process of being interviewed" (p. 136). Thus, the data that were collected in this study are "partial and incomplete; an insight into a story in progress rather than a final or conclusive account" (Hoskins, 2010, p. 136). In this study, I have used narrative analysis to interrogate the storied nature of the interview data. As depicted in table 6, I transcribed a total of 45 hours and 13 minutes of interview recoding (11 hours and 36 minutes from subsession one and 33 hours and 30 minutes from subsession two and three). However, it is beyond the scope of this thesis to utilise 45 hours of interview recording, therefore I have chosen to present the analysis from subsession one in the chapters that follow. As narratives determine "how knowledge is constructed in the everyday world through an ordinary communicative act - storytelling", narrative analysis is thus concerned with intention, the assemblage and sequences of events and how language or images are used to communicate meaning (Riessman, 2008, p. 13). Thus, Reissman (2008) argues that it is important to question how and why (form), what (content) and where (place-context) stories are told.

Chapter five is focused on the "narrative syntax" (Squire, 2008b, p. 9) or how participants structure events and experiences that *form* their told stories. In order to examine the narrative form within and across four particular case studies, I draw on the notions of the 'lived life' and 'told story' (Rosenthal, 1993; Wengraf, 2011), emplotment (Ricoeur, 1984, 1985, 1988) and Gergen and Gergen's (1986) criteria of a 'good narrative form'. Chapter five is also concerned with "narrative pragmatics" (Squire, 2008b, p. 9) or how the *interview context* influences the kinds of narratives these women chose to tell their audience/s. Next, in chapters six and seven, I investigate "narrative semantics" (Squire, 2008b, p.9) or the *content* of all the participants' experiential narrative accounts. The *broader context* in which their told stories are situated is also examined. I conduct an intersectional analysis of the narrative content in order to identify discursive themes that account for how the participants' science identities are constrained within their location in

the ‘matrix of oppression’ (Collins, 2002). Whereas, chapter six provides a model for how these women (co)construct, (de)construct and (re)construct their-selves as scientists; chapter seven presents a temporal flow of discursive themes that explain the intersections of 'race', class, gender, language, and religion in relation to their past secondary schooling, present university or working life and projected futures. Lastly, by presenting a narrative portrait of one participant in chapter eight, I have integrated all methods of analysis in discussing the relationship between the form (syntax), content (semantics) and context (pragmatics) of her life narrative.

4.9.1. Phase 1: The ‘lived life’ and ‘told story’

The aim of the analysis in phase one is to explain how black South African women scientists construct their-selves (through their told stories) and how temporal and spatial shifts complicate their narrative identities. The focus is on how these women structure events and experiences that form their told stories and how the interview context influences the kinds of narratives they chose to tell their audience/s. This structural analysis is divided into four steps, which I will now discuss. It is noteworthy that although I implemented these four steps in order to analyse all 14 cases, I have decided to present only four cases for two main reasons; first, it is beyond the scope of this thesis to discuss all 14 cases and second, I noticed that there were four particular patterns in which these women told their stories, thus I chose one case that best represented a particular pattern.

4.9.1.1. Step 1: The ‘living of the lived life’ and ‘telling of the told story’

For each of the 14 participants, I compiled a biographical chronology of their life history by using the biographic narrative interview data. The biographical chronology is depicted in the form of a timeline, which provides a representation of a linear progression of significant events throughout each year of the women’s lived lives. After presenting their biographical chronologies, I then focus on the told story pattern in relation to how temporal and spatial shifts have shaped their narrative identities. The telling of the told

story pattern is analysed using a 'Text Structure Sequentialisation' (TSS), which subsequently informs a 'Teller Flow Analysis' or a 'Teller Field Analysis' (Wengraf, 2011). I then compare the 'lived life' and 'told story' and lastly I utilise the notion of 'emplotment' (Ricoeur, 1984, 1985, 1988) to interpret the ways in which the configuration of one's told story has refigured their narrative identity.

The Text Structure Sequentialisation takes into account the process of social activity and is based on the assumption that in every situation an action represents a choice between ranges of possible alternatives (Rosenthal, 1993). Therefore, this analysis procedure interrogates the "action sequences which are manifested in texts as reported activities" (Rosenthal, 1993, p. 15) in relation to the range of possibilities that the narrator has ignored as well as the consequences of her choices. Rosenthal (1993) posits that in sequential analysis, interpretation is "the reconstruction of the meaning of the text following the sequence of event" (p. 5). The sequentialisation "summarises topics, sequence, textsorts, relative amounts of total time/text devoted to the different chunks" (Wengraf, 2011, p. 444). The interview text from has been sequentialised into text segments according to the following criteria: change of speaker, 'text sorts' or change in presentation style, but mainly according to topical shifts (Rosenthal, 1993; Wengraf, 2011). I did not rearrange the order in which the participants raised the topics; rather I identified the topical shifts in the 'telling of their told story' (Wengraf, 2011).

Labov and Waletzky (1997) advocate that fully formed narratives have six separate elements that are used by the teller to construct a story and make meaning from past experiences. These elements include "the abstract (a summary of the subject of the narrative); the orientation (time, place, situation and participants); the complicating action (what actually happened); the evaluation (the meaning and significance of the action); the resolution (what finally happened); the coda, which returns the perspective to the present" (pp. 8-9). The evaluation component provides insight into intentionality or how and why the narrator understands the significance and meaning of the events that comprise the narrative (Linde, 1993).

Wengraf (2011) adapt Labov's analytic method and differentiates between the following six textsorts: 1) report, 2) general incident narrative (GINs), 3) particular incident narrative (PINs), 4) argumentation, 5) evaluation and 6) description. Patterson (2008) explains that "a sequence of two clauses which are temporally ordered" (Labov, 1972, as cited in Patterson, 2008. p. 24) constitutes a minimal narrative. Narrative provides a "method of recapitulating past experiences by matching a verbal sequence of clauses to the sequences of events that actually occurred" (Labov & Waletzky, 1967, p. 12).

Following, I've provided a brief synopsis of each textsort. *Report* clauses contain cold facts about what happened in which the narrator is emotionally distant from the experience (Wengraf, 2011). G*eneral incident narrative (GINs)* is a pseudo-narrative about typical situations because generalised images, events and feelings are presented (Wengraf, 2011). However on the other hand, p*articular incident narrative (PINs and in-PINs)* provide detailed descriptions of a particular incident. It is as if the narrator is "reliving [their] original experience" (Wengraf, 2011, p. 935). The emotional meaning is depicted in the detailed descriptions of particular incidents (Phoenix & Bauer, 2012). The clauses that comprise *argumentation* are issues that are argued or theorised from the present perspective and reveals the positionality of the narrator (Wengraf, 2011). *Evaluation* clauses justify the crucial point or motivation for selecting and telling a particular story which not only reveals the 'moral' of the story, PIN or report but also the narrator's perception, experience and feelings about the events as well as how the narrator wants to be understood (Patterson, 2008). These evaluation clauses are crucial because they reveal the narrator's intentionality, and strategies for meaning-making while performing purposeful acts. Description clauses provide a setting (entities, persons, landscapes, systems, contexts) for the events of the story. *Orientation* clauses ('who is the story about?' 'when did it happen?' 'where did it happen?') provide a setting for the events of the story (Patterson, 2008).

I have added another textsort to this list, namely "reflection". Whereas evaluation is an interpretation of particular events, reflection need not be linked with an event, rather it is a reflection of how a combination of events have led to a particular point. Whereas the

first three textsorts (reports, GINs and PINs) can all be seen "on a spectrum of *thin-ness and rich-ness* of (i) particular incident detail and (ii) apparent emotional closeness / distance" (Wengraf, 2011, p. 935); the last three textsorts (argumentation, evaluation and reflection) are on the spectrum of relative detachment from a report or PIN account. For each text segment, I documented the 'textsort' or the way in which the participant spoke about a particular topic.

The sequentialisation is then interpreted by the 'Teller Flow Analysis' and the 'Teller Field Analysis' (or Thematic Field Analysis) and supported by micro-analyses (Wengraf, 2011). The thematic field analysis examines the narrator's biographical overall construct and biographical evaluations thus revealing the narrator's selective principles and their present perspective (Rosenthal, 1993). Individual themes within a narrated life story are 'elements of a thematic field' (Gurwitsch, 1964). The thematic field consists of core themes that are connected with a sum of events or experiences thus forming a background for the illumination of dominant themes in relation to others. Fischer (1982) explains, "the narrated life story thus represents a sequence of mutually inter-related themes which, between them, form a dense network of interconnected cross-references" (p. 168).

Narrators structure their life stories around key themes or topics and recurrent themes are embedded within different kinds of storylines about their identities that are continually reworked and retold retrospectively (Boenisch-Brednich, 2002; McAdams, 1997; Mishler, 1999; Plummer, 2001; Phoenix, 2008). For each topic, I noted whether the participant was referring to the following aspects of her identity positions: motherhood, linguistic identity, challenges facing black women in science, engineering or architecture, scholarship recipient, career and science identity, failure, personality characteristics, significant others, recognition, motivators and aspirations. Although I conducted a 'text structure sequentialisation' and a 'teller flow/field analysis' for all 14 interviews, for the sake of practicality, I have only presented one example in appendix 5. In this tabulated example, I have divided snippets of interview text into text segments, and for each sentence I identified the textsort as well as the 'discourses', themes, significant others and aspects of their-selves that they referred to in their narrative accounts.

To recap, in step two I identified the sequence of significant events and experiences that form the plot of their told stories. I also categorised these events and experiences (which represent particular themes) into storylines as well as differentiated the 'textsort' or the tone in which an individual talks about herself in relation to particular events and experiences, for instance whether she reported on (REP), described (DES), argued (ARG), narrated (PIN or GIN), evaluated (EVAL) or reflected (REF) on particular selves and events reveals its level of significance of aspects of the narrative (Labov as adapted by Wengraf, 2011).

4.9.1.2. Step 2: Comparing the lived life and told story in the form of a Life-story Diagram

In step two, I created diagrams in order to compare their lived lives and the told stories. I have plotted these topics (i.e. events and experiences) graphically according to the year in which these events took place (x-axis) and when these events were mentioned in the interview as well as the number of minutes each participant spoke about the event (y-axis). In other words, the x-axis represents 'chronological time' which spans from their date of birth to the interview date in 2012, to their anticipated future. As indicated on the y-axis (i.e. the temporal flow of the interview), one is able to determine how much time these women spend talking about each event or experience as well as the order and follow of interview talk. Overall, the diagrams capture the flow of the plot that sometimes develops in a chronological order or in reverse-chronological order but oftentimes it is not chronological, but rather reflects the unique movement within each told story.

4.9.1.3. Step 3: A descriptive summary of the told story

I then provided a summary of a participant's told story by discussing the topics within each stage. In order to do so, I draw upon two theoretical resources, namely 'concordance and discordance' (Ricoeur, 1984) and 'biographical turning points' (Elder, 1986).

4.9.1.4. Step 4: The configuration of the told story and the refiguration of narrative identity

In the fourth and final step, I adapt Ricoeur's (1984; 1985; 1988) notion of 'emplotment' as well as Gergen and Gergen's (1986) criteria of 'a good narrative form' in order to examine how a participant's told story has been structured according to the following four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events and (4) discordance, concordance and narrative identity. Gergen and Gergen (1986) suggest that the narrative theorist must establish the developmental goal or the valued endpoint of a narrative account, otherwise the account is rendered meaningless. Furthermore, a well-developed story is one that contains events that lead to the valued endpoint, thus the narrative theorist should identify the 'logical connection of developmental events' (Gergen & Gergen, 1986). In terms of the third component, emplotment of the developmental goal, I demonstrate how these women have constructed their told stories by organising and interpreting apparently unrelated experiential events that follow the principles of 'emplotment' (Ricoeur, 1984, 1985, 1988).

I explain how the 'synthesis of heterogenous elements' (Ricoeur, 1984) that comprise their told stories have the following three features: First, the plots have created a unified story about a particular phenomenon from the organisation and interpretation of multiple events that have occurred within their lives. Second, the temporality of emplotment within their told stories is a configuration (as opposed to succession) because although there are a series of incidents that happen one after the other, the sequencing of these events is the lived life and the told story differs. Whole stories are created from the integration of particular events, experiences and multiple selves, which are fluid and fragmented, into the 'whole' narrative (Ricoeur, 1984). In other words, these young women configure these events, experiences and selves into a whole where each event is evaluated as meaningful for a particular audience in relation to the whole (Tamboukou, 2013; Reisman, 1993). Third, the plots mediated sameness and difference or change, concordance and discordance, or the "discordant concordance" of these young women's

narrative identities in relation to significant others, circumstances, themes, consequences and contingencies that make up a single story (Ricoeur, 1984). Put simply, in step four I adapt Ricoeur's (1984) notion of 'emplotment' as well as Gergen and Gergen's (1986) criteria of 'a good narrative form' in order to examine how the women's told stories have been structured according to the following four components: the establishment and emplotment of a developmental goal, key themes and storylines; the 'logical connection of developmental' events and; discordance, concordance and narrative identity.

4.9.2. Phase 2: Discursive themes across the 14 women's told stories

The aim of the analysis in phase two is to explain how these young women (co)construct, (de)construct and (re)construct their-selves as scientists with and against the (mis)recognition of significant others. I analyse the discourses that these women draw on in the construction of their intersectional identities as well as provide an account of the barriers they faced in their pursuit of a STEM degree and how they traversed these barriers (or not). The focus is on the content of their experiential narrative accounts as well as the broader context in which their told stories are situated. Based on the research questions, I initially created three broad coding categories: (1) social categories and discourses, (2) barriers and (3) traversing or maintaining barriers.

I conducted an intersectional analysis of the narrative content across all 14 cases and allocated discursive themes to the coding categories (see appendix 6 for a working draft of codes and discursive themes). In other words, I used an intersectional methodological approach of 'intracategorical complexity' (McCall, 2005) to analyse how their science identities have been constrained within their location in the "matrix of oppression" (Collins, 2002). McCall (2005) affirms that despite the popularity of intersectionality, there has been little discussion with regard to its methodology. Thus, she conceptualises three intersectional methodological approaches to analyse the relations of multiple and intersecting inequalities between socially constructed groups. These approaches include: (1) anticategorical complexity, (2) intracategorical complexity and (3) intercategorical complexity or the categorical approach. The anticategorical complexity approach aims to

deconstruct analytical categories, whereas the intercategorical complexity approach strategically uses categories to interrogate the relationships and configurations of inequality among social groups (McCall, 2005). As mentioned, in this study I adopt the intracategorical complexity approach which utilises narrative methods to explore the experiences of an individual (or a social group) and "extrapolate illustratively to the broader social location embodied by the individual" (McCall, 2005, p. 1781).

During the coding process, I developed a pattern in how these women (co)construct them-selves as scientists through recognition from significant others, (de)construct them-selves as scientists through misrecogntion and these women were able to traverse barriers and (re)construct other selves through homespaces. Thus, I have dedicated chapter six to explaining how these women (re)construct themselves through the dialectical tension between recognition and misrecognition of one-self by an-other. Furthermore, these women (de)construct them-selves as scientists through the barriers they faced from their social positioning as young black women in science. Whereas in chapter six, I explore the 'effects' of misrecogntion and failure on their science identities; in chapter seven, I discuss in detail the process of how misrecogntion, failure and several other barriers have influenced the (de)construction of them-selves as scientists. In other words, I examine the complex intersections of 'race', class, gender, language, and religion in relation to their past secondary schooling, present university or working life and projected futures.

4.9.3. Phase 3: A narrative portrait of Alala Celukwazi

The aim is to consolidate the findings presented in chapters five, six and seven in one narrative portrait or to present the relationship between the form, content and context of a life narrative. Thus, I conducted a narrative analysis of Alala's interview data (from subsession one and subsession three), which I have presented in chapter eight. The reason I chose to create a narrative portrait of Alala is because she provides the most complicated life narrative compared to the other cases. The particular features that complicates a person's told story is discussed in chapter five in relation to four narrative patterns. McAdams (2011b) writes:

> "[N]arrative identity … is an internalized and evolving story of the self … Complete with setting, scenes, characters, plots, and themes, narrative identity combines a person's reconstruction of his or her personal past with an imagined future in order to provide a subjective historical account of one's own development". (p. 100)

I have analysed Alala's interview data according to the following coding categories: context, plot, topics, themes, storylines, tone, selves, character, barriers, metaphors and origin. The process of posing questions in each category guided my analysis of the interview text. For instance, I asked myself what the socio-cultural context is in which Alala's story is located? How does the interview context influence the kinds of narratives she chooses to tell her audience/s? What is her told story about and why does she arrange the elements of her story in a particular way? How does the tone in which she narrates particular events tell us about the significance of the events that constitute her narrative? What stories does she tell about the barriers she faced in pursuit of a STEM degree? At the end of her told story, how is she different from the person she presents at the beginning of her story? How has the turning points in her told story changed her sense of her-self through time? Who are the main characters in her told story and what purpose do they serve? What are the themes or messages she wants her audiences to understand from her told story? And which themes are embedded in particular storylines? What metaphors or symbolic objects does she use in the telling of her told story? What genres does her story draw upon? For Alala's case, I documented possible responses to each of these questions in a table format (see appendix 7). In presenting Alala's narrative portrait in chapter eight, the focus is on addressing all the research questions simultaneously in one case. In other words, I constructed Alala's narrative portrait by presenting how she (co)constructed, (de)constructed and (re)constructed her intersectional identities through time and with the (mis)recognition of significant others, discursive barriers and homespaces.

4.10. Ethics

The following four key ethical principles have been upheld in this research: "autonomy and respect for the dignity of the person, nonmaleficence, beneficence and justice" (Wassenaar, 2006, p. 67). The first principle, autonomy "finds expression in most requirements for voluntary informed consent by all research participants" (Wassenaar, 2006, p. 67). The participants were given an 'information sheet' (see Appendix 3) that provided information about the aims of this research study and explained five key points: (1) that their participation is voluntary and if they choose not to take part in this research there will be no negative consequences for them; (2) they may choose to withdraw from this research at any time; (3) the audio recordings of the interviews would be used to transcribe the interview discussion and that my personal computer has a login password therefore only I will have access to the raw data and; (4) they could contact me if they have any questions or concerns about this research study. It is important to point out that I have worked as a researcher at the Diversity Office that implemented this scholarship programme, thus the participants and I have known each other for over five years. As a result, I was concerned that some of them may feel obliged to participate however during the recruitment stage I reiterated that if they choose not to take part in this research there would be no negative consequences for them personally or in terms of their scholarship. The women were aware that there could be no consequences for their scholarship because the programme came to an end in December 2011.

The second principle, nonmaleficence requires that I "ensure that no harm befalls research participants as a direct or indirect consequence of the research" (Wassenaar, 2006, p. 67). All the participants were aware that I no longer work at the Office that implemented the programme therefore I carefully reiterated that I was conducting this research for my PhD thus, if they choose not to participate in this research, there will be no implications for them at all. As I was aware that these participants become anxious when they did not know what to expect, I provided a detailed summary in the participant information form of what they could expect during the research process. In addition, in order to make them feel more comfortable and give them some control over the interview

process, the interview was conducted at their favourite place at Wits. They were also given the option of dividing the subsessions over two days (as opposed to one day). It is notable that probing for particular incident narratives may provoke painful or even traumatic memories therefore the participants were aware that they could choose to withdraw from this research at any time and that there were counsellors whom I could put them in contact with.

The third principle, beneficence requires the researcher "to attempt to maximise the benefits that the research will afford to the participants in the research study" (Wassenaar, 2006, p. 67). At the end of the study, I gave the participants access to their transcripts that were utilised in this study as well as the research findings. Furthermore, they were informed that I am available for informal discussions should they want to discuss their reflections about our interview conversations. In accordance to the fourth principle (justice) I treated the participants "with fairness and equity during all stages of research" (Wassenaar, 2006, p. 68) and implemented several interventions in order to minimise the burden of the research on participants.

4.11. Reflexivity

During the interview exchange, there are particular roles that are adopted by the researcher, such as conceptualising the research questions and interpreting the participants' narratives, which situates the researcher in a position of power in relation to the participants. For this reason, I asked the participants where they wanted to conduct their interview so that they could have some control over the interview process. Many of them chose their favourite place at Wits where they felt 'safe' or more comfortable to express themselves. Furthermore, the first subsession was a non-interrupted narrative interview in which they spoke about their lives, and I listened, for as long as they needed. It is noteworthy that the length of most interviews indicates willingness, even eagerness, on the part of participants to tell me (as a researcher) about their life stories.

In this research I am faced with the question as to how can I 'understand' particular

experiences of black women in STEM if I myself have not had these same experiences (being a white woman from a middle-class background and as a student of the social sciences). However, my aim in this research is not to psychologically identify with the participants but rather to make sense of their experiences by interpreting their life narratives (Fay, 1996).

Harding (1987) asserts, "the beliefs and behaviours of the researcher are part of the empirical evidence for (or against) the claims advanced in the results of research" (p. 9). This indicates that I, as a researcher, not only interpret the participants' reality but I also contribute to the construction of their reality (Elliott, 2005). Following the "voice-centred relational method" (Mauthner & Doucet, 1998) in my reading of the interview transcripts, I was cognizant of how I contributed to the participants' meaning-making strategies. Mauthner and Doucer (2003) explain that in so doing "the reader reads for herself in the text in the sense that she places herself, with her own particular background, history and experiences, in relation to the person she has interviewed" (p. 126). In other words, in accordance with the "hermeneutics of restoration" (Josselson, 2004), I have reflected on how my position impacts on my understanding of the meanings constructed by the participants.

I have also kept detailed field notes about the interview process and I have tried to avoid the danger of over-identification with participants so that I may remain 'faithful' to their meanings and avoid substituting my own meanings with that of the participants (Josselson, 2004). During the research process I have critically reflected on "how my own theoretical and biographical perspectives might impact on my relationship with the participants, my interpretation of research evidence, and the form in which the research is presented" (Elliott, 2005, pp. 153 – 154). It is noteworthy that in this thesis, I have only analysed the interview transcripts from subsession one, which was a non-interrupted narrative interview. Therefore, it is important to examine how the context in which these women narrate their told stories influences why they decide to present a simplified or nuanced sense of their-selves. Narrative accounts are viewed as situated retellings because their reproduction is responsive to their particular context (Mishler, 2009). In

other words, their “narratable self” (Cavarero, 2014) is not constructed in isolation from other people but rather exists in a constitutive relation with their perceived audience, particularly, to me, the interviewer. These women are reliant on me to tell the tale of their life story. According to Cavarero (2014) the desire to hear one’s life story by another is a “fundamental feature of every narratable self” (Kottman, 2014, p. xiv).

Being a staff member of their scholarship programme, these women initially viewed me as someone who had recognised and supported their academic talent. Over five years however, we got to know and value each other and developed a comradership or sisterhood. Their told stories were co-constructed through a dialogue of our ongoing relational history, thus my interpretation of their told stories must be cognizant of this context. Furthermore, the ‘single question aimed at inducing a narrative’ (SQUIN) influenced the ways in which they portrayed their sense of themselves within their told stories. It seems that the SQUIN approach might have silenced or further marginalised certain individuals who felt pressurised by the question “tell me the story of your life”. For instance, Kgnaya and Ethwasa’s narratives of their told stories only lasted five minutes, whereas they spoke for over an hour during the remaining two subsessions. Further, the women who provided ‘simplified’ told stories during subsession one subsequently provided more sophisticated and nuanced accounts of their multifaceted selves during the other subsessions. It is thus unfortunate that as I have only used the interview data from subsession one, the voices of the women in this thesis are not heard equally.

My particular relation to these women also influenced the kinds of stories they chose to narrate, for instance, many women spent a significant amount of time talking about their experiences of academic failure. Being a past evaluator of their scholarship programme, I recognised and supported their academic talent during their studies. As a result, these women may have felt obligated to ‘live up’ to my (and the scholarship programme’s) recognition of their academic talent. For those women who needed to justify or re-evaluate their understanding of ‘academic talent’, their told stories centred on failure. Due to our history, these women entrusted me with their intimate stories. I thus felt an

enormous responsibility to meaningfully represent or do justice to their experiences. As a result, there are instances in which my analysis of their narratives is too diverse and I may have also over analysed the data.

In chapter six, I introduce the notion of a 'homespace' where these women are able to create a sense of home through their relation to significant others. It is evident that for many of these women, I represent part of that healing home space which might have created unknown positive but also inhibitory effects. In other words, my history with these women may explain why they trusted me with particular issues that some black people might consider 'insider' or 'risky' to explore with white or other people who are positioned differently from themselves. Although, their silences or decision not to raise particular issues might have also been influenced by our relationship.

4.12. Conclusion

As there is a dearth of empirical studies that investigate the lives of black South African women scientists in post-apartheid South Africa, in this chapter I have conceptualised a methodology with several innovative component parts. For instance, a biographical narrative method has been adopted in this study because the notion of biography, which comprises the subject's experiential world and her social reality, is presented as a way out of the subject-society dualism (Bertaux, 1981; Fischer-Rosenthal, 1989, 1991; Kohli, 1986a, 1986b; Rosenthal, 1993; Schütze, 1983, 1984; Schütze, 1977; 1983; Wengraf, 2001, 2011). In this chapter, I present the research questions, followed by the method of recruitment and a brief description of the participants' background and academic record. A purposeful method of recruitment was adopted as I invited the women who were recipients of the Oya scholarship programme to participate in my study. These young women could be viewed as living at a cultural crossroads by virtue of their coexisting membership to a marginal and an elite group, thus forming an outlier group. By utilising a narrative approach in examining the lives of black women in science, I will not only gain insight into how they (co)construct, (de)construct and (re)construct their identities but also into the political, social, cultural, historical and economic contexts that situate

their told stories in space and time.

CHAPTER 5:
NARRATIVE IDENTITY PROCESSING OF FAILURE: THE TEMPORAL AND SPATIAL SHIFTS THAT COMPLICATE WHO I AM

5.1. Introduction

In chapter five, I examine the ways in which black South African women scientists construct their narrative identities through their told life stories, and how temporal and spatial shifts within told stories complicate their-selves. This chapter is divided into two sections. While the first section examines the narrative form within each case, the second section compares narrative forms across the four cases. The four case studies presented in the first section comprise a particular structure. Each case begins with the biographical chronology of a participant's lived life. Next, I present a Life-story Diagram which depicts the comparison between a 'lived life' and 'told story' (Wengraf, 2001). This is followed by a descriptive summary of the topics (i.e. events and experiences) within each stage of her told story. In other words, I explain how each topic creates 'concordance' or 'discordance' within a told story (Ricoeur, 1984) and how each stage is associated with a particular 'biographical turning point' (Elder, 1986) within the person telling their story retrospectively. It is important to compare the lived life and the told story because the juxtaposition of 'real' past events and the structured stories told by these women provides insight into how and why they select, recount and reconstruct present meanings of particular past events and experiences through narrative construction. Lastly, I adapt Ricoeur's (1984, 1985, 1988) notion of 'emplotment' as well as Gergen and Gergen's (1986) criteria of 'a good narrative form' in order to examine how the diagram and told story summary has been structured according to the following four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events and (4) discordance, concordance and narrative identity. Thus, each case concludes with a discussion about the particular narrative form within the told story. I then compare the diagrams and the discussion of narrative forms in the second section. The comparison of the diagrams produces four particular reasons as to

why the visual representation of one's told story is a useful device to analyse intricate narrative identities. Next, by comparing the narrative forms across the four cases, I propose that there are particular patterns of storytelling, namely a 'labyrinth storymaze', a 'simply-connected storymaze', a 'multiply-connected storymaze', and a 'weave storymaze'. This metaphor is utilised as a basis for discussing the particular features in relation to the four components of a 'a good narrative form' (Gergen & Gergen, 1986) which complicate a narrative identity.

5.2. Narrative forms of four cases: Comparing the lived life and told story

Before presenting the case studies, in this section I will provide a brief overview of the four steps I followed in order to construct each case. A detailed discussion of each step is provided in the methodology chapter (see 4.9, phase 1).

The first step of analysis involved working with the 'lived life' and 'told story' separately (Wengraf, 2011). I complied a biographical chronology in the form of a timeline that depicts a linear progression of significant yearly events throughout the women's lived lives. Second, I conducted a 'text structure sequentialisation' (Wengraf, 2011) or a structural analysis of the told story. The told story was sequentialised into text segments according to topical shifts. Text segments are chunks of interview text about a particular topic. In other words, I did not rearrange the order in which the topics were raised by the participants, rather I identified the topical shifts in the 'telling of their told story' (Wengraf, 2011). Third, I documented the 'textsort' or the way in which the participant spoke about a particular topic, for instance whether they reported on (REP), described (DES), argued (ARG), narrated (PIN or GIN), evaluated (EVAL) or reflected (REF) on particular events reveals its level of significance (Labov as adapted by Wengraf, 2011). Fourth, for each topic I noted whether the participant was referring to the following aspects of her identity positions: motherhood, linguistic identity, challenges facing black women in architecture, scholarship recipient, career and science identity, failure, personality characteristics, significant others, recognition, motivators, and aspirations. These 'identity positions' are called storylines (Mishler, 1999) because the participant

tells a story of her identity construction over time. To recap, I created biographical chronologies and a list of sequential topics that were raised in their told stories. I also documented the tone (i.e. textsort) of each topic as well as which storylines the participant referred to while talking about a particular topic.

In the second step, I compared their lived life to their told story in the form of a diagram. The x-axis represents the 'lived life' or chronological time from their date of birth to the interview date in 2012, to their projected future, while the y-axis is representative of the 'told story' or the temporal flow of the interview. Each topic was assigned a number and each storyline allocated a symbol. I then plotted each topic (number) and storyline (symbol) onto the graph according to the time (in minutes) the topic was mentioned in the interview (i.e. y-axis) and the year in which the topic occurred in her lived life (i.e. x-axis). For instance, if a participant began her told story with the topic of her birth place, this topic was allocated the number '1' and plotted onto the y-axis according to the time she mentioned this topic in the interview (i.e. within the first minute of the interview) and the x-axis according to the date in which she was born. It is noteworthy that the intersections between storylines are depicted graphically with two symbols attached to particular topics (numbers). This process was followed for each topic. Once all the topics were plotted onto the graph, I connected the topics by drawing a straight line from one topic to the next, which revealed the shifts in 'telling of their told story' (Wengraf, 2011).

Further, sets of topics were grouped into a 'stage' of the told story. For instance, the following two topics "feeling depressed after my second experience with failure" and "therapy, prayer and personal growth" could be grouped into a stage called "what my experience of failure taught me". These stages are depicted in the diagram by a dotted horizontal line. Thus, in step three, I provide a summary of a participant's told story by discussing the topics within each stage. In order to do so, I draw upon two theoretical resources, namely 'concordance and discordance' (Ricoeur, 1984) and 'biographical turning points' (Elder, 1986). I explain how each topic creates 'concordance' or 'discordance' within a told story (Ricoeur, 1984). I also discuss how each stage is associated with a particular 'biographical turning point' (Elder, 1986) within the person

telling their story retrospectively.

In the fourth and final step, I adapt Ricoeur's (1984) notion of 'emplotment' as well as Gergen and Gergen's (1986) criteria of 'a good narrative form' in order to examine how a participant's told story has been structured according to the following four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events, and (4) discordance, concordance and narrative identity.

Based on these steps, I structured each case by presenting the biographical chronology of a person's lived life, followed by the diagram and a discussion of the topics within each stage of her told story. Lastly, I examined the diagram and discussion in relation to the four components of a 'good narrative form' (Gergen & Gergen, 1986). Although I implemented these four steps in order to analyse all 14 cases, I decided to present only four cases for two main reasons; first, it is beyond the scope of this thesis to discuss all 14 cases and second, I noticed that there were four particular patterns in which these women told their stories, thus I chose one case that best represents a particular pattern, which I will now discuss in detail.

5.2.1. Case one: Khanyisile Baloyi

5.2.1.1. The lived life

1988: She was born in Johannesburg into an isiZulu speaking family.
1994: Younger sister born.
1995: Started Grade 1 at an all girls' Primary School. Main actress in a school play.
1998 : 'A' symbol for Science. Received a badge for being in the top 10 of academically achieving learners.
2001: Chosen to be a prefect.
2002: Vice class captain. Acted in the inter-high school drama competition (RAPS) at Wits Theatre.

2003: Voted into the Representative Council of Learners (RCL).

2004: Class captain. Excelled in mathematics.

2005: 'A' symbol for Science in term 1.

2006: Voted into the Representative Council of Learners (RCL). Director of the drama team. Director of the debating team. Director of the public speaking team. Awarded the SA bank trophy for being one of the top three public speakers. Prefect or peer educator. Two distinctions in her Matriculation examinations. One of the top academic achievers in her school.

2007: Awarded the Oya scholarship. Enrolled for Computer Science at Wits (Faculty of Science). Lived at the university residence for the duration of her studies. Passed first year.

2008: Failed one (of ten) courses. Treasurer for Computer Science Student Council. Passed second year.

2009: Chairperson of the Residence House Committee. Media and Publications Officer for the Residence House Committee. Traditional isiZulu ceremony for her 21st birthday party. Passed third year and accepted into honours.

2010: She was the only black woman in her Honours class. Passed Honours and accepted into Masters.

2011: Full time job at a South African university. Masters degree (part-time). Got married. Gave birth to a baby boy.

2012: Continues with job (full time) and Masters degree (part time).

5.2.1.2. The told story pattern

With the aid of Life-story Diagram 1 (see overleaf), I will examine the plot of Khanyisile's told story in relation to whether her narrative identity has been constructed upon the model of 'discordant concordance' or 'concordant discordance' (Ricoeur, 1984).

Stage 1: Growing up, what was most important to me was my family, teachers, drama, public speaking, mathematics, and computers.

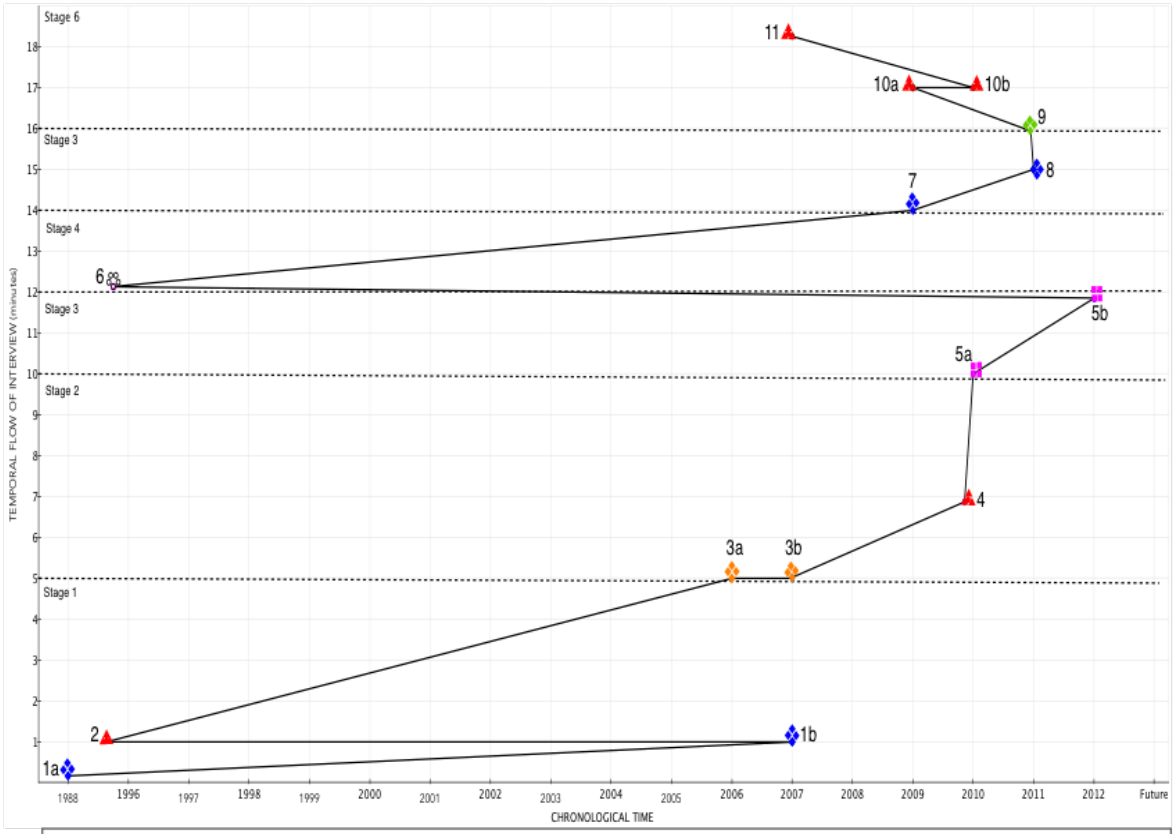
As depicted in the diagram (topic 1), Khanyisile begins her told story with a sense of concordance by reporting on the first 19 years of her life and how she grew up in a "*very close-knit family*" in which her father worked every day in order to provide his family with a 'good education'. Furthermore, her mother gave up her job in order to become the caregiver in the family. Having discussed the importance of a family unit growing up, she continues to create concordance by going back to the time when she started primary school in order to argue for, and evaluate how, her passion for drama, public speaking, mathematics and computers developed over the next 11 years of her life (see topic 2). She argues that she was an outgoing, talkative and involved child who won several awards for drama and public speaking. She then also reflects on how her love for mathematics developed as a result of the recognition she received from her teacher. Lastly, her father's love for computers influenced her interest in, and decision to major in, Computer Science at university. Thus, the turning point that shaped her narrative identity exists in relation to drama, public speaking, her family, and her love for mathematics due to her teacher's recognition.

Stage 2: Transitioning to a university classroom dominated by white men

In the second part of her story, Khanyisile moves forward to the time when adjusting to university life was marked by discordance because her classes were dominated by white men, which was particularly unfamiliar for Khanyisile because she had previously attended all-girls' schools. Furthermore, the transition into university residence was also challenging because she had grown up "*in such a small, close-knit family*" (see topic 3). However, concordance was generated through her relationships with her Oya friends "*who you could always talk to*".

As depicted by the diagram (topic 4), concordance remains unchanged three years later when Khanyisile argues that her graduation party inspired her community and family members as well as showed her younger sisters that university is not only for certain 'types of people'.

Life-story Diagram 1: Lived life and told story of Khanyisile Baloyi



Storylines

- Significant others
- Recognition
- Challenges facing Black women in science
- Career and science identity
- Personality characteristics
- Pregnancy and motherhood

Topics

1. Growing up in a 'close-knit' family (REP)
2. Awards for drama and public speaking (ARG, PIN)
3. Adjusting to a male and white dominated environment (ARG, EVAL)
4. My graduations inspired community (EVAL, PIN)
5. Juggling a job and masters degree (REP)
6. Drama thought me to be outspoken (PIN, EVAL)
7. My 21st party celebration (PIN, EVAL)
8. My wedding day (PIN, EVAL)
9. The birth of my baby (PIN, EVAL)
10. My graduations (ARG)
11. Voted in as the chairperson of residence committee (ARG)

Khanyisile then reports that in her Honours class of 10 students, there were two women of which she was the only black woman in her class. During her Honour's year of study, she continued to enjoy a sense of concordance due to the fact that she made friends with her classmates, "*it was so easy to work together and to learn from each other*", but that she started "*getting into what I love doing*". Thus, the second turning point that shaped her narrative identity lies in being in an all-girls' school to 'becoming' a black woman in science.

Stage 3: Juggling a full-time job with a Masters research project

Khanyisile then moves forward in time by a few months when talking about her job as a business intelligence engineer (see topic 5). Concordance is maintained in the third part of her told story because reports on the advantage of working at a university as opposed to industry is that she is involved in innovation and development. "*[S]o it's great for me to actually-to be in the foundation phases of things and I'm learning so much from that*". Khanyisile concludes her told story at this point. The third turning point that shaped her narrative identity lies in being a postgraduate student to becoming a business intelligence engineer at a South African university.

Stage 4: Coming out of my shell: playing the main actress in a school play

When I asked Khanyisile whether she remembered any other significant events, she returned to her childhood and narrated how her role as the main actress in a school play helped her "*come out of my shell"* and "*develop all the skills to be the person that I am now, who is able to like just talk and make friends and be sociable*" (see topic 6). In other words, through drama she was able to overcome the discord of being shy and create concordance by 'coming out her shell'. Thus, she returns to her 'first' turning point in which her narrative identity was shaped in relation to how drama helped her 'come out of her shell'.

Stage 5: Being a 21-year-old virgin 'girl' to becoming a married woman and mother

For three minutes, Khanyisile talks about the next stage of her told story, which comprises three parts, namely (1) being a 21-year-old virgin girl, (2) becoming a married woman and (3) motherhood. In each part she maintains a sense of concordance. Firstly, Khanyisile evaluates the cultural importance of her 21st birthday celebration. As demonstrated in the diagram (topic 7), in moving forward to the time she turned 21, she reflects on how traditional Zulu families feel pride that "*you are 21 and you are still a virgin*". Secondly, she then moves forward to her wedding day when she "*mov[ed] from being a girl … to being a woman … you can differentiate between me before-that's-and me after it*" (see topic 8). Thirdly, the same year she explains how the birth of her baby was a "*life-changing experience, you're <u>never</u> the same afterwards because there is someone that you responsible are for, there is someone who you feel like you need to love for, it's just, just, ja, beautiful (.hhh)*" (see topic 9). The fourth turning point that shaped her narrative identity lies in being a being a 21-year-old virgin 'girl' to becoming a married woman and mother.

Stage 6: Becoming a graduate, Oya scholar and chairperson of the Residence House Committee

As depicted in the diagram 1 (topics 10-11), concordance is maintained when Khanyisile moves back to when she was a university student and explains how three events were particularly significant for her, that is both of her graduations as well as being chosen for the Oya scholarship and the chairperson of the Residence House Committee. Thus, she returns to her 'second' turning point in which her narrative identity was shaped in relation to her graduations, and being chosen as an Oya scholar and chairperson of the Residence House Committee.

5.2.1.3. The narrative form

I will now examine how the diagram and the summary of Khanyisile's told story has been

structured according to four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events, and (4) concordance and narrative identity.

The developmental goal and storylines

Khanyisile's told story is about 'the labels of what I am: an actress, public speaker, Oya scholar, leader, graduate, wife, mother, and a black woman computer scientist'. The labels that define who she believes her-self to be encapsulates the "development goal" or "evaluative endpoint" of her told story (Gergen & Gergen, 1986). There are six storylines that cut across her told story, the most predominant of which are 'recognition' and 'significant others'. Khanyisile talks about 'recognition' for 10 minutes and 'significant others' for three minutes. As the duration of the interview is only 18 minutes, 'recognition' and 'significant others' together comprise 72% of interview time. Furthermore, as depicted in diagram 1, she talks about the topics of 'significant others' and 'recognition' nine times at the beginning, middle and end of her told story; while the other storylines are only mentioned once or twice. She begins her told story with 'significant others' and 'recognition' as she developed an intrinsic love for mathematics because of the recognition she received from her primary school teacher. Khanyisile ends her told story with her graduations, which inspired her family and community members to pursue their educational aspirations. She also constructs herself as an outspoken person due to the continued recognition she had received for her performances in drama. The remaining storylines comprise the middle of her told story. She spends approximately two minutes talking about each storyline, namely her career, personality, motherhood, and the challenges she faced as a black woman in science. Being a black woman in science who had previously attended all-girls' schools, she struggled to adjust to university classes that were dominated by white men. Khanyisile also refers to the multiple and often contradictory roles in having a career and being a mother. Receiving 'recognition' from 'significant others' holds emotional meaning for Khanyisile, and she recounts four Particular incident narrative. Each PIN (Wengraf, 2011) is followed by an evaluation clause which indicates that Khanyisile chooses to tell a particular narrative in order to

convey the ‘fact’ that recognition from significant others is crucial to what she believes herself to be. The topics that comprise argumentation (Wengraf, 2011), namely ‘adjusting to a white and male-dominated environment’ and ‘becoming a chairperson and graduate’ reveal her current positionality of being a black woman in science, a leader in the university and a role model to her younger siblings and community members.

Thus, recognition from significant others plays a central role in establishing the ‘developmental goal’, as Khanyisile tells a story of how multiple labels, recognised by others, make up ‘who I am’. The other storylines about her career, personality and being a mother and a black woman in science play a supportive role in the dominant story of being defined by recognition from others.

Emplotment of developmental goal

Khanyisile has constructed the ‘developmental goal’ of her told story by organising and interpreting apparently unrelated experiential events (from her lived life) that follow the principles of ‘emplotment’ (Ricoeur, 1984, 1985, 1988). In other words, the plot of her told story has created a unified story about the multiple labels that make up who or what Khanyisile believes her-self to be. Khanyisile’s told story covers the entire span of her lived life (from birth or childhood through to the time of their interview), which she narrates in a linear fashion (i.e. from her past and recent past, to her present). Thus, the structure of her story imitates her lived life in that ‘growing up’ forms the beginning of her story (her past), ’university life’ forms the middle (her recent past) and her career, motherhood and married life (her present) forms the end. Khanyisile tells her story in a particular temporal order, namely from past to recent past to present to past to present to recent past. In Stage 1 (past), she begins her told story with an explanation of how family, teachers, drama, public speaking, mathematics, and computers were most important to her growing up. Stage 2 (past) provides an overview of the university adjustment difficulties she faced in her recent past while in Stage 3 (present), she explains how she is currently trying to maintain a balance between her full-time job and part time Masters research project. Her told story ends at this point (her present), however, when I ask

whether she remembered any other significant events, her narrative moves back to her past in which she argues that drama helped her "come out my shell" (i.e. Stage 4 of the interview). She then returns to her present in order to narrate the transition of being a 21-year-old virgin 'girl' to becoming a married woman and mother (i.e. Stage 5 of the interview). Lastly, she ends her told story with her recent past as she provides an overview of the importance of being a graduate, Oya scholar and chairperson of the Residence House Committee (i.e. Stage 6 of the interview).

Logical connection of topical events

The sequence of topics or events that lead to a 'valued endpoint' have been tied together by a combination of occurrences which provide a sense of temporality and movement within Khanyisile's told story. This movement is made possible by the relation between the two axes, namely chronological time and the temporal flow of the interview. Khanyisile's told story incorporates a combination of progressive and steep 'step' and 'zig-zag' occurrences. In other words, there isn't a progressive pattern that develops over time, as Khanyisile simply mentions one incident that either creates a 'step' or 'zig-zag' occurrence within her told story. This pattern is consistent with the 'developmental goal' as she provides a particular incident narrative that supports a label of 'what I am'. The 'progressiveness' and 'steepness' are determined by the temporal flow of the interview (y-axis) whereas the 'steps' and 'zig-zags' are determined by chronological time (x-axis). Khanyisile begins her told story with a steep and steady 'zig-zag' as she moves back and forth in time in order to provide an overview of how she grew up in a 'close-knit family' and how she received multiple awards at a young age. The steady 'zig-zag' occurrence begins in 1996 and ends in 2006, which illustrates how Khanyisile spends a significant amount of time in her lived life and her told story talking about forms of recognition. This is followed by a progressive 'step' as she talks about university adjustment, graduation and her job as an intelligence engineer. After posing a question to Khanyisile, "is there anything else you can remember?", there is another sharp zig-zag in her told story as she moves back to her 'drama days' and then forward to her 21st birthday party. This is followed by a progressive zig-zag as she moves forward to her wedding day, the

birth of her son and then back to her graduation parties and university life.

Concordance and narrative identity

Khanyisile's told story is a "stability narrative" as she provides a series of events that are in concordance with the valued endpoint (Gergen & Gergen, 1986). As there is no movement between discordance and concordance or no development of her told story, her narrative identity has remained stable or unchanged.

5.2.2. Case two: Kaiya Lebona

5.2.2.1. The lived life

1990: She was born in Nelspruit, Mpumalanga. Kaiya's mother did not take maternity leave; she went back to work the day after giving birth.

1991: She suffered from asthma her entire life

1992: Only black child at her Afrikaans preschool. Nannied by a white woman.

1995: First language was Afrikaans; she was not taught English or an African language.

1996: Started Grade 1 at St. Matthew (Catholic private school) where she learnt English. Ill-treated by her peers because she did not speak an African language. Participated in gymnastics outside of school from 1997 - 2003.

2002: Certificates for obtaining an average of 80%

2003: Moved into her aunt's (mother's older sister) house in Durban. Started Grade 8 at Mount High School situated in Durban. Merit badge for being the top academic performer in her class. She was neglected and emotionally abused by her aunt. She left Durban and returned home to her family in Nelspruit

2004: Grade 9 - 12 at Riebeck High School in Nelspruit (former Model C school) . She continued to be ill-treated by her peers because she did not speak an African language. Participated in gymnastics outside of school from 2005 - 2007.

2007: Captain of a Gymnastics Club in Mpumalanga. Became one of the ambassadors for South Africa at the World Gymnaestrada in Austria. Prestige trophy for Afrikaans

poetry. Top 20 academic performers in her grade. Grandmother passed away after a heart attack.

2008: Awarded the Oya scholarship. Enrolled for Biological Sciences at Wits (Faculty of Science). Lived at the university residence for the duration of her studies. Passed first year.

2009: Passed second year.

2010: Passed third year.

2011: Passed honours. Job applications unsuccessful due to lack of experience.

2012: Moved back home with her family in Nelspruit. She worked at a government office in Nelspruit. She felt depressed and lost a fair amount of weight.

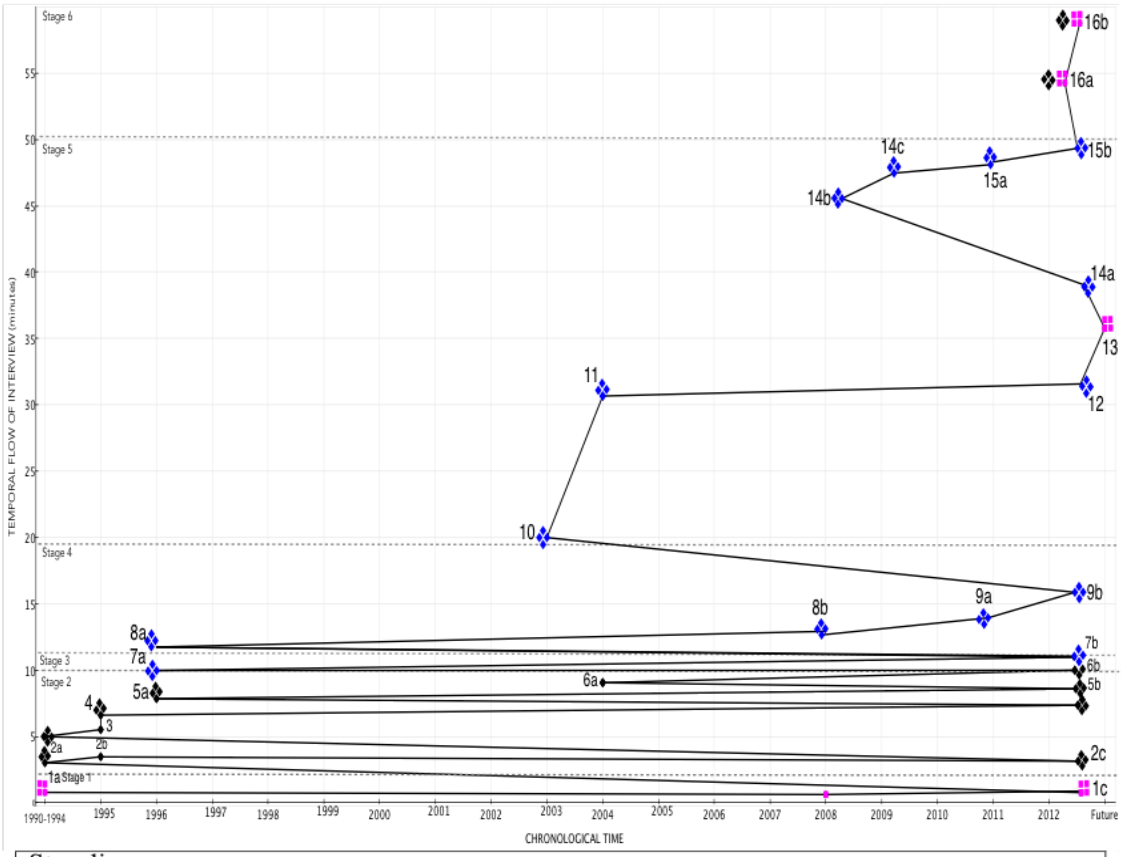
5.2.2.2. The told story pattern

With the aid of Life-story Diagram 2 (see overleaf), I will examine the plot of Kaiya's told story in relation to how her narrative identity has been constructed upon the model of 'discordant concordance' or 'concordant discordance' (Ricoeur, 1984).

Stage 1: My medical family influenced my decision to pursue science

Kaiya begins her told story by saying "*I never really saw myself doing science*", thus introducing the first storyline focused on her career identity (in relation to significant others). As depicted in diagram 2, she creates concordance by arguing that as she was born into a family that is involved in the medical field (topic 1a), and she was thus influenced to pursue a degree and career in science (topics 1b and 1c). She believes that she was under-prepared for a Bachelor of Science degree due to the discordant career advice she received in high school. "*So (.) it's a small town that I come from, hmm (2) there is not a lot of opportunities, so that obviously means you won't really get the best advice when it comes to careers*". However, she gained a better understanding of what science entailed when she was offered the Oya scholarship (concordance). The first turning point that shaped her narrative identity lies in coming from a medical family and thus choosing to pursue a degree and career in science.

Life-story Diagram 2: Lived life and told story of Kaiya Lebona



Storylines

- Career and science identity
- Linguistic identity
- Significant others

Topics

1. Decision to pursue science (ARG)
2. Raised by a white nanny (ARG)
3. Afrikaans first language (ARG)
4. Using my hands to communicate with my parents (PIN)
5. Rejected by peers in primary school (EVAL)
6. Rejected by black peers in high school (EVAL)
7. Different relationships with mother and father (REF, TIN)
8. Trapped at home but free at university (ARG, EVAL)
9. Returned home and became depressed (ARG, EVAL)
10. Moved in with her aunt in Durban (PIN)
11. Neglect and emotionally abuse by her aunt, thus returned home (PIN, TIN)
12. My aunt became my drive to succeed (EVAL)
13. Help people in a boundary set environment (EVAL)
14. Need for social bonds (EVAL, PIN)
15. Depression due to abuse (ARG, EVAL)
16. Work in a government office (ARG)

Stage 2: Being rejected by others for not speaking a 'black language'

The following section is focused on the second storyline, which pertains to her linguistic identity (in relation to significant others). Kaiya moves back to the day she was born and explains how her mother returned to work the following day instead of taking maternity leave (see diagram 2, topic 2a). Thus, Kaiya reflects on how she was introduced to a westernised culture by her "white nanny" (topics 2b and 2c). "*So that's how I ended up being nannied by a white lady (.) so that's where my understanding of my culture came, hmm from a westernised culture per say, I would say to-that's how things started (.hhh)*". The second turning point that shaped her narrative identity lies in being raised by a white nanny and identifying with a westernised culture. Once again, she moves back in time to when she was the only black child in her preschool and how she only spoke Afrikaans up until the age of five (topic 3).

During this time she explains that although her parents spoke Afrikaans fluently, but "*at the time, it wasn't a language that you would want to speak because it was still (.) the apartheid era*". Thus, as she needed to 'use her hands' in order to communicate with her parents, she narrates a particular incident (topic 4) in which she questioned her mother's intelligence. "*[M]y mother sometimes makes a joke (2) where at one point I questioned if she was dumb (.hhh), that she didn't understand me ((laughing)). I don't remember that incident, that it is embarrassing thinking about it, it was embarrassing (hhh)*" (discordance). As a result, her parents made an effort or "sacrifice" to communicate with Kaiya and her younger sister in Afrikaans. Kaiya then moves forward to the present time and argues that "*I'm proud that they took sacrifices and it also made me what I am today*" (concordance). The third turning point that shaped her narrative identity lies in only speaking Afrikaans up until the age of 5.

In 1996, when Kaiya went to a private Catholic school, she learnt to speak English. She then moves back in time once again and talks about how she grew up in schools and communities where people were "*a bit ignorant to understand*" or accept the fact that she did not speak an African language, thus creating a sense of discordance (topic 5a). She

provides particular incidents in which she was ill-treated by her peers in primary school because "*it was always as if you were aiming to be something that you are not, so not being able to speak a black language or being familiar with, you know <u>your</u> culture, to them that was shameful"*. She also struggled to make "black friends" because she felt that not speaking a "*black language … was shameful*" and she believes that having white friends was problematic for the 'black community' because "*it was now as if I was trying to be white and it wasn't the case*".

As depicted by topic 5b, she reflects on the personal impact these experiences has had on the development of her personality:

> "*It was hurtful at the time you know you're immature, you are still growing as a child, you don't know how to handle it (.hhh) and I think that's how I ended up being a person today (2) is very quiet about my problems about my life (.) about everything-even my successes (2) I don't tend to share them at a lot of people (.) not even my family and it's not to say that I don't-my family its just-I think the way the environment played a great role in making me as I am today*".

Furthermore, in retrospect she believes that as a coping mechanism, she took up gymnastics, which was offered outside of her school. Moving back to her high school, she continued to feels rejected by her peers for not speaking an African language, which she believes has made it difficult for her to currently trust and relate to people (topic 6a and b). The fourth turning point that shaped her narrative identity lies in feeling rejected by her peers for not speaking an African language and thus becoming "very quiet about [her] problems [and] successes" and wary of trusting people.

Stage 3: My mother moulded me into a people-pleaser

In the third storyline, Kaiya reflects on how her relationships with significant others have impacted on her sense of self-development. In topic 7, she evaluates how she felt rejected by her mother, who would be 'bitterly disappointed' if Kaiya did not excel in school and gymnastics. As a result, Kaiya believes that her relationship with her mother "*molded a*

part of me [in terms of] always trying to please to people (2) Ja, actually thinking about it is right now (.) I'll always aim to aim to please or not disappointing anyone " (discordance). However, on the other hand, her loving and supportive father re-established concordance because he was Kaiya's consolation "even though it wasn't the best of our ability, he would still be proud" (topic 7). The fifth turning point that shaped her narrative identity lies in having a strained relationship with her mother, which influenced her need to please people.

Stage 4: Feeling trapped at home but free at university

Once again, Kaiya moves back in time to explain how she felt "trapped" at home due to her discordant relationship with her mother. However, as depicted in diagram 2 (topic 8) she contrasts her home environment with the diverse university context where 'people got along with her' and where she felt free to be and *"learn who I am as a person, what I really want from life. Not just that I want a degree but in general*" (concordance). During her first year at university, Kaiya felt that people initially judged her because "*you are a black girl that cannot speak a black language (.) you seem quite fluent to speak English and you're not familiar with black roots and upbringing*".

However, she then argues that with time people accepted and appreciated her. As a result *"I felt good about myself [before] I didn't really have a lot of self-confidence or self-esteem*". Once Kaiya had completed her Honours degree, she returned home to Mpumalanga (topic 9a). She explains how she felt 'trapped' not only by her relationship with her mother but also due to the fact that her job applications were continually rejected. As a result, she became depressed and lost a fair amount of weight (discordance) (topic 9b). The sixth turning point that shaped her narrative identity lies in the shifting of selves from feeling trapped in her home environment to feeling free and appreciated in the university context to feeling trapped once more when she returned home.

Stage 5: The year I was emotionally abused and neglected by my aunt

Kaiya then returns to the third storyline, focused on her relational selves. In this case she talks about her discordant relationship with her Aunt Lulu. She moves back to the year she decided to live with her aunt so that she could attend Grade 8 at a new public school in Durban (topic 10). She describes her experience at this school as "phenomenal" because she felt accepted by her peers. "*People seem to love me for who I was, no one was questioning that I didn't know a black language, people didn't care about that, people cared about me-the interesting things that they saw in me"*. The reason she left Durban at the end of her Grade 8 year was because she was "ill-treated" or emotionally abused and neglected by her aunt. She provides particular incident narratives about how her aunt treated her during the course of 2003. For instance, although her aunt was wealthy, she locked up her groceries thus, Kaiya spoke about how much weight and hair she had lost during the year. "*[S]o I was hungry a lot of the time ((crying)) … I never had breakfasts ((crying)), I never had lunch and when it came to supper, I had leftovers ((crying))"*. Kaiya explains that there were times when she was so hungry *"I went as far as to steal food just to satisfy my hunger"*. Furthermore, her aunt would frequently tell Kaiya that she would 'never amount to anything'.

Toward the end of the year, her father drove to Durban to fetch Kaiya and take her back home to Mpumalanga (topic 11). "*It was a hard experience for me so (3), ja, now I think I was already secluded (2) I was and already excluded from the community and now my family (.) ja it hurts (.hhh), in a way but I told myself that it was an experience, it strengthen me in some way*". From her current perspective, Kaiya attempts to create concordance by reflecting on how being emotionally abused by her aunt has impacted on her drive, career aspirations and need for meaningful social bonds. She argues that her aunt has given her the drive to achieve her goals. "*I wanted to prove a point to her ((crying)), she felt that I never had the potential to succeed in anything … she was mostly my drive … so that I can prove her wrong*" (topic 12). She also aspires to have a career in which she will be able to indirectly help people "*in the right way … in a boundary-set environment*" (topic 13).

Furthermore, she retrospectively associates her 'lonely' past with her current need to protect her social bonds (topic 14a). "*That's just one-tenth of the stuff I experienced that year Sabrina (.hhh) and not just at my aunt's but primary school high school, so I was very alone Sabrina ((crying)) I never really had anyone-so I think that's why, when I do hold a bond with someone, I would do anything in my power to hold on to it [crying]"*. For instance, she provides detailed narratives of how she assisted her best friend (Mamoratwa) during her pregnancy (topic 14b), as well as her roommate who was going through a difficult time (topic 14c).

Kaiya then returns to a topic she had previously mentioned in topic 9, namely why she became depressed when she returned home after completing her Honours degree (topic 15a) In retrospect, she attributes her depression to being emotionally abused at the age of 13 (topic 15b).

> "*I have been a bit depressed and that's what explains why I've lost all that weight ((started crying)) … I never really understood why I was getting depressed (.) but as time went by, I realise that it was what was done to me … I think it gets harder when you don't understand what's going on ((crying)) … no matter which angle you look at a situation, you don't seem to find comfort or a solution that can console you-make you feel better*" (discordance).

The seventh turning point that shaped her narrative identity lies in the shifting of selves from being neglected and emotionally abused by her aunt at the age of 13 to becoming driven, developing depression and aspiring for meaningful social bonds and a career within a "boundary-set environment".

Stage 6: In a government office, a person like me is not accepted

Kaiya ends her told story by referring back to the first and second storylines (i.e. career and linguistic identities) in relation to significant others. She talks about her current job in a government office and how discordance has continued because she feels rejected by her

colleagues and clients because she does not speak a 'black language'. *"[A] person like me is not accepted in the sense that I'm black and you know how it works Sabrina, people are still held up with apartheid, so when a person like me comes about, who is Westernised, who doesn't know a black language, a person will not accept you and that's just how a government office just works Sabrina"*. Lastly, she provides particular examples that illustrate her efforts to "blend in" and minimise "*those little things makes me stand out [but in the end] they speak a black language it's just apparent that you are not-you're not*" (topic 16). Thus, she returns to her 'fourth' turning point that shaped her narrative identity lies in feeling rejected by her colleagues and clients for 'being Westernised' and not speaking an African language.

5.2.2.3. The narrative form

I will now examine how Kaiya's told story has been structured according to four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events, and (4) concordance and narrative identity.

The developmental goal and storylines

Kaiya's told story is about the importance of language and significant others in what it means for Kaiya to be black in post-apartheid South Africa. What blackness means for Kaiya encapsulates the "development goal" or "evaluative endpoint" of her told story (Gergen & Gergen, 1986). There are three storylines that cut across her told story, the most predominant of which is 'significant others'. She spends most of her time (38 minutes or 67% of interview time) talking about significant others in her life. During the rest of the interview she talks about language for nine minutes, her career for six minutes and the combination of language and career for four minutes. Kaiya begins and ends her told story with 'science and career identity'. She decided to pursue a degree in science because of her 'medical family' but ended up working in a government office where she feels rejected by her colleagues because of her linguistic identity. Toward the beginning of her told story, she explains that she has "always" felt rejected by others because she

does not speak a “black language”. Retrospectively, she believes that her encounter with rejection has made her “very quiet about [her] problems [and] successes” and cautious of trusting people. The middle of her told story is a continuation of her narrative of rejection by ‘significant others’, particularly by her mother and aunt. Retrospectively, she argues that her strict mother influenced her need to please people, while her emotionally abusive aunt fuelled her depression and drive to achieve her educational aspirations. Furthermore, she constructs her family house as a place of confinement whereas the university is viewed as a space of freedom. As depicted in diagram 2, she refers to her career for a total of five times at the beginning and end her told story, in which she explains how her linguistic identity intersects with her career.

Kaiya refers to her linguistic identity 11 times toward the beginning and at the end of her told story where her career, linguistic and relational identities intersect. Her discussion about significant others comprises the middle of her told story which she mentions 14 times. Indeed, significant others cuts across the beginning, middle and end of her told story because she talks about how her family influenced her career decision and how she felt rejected by her peers and colleagues for not speaking a “black language”. Kaiya utilised an argumentative tone (Wengraf, 2011) when talking about her ‘linguistic identity’, which reveals her current position as a young Black, English-speaking woman who does not speak an African language. Furthermore, she provides three emotional descriptions of particular incidents (Wengraf, 2011) about ‘significant others’ and she evaluates (Wengraf, 2011) how these incidences contributed to depression, her drive to succeed and her desire to find a job within a ‘boundary-set environment’. Thus, Kaiya’s significant others play a central role in establishing the “goal state or valued endpoint” because her experience of being a black person who does not speak a “black language” is determined by being rejected by others.

Emplotment of developmental goal

I argue that Kaiya’s told story has multiple ‘emplotments’ (Ricoeur, 1984, 1985, 1988), as she has organised and interpreted unrelated experiential events within three storylines

which each have thier own beginnings, middles and ends. The plot of her told storylines has created a unified story about the importance of language and others in what it means for Kaiya to be black in post-apartheid South Africa. Kaiya's told story covers the entire span of her lived life (from birth or childhood through to the time of their interview), which she narrates in a linear fashion (i.e. from her past and recent past, to her present). The three storylines pertain to her science or career identity (storyline 1), linguistic identity (storyline 2) and relational selves (storyline 3). The beginning (her past) and ending (her present) of her told story comprise storyline 1 and 2.

The middle of her told story comprises storyline 3 (her past and present). At the beginning of her told story (her past), Kaiya argues that she chose a career in science because she comes from a medical family (storyline 1). She also explains how she felt rejected by her peers in primary and high school for not speaking an African language (storyline 2). In the middle of her told story (her recent past and present), she talks about her strained relationship with her mother and supportive relationship with her father (storyline 3). Furthermore, she provides particular incident narratives about how she was neglected and emotionally abused by her aunt. At the end (her present), storylines 1, 2 and 3 converge as she argues that in her current job working for the government, "a person like me is not accepted by others" (i.e. a black person who does not speak a 'black language').

Logical connection of topical events

The series of events that lead to a 'valued endpoint' have been tied together by a combination of patterns, which provide a sense of temporality and movement through time. Kaiya's told story incorporates a combination of steep and progressive 'zig-zag' patterns that develop over time. She begins her told story with a sharp 'zig-zag' pattern as she provides an overview of why several past events are presently significant to her. In other words, she repeatedly moves from past to present or beginning to end. There is no middle to this pattern as she draws on its beginnings and ends in order to provide a number of overarching reflections on the importance of particular storylines. In the first

12 minutes (21% of the interview), Kaiya introduces the significance of all three storylines, namely why she chose a career in science, how she felt rejected by others for not speaking an African language and the ways in which her relations with others shaped her sense of self-development. The next 36 minutes (63% of the interview) consist of a progressive 'zig-zag' pattern as she jumps back and forth in time when talking about how she was emotionally abused and neglected by her aunt. Her told story ends with a steep 'step' in which she talks about feeling rejected by her colleagues (for 3 minutes).

Discordance, concordance and narrative identity

It is evident that Kaiya has organised the telling of her told stories by narrating how she has created concordance or ordered the discordance or chaos caused by incidences, herself or interactions with others, which reveal her meaning-making strategies. I would liken progressive narratives to the notion of 'concordance', regressive narratives to 'discordance' and stability narratives to stories that are dominated by either concordance and discordance (as in Khanyisile's told story). Kaiya's told story oscillates between progressive and regressive narratives as there is a constant tension between 'discordant concordance' or 'concordant discordance' (Ricouer, 1984), which creates the temporal and spatial shifts in her turning points that shape her multifaceted narrative identity. Unlike Khanyisile's told story, Kaiya's story involves a 'dramatic engagement' as there is a constant rapid movement of progressive and regressive narratives that move her story toward and away from the valued endpoint (Gergen & Gergen, 1986).

5.2.3. Case three: Takalani Nengwekhulu

5.2.3.1. The lived life

1989: Born in a small village in Limpopo into a TshiVenda speaking family.
1991: First sister born.
1993: Second sister born.
1995: Started Grade 1 at Vhukovhela Primary School in her village. All her lessons were taught in TshiVenda throughout primary school.

1996: Father dies in a car accident (Takalani's mom was 28 years old at the time).

2001: Mother buys their first family car.

2002: Started Grade 8 at Dima Secondary School. Her teacher reprimands her for 'not' doing her homework. By the end of the first block, she came 8th out of 200 learners in her grade.

2003: Best student for mathematics and science. Met her white Afrikaans teacher. Prefect.

2004: Best learner in church's Sunday school.

2005: Best student for mathematics and science. Won silver medal at the provincial Minquiz competition. Best overall academic achiever. Secretary of the student Christian movement.

2006: Best overall academic achiever. Grandmother and aunt passed away. Committee member of ANC Youth League and the secretary of Student Christian Movement. Six distinctions in her Matriculation examinations and became the 21st best student for her academic performance in the Matriculation examinations in the Limpopo Province. Applied for Aeronautical Engineering at Wits.

2007: Awarded the Oya scholarship. Enrolled for Aeronautical Engineering at Wits (Engineering and the Built Environment) and lived at the university residence for the duration of her studies. Became a member of Mailazuiboma (Venda speaking people club). Passed first year of study.

2008: Failed second year of study.

2009: Passed the four repeat second year courses and one third year course. Proceeded to third year. Youngest sister stared started Grade 8.

2010: Failed two third year courses (and failed third year). Oya scholarship funding ended. Younger sister enrolled at the university of Venda for LLB.

2011: Passed three repeat third year courses. Passed 90% of her Honours courses.

2012: Working on completing a research report and one Honour's year course. Applied for several jobs.

5.2.3.2. The told story pattern

With the aid of Life-story Diagram 3 (see overleaf), I will examine the plot of Takalani's

told story in relation to how her narrative identity has been constructed upon the model of 'discordant concordance' or 'concordant discordance' (Ricoeur, 1984).

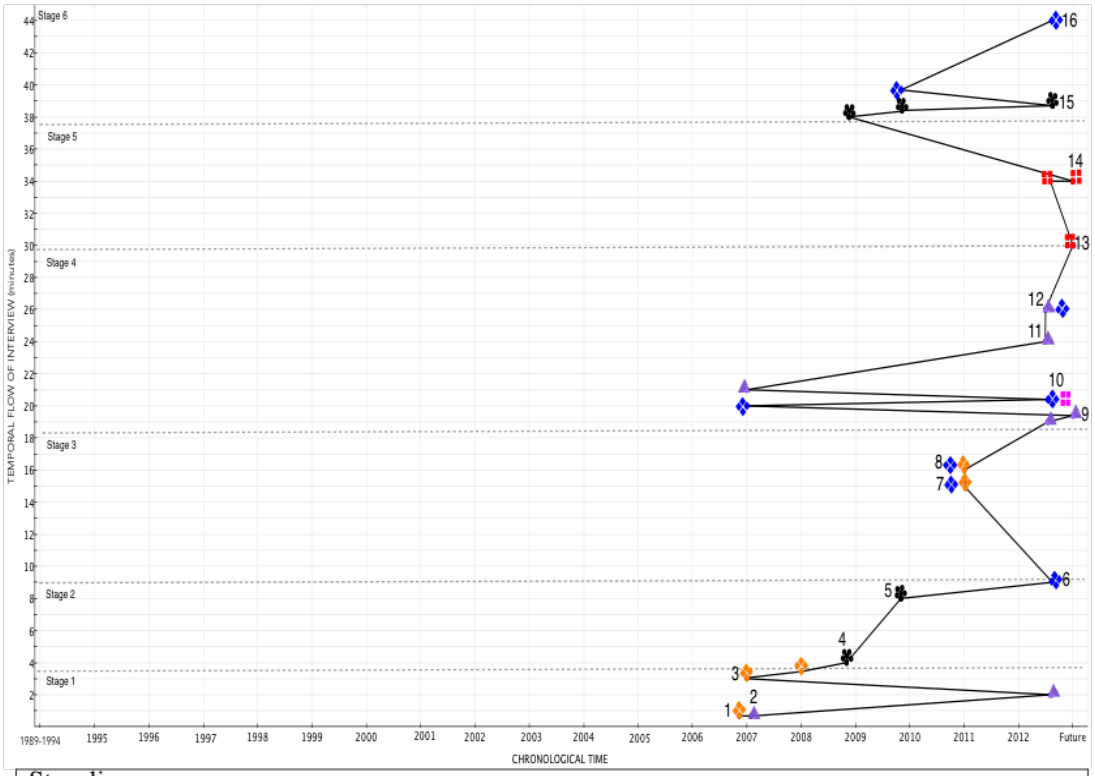
Stage 1: My life started when I passed Matric, received the Oya scholarship and arrived at Wits with very little background knowledge

Takalani begins her told story with the following opening statement: "*my life really started when I passed my Matric [and] decided to come here and study Aeronautical engineering"*. As depicted in diagram 3 (topic 1), Takalani argues that her 'lack of background knowledge' initiated discordance in her told story. "*I had a very little knowledge [of] what is that I'm expected to do, it was just the fact that I loved aeroplanes but not really knowing much about them because of the background that I'm from*". However, the Oya scholarship created a sense of concordance because she still feels fortunate or "very, very advantaged" by the support she has received from the programme (topic 2). During her first year, she also struggled to adapt to the discord of being a residence student. "*I would miss home a lot, I would miss my mom, I'd miss my sisters, I'd miss my family*" (topic 3). Thus, the first turning point that shaped her narrative identity lies in the juxtaposition of being 'disadvantaged' by her academic under-preparedness but 'advantaged' by the support she received from the Oya scholarship.

Stage 2: From failure I learnt not to be defined by circumstances external to myself

As Takalani has a history of excellent academic achievement, she always considered herself to be a "smart person" who would "never struggle academically". However, when she experienced failure for the first time in her life, she "*wondered what went wrong … I ended up so confused, feeling so lonely (2) feeling stupid"*. In other words, she talks about how the discordance of failing her second year of study made her feel *"like (.) can this life end or something"* (see diagram 1, topic 4). Takalani was able to pass her repeat year and proceed to her third year of study in 2009. However, the discord of failure continued when she failed her third year as well and, as a result, her Oya scholarship came to an end and she "got so emotionally depressed" (topic 5).

Life-story Diagram 3: Lived life and told story of Takalani Nengwekhulu



Storylines

- Challenges facing Black women in science
- Scholarship recipient
- Career and science identity
- Failure and/or academic exclusion
- Significant others
- Aspirations and expectations

Topics

1. Arrived at Wits with little background knowledge (ARG, REP)
2. Fortunate to receive support from Bale (ARG)
3. Homesickness (ARG)
4. I felt confused and stupid after my first experience with failure (EVAL)
5. I felt depressed after my second experience with failure (PIN, EVAL)
6. Therapy, prayer, competence and growth (EVAL)
7. My lecturer's distrust of my competence (PIN)
8. My peer's refusal to work with me in a group setting (PIN)
9. Trained at the best university in Africa (ARG)
10. I chose my studies over relationships (ARG)
11. Thankful to scholarships (REP)
12. I'm fortunate compared to my peers (ARG)
13. Aspirations provide career guidance to high schools (ARG)
14. Expectations and aspirations to buy houses and cars (ARG, GIN)
15. The emotional scars of failure (EVAL, ARG)
16. My mother away from home (EVAL, ARG)

In an attempt to recreate concordance and make meaning of her experiences of failure (topic 6), she went to see a therapist and resorted to prayer. "*I'm a Christian (.) so like I have this spiritual background, so I think that also helped me as well (.) so I was like, I will wait and see what happens*". Takalani was able to find a company who agreed to fund her remaining two years at university. Reflecting on her experience of failure, she concludes that despite "the background that I come from" she is now able to design an aircraft. She feels that she has grown in strength and resilience thus establishing a sense of concordance. "I think there won't be any more pain or anything that could crush me down completely". Lastly, the most important lesson she has learnt is that she should not define who she is by circumstances that are external to herself. "I *learnt that I am me and I can't be defined by the circumstances around me*". Thus, the second turning point that shaped her narrative identity lies in the shifting of selves from being an academic achiever to failing twice and feeling confused, lonely and depressed and then to understanding that she cannot be defined by circumstances external to herself.

Stage 3: Being a black woman, my lecturers and peers distrusted my competence as an engineering student

Takalani then moved back to the time when she was the only black woman in her third year and Honours' class of 19 students. As depicted in diagram 3 (topic 7), Takalani narrates a typically troubling incident in which her lecturer would "*keep his eyes on me*" during class and asked her, in front of the class, whether she understood the content that was being taught and that she should stay behind for extra lessons (discordance). Takalani believes that her lecturer's distrust in her competence as an engineering student may have influenced her peers' perception of her academic ability as they would either be reluctant to, or refuse to, work with Takalani in a group setting, thus maintaining discordance. "*I don't know if I saw this wrong but I think lecturers lack to trust me (2) they [and peers] didn't trust me*" (topic 8). In order to create concordance from this situation, Takalani would tell herself to "*be strong and … mingle*". Thus, the third turning point that shaped her narrative identity lies in being underestimated as a competent engineering student by her lecturer and peers because she is a black woman.

Stage 4: Reflecting on my life at university

Takalani maintains concordance by providing her current perspective on what has been most important to her during her time at Wits. As depicted in diagram 3 (topic 9), Takalani argues that she is "*very very happy … to be an aeronautical engineer soon*" who has been trained at one of "*the best universities in Africa*". In topic 10, she moves back to her first year at university and reflects on how she always chose her studies over relationships, which resulted in her loneliness, "*you don't want to be lonely and failing at the same time*". She repeats this pattern in topic 11 as she reflects on how "thankful" and "fortunate" she is to have received scholarships for six years, which has made her view failure not as "*punishment [but] growth*". As a result, Takalani views herself as fortunate compared to her peers, some of whom dropped out of university due to the lack of funding, "*some of them were even more brilliant than me*" (topic 12). Thus, the fourth turning point that shaped her narrative identity lies in attending the best university in Africa, prioritising her studies over relationships, and feeling fortunate to have received university funding for six years.

Stage 5: Aspirations to give back to my community and family

Takalani argues that it was difficult to adapt to the academic demands of university because her schools did not equip her with the relevant background knowledge. Thus, her academic under-preparedness fuelled her aspirations to visit the kinds of high schools she attended in order to advise those interested in aeronautical engineering on how they could familiarise themselves with this field (topic 13). She thus creates as sense of future concordance from her past discord of adjusting to university. As depicted in diagram 3 (topic 14), Takalani moves to her discordant current position of remaining a student while her peers are buying houses, cars and getting married. This situation makes her feel demotivated and "emotionally depressed", especially when her family members "expect things" from her. "Like you'll find yourself being very depressed (.) cause you're thinking, hey, now I'm wasting my life". Thus, the fifth turning point that shaped her

narrative identity lies in her aspirations to provide career guidance to learners in rural schools and to financially provide for her family while remaining a student when her peers become professionals.

Stage 6: The emotional scars of failure and my mother away from home

In the final stage of her told story, Takalani returns to the discordant effects of failure (topic 15). She believes that her peers dropped out of university because they felt "so beaten up" by failure, an experience that she believes creates emotional scars forever. *"[W]hen you graduate you are going to be happy for that day but that pain, like, it just it remains"*. As mentioned earlier, Takalani's therapist made her realise that failure is part of succeeding, thus, she created concordance or a sense of home at Wits for Takalani".*I don't know why but she loves me, she think I'm-she takes me like, I'm her own daughter … a mother far away from home*" (topic 16). Thus, the final turning point that shaped Takalani's narrative identity lies in becoming emotionally scarred by failure and having a therapist that loved and cared for her like a mother.

5.2.3.3. The narrative form

I will now examine how the diagram and the summary of Takalani's told story has been structured according to four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events and (4) concordance and narrative identity.

The developmental goal and storylines

Takalani's told story is about how failure has taught her not to be defined by circumstances external to herself, which encapsulates the "development goal" or "evaluative endpoint" of her told story (Gergen & Gergen, 1986). There are five storylines that cut across her told story, the most predominant of which are 'significant others' and being a 'scholarship recipient', as she spends 13 minutes talking about each topic (58% of interview time). During the rest of the interview, she spends an equal

amount of time talking about failure, aspirations and the challenges she faces as a black woman in science. Takalani begins her told story by connecting two storylines, that is ‘challenges facing black women in engineering’ and being a ‘scholarship recipient’. Although she had limited access to career guidance and financial resources and although she was academically under-prepared for university, the Oya scholarship provided her with the economic and social capital she needed to better prepare herself for university studies. In other words, she was ‘disadvantaged’ by her academic under-preparedness but ‘advantaged’ by the support she received from the Oya scholarship. She introduced her ‘disadvantaged background’ as contributory factor to the storyline of failing a year of study twice, which made her feel confused, lonely and depressed. Another factor which contributed to failure is her lecturer’s sexist and racist stereotypes, which she needed to fight against when looking for a group of classmates with whom to work with (i.e. intersection of two storylines, namely ‘challenges facing black women’ and ‘significant others’). Takalani’s ‘disadvantaged background’ and the challenges she faced at university created an ‘aspirational’ storyline in which she plans to provide career guidance to learners in rural schools. She ends with the ‘significant other’ storyline as she explains that her therapist (i.e. “a mother far away from home”) provided her with the support she needed to persevere and accept the emotional scars of failure.

As depicted in the diagram 3, Takalani talks about being a recipient of several scholarships twice at the beginning and five times in the middle of her told story. She also mentions the challenges she faced in engineering three times at the beginning and twice at the middle of her told story. She refers to her experience with failure (twice) toward the beginning and three times toward the end of her told story. Significant others feature four times in the middle and twice at the ending of her told story. There are also points at which storylines intersect, for instance the challenges she faces in engineering intersects with significant others in topics 7 and 8; while being a recipient of various scholarships intersects with others in topic 12. Whereas she narrates a particular incident when talking about failure (see diagram 3, topic 5) she narrates two particular incidents when referring to the challenges she faced as a black woman in engineering (diagram 3, topics 7 and 8). Takalani provides three particular incident narratives (Wengraf, 2011) when discussing

the emotional impact of two storylines, ‘failure’ and ‘challenges she faced as a black woman in engineering’ in that her lecturer and peers distrusted her competence. As she argues (Wengraf, 2011) and positions herself as being fortunate for being a ‘scholarship recipient’ for six years and as she evaluates (Wengraf, 2011) the emotional support from her therapist, Takalani was motivated to create meaning from failure. “*[M]y mom can’t afford [tuition fees] so I was very fortunate … that’s the reason why I see how this [failure] was not like a punishment, I think it was just (.) just some sort of growth, like growing as a whole, growing as a person*”. Thus, each storyline plays a significant role in establishing the “goal state or valued endpoint” (Gergen & Gergen, 1986) of how failure has taught her not to be defined by circumstances external to herself.

Emplotment of developmental goal

I will demonstrate how Takalani has constructed her told story by organising and interpreting apparently unrelated experiential events that follow the principles of ‘emplotment’ (Ricoeur, 1984, 1985, 1988). As mentioned, the plot of her told story has created a unified story about how failure has taught her not to be defined by circumstances external to herself. Takalani’s told story covers her university life and her projected future, which she narrates in a non-linear fashion (i.e. from her past, to present, to future, to past). She begins her told story by juxtaposing stages 1 and 2. Although she matriculated as the 21st best academic learner in the Limpopo Province (stage 1), when she came to university she failed her second and third years of study (stage 2). In order to make sense of failure, in stage 1 Takalani argues that she was academically under-prepared for aeronautical engineering and in stage 3, narrates an incident which demonstrates how her lecturer and peers doubted her competence as an engineering student because she is a black woman. Stages 1 and 2 thus form the beginning of her told story (her past) in which she presents two opposing events (i.e. academic excellence versus failure). The middle of her told story comprise stages 3 - 5 in which she talks about the past challenges she faced as a black woman in engineering, her current gratitude for receiving scholarships for six years and her future aspirations of ‘giving back to her community’. In the final stage, she ends her life story with an explanation of

how she has been emotionally ‘scarred’ by her past experience of failure followed by the continuous emotional support provided by her current therapist or “my mother far away from home”.

Logical connection of topical events

The series of events that lead to a ‘valued endpoint’ have been tied together by a combination of patterns which provide a sense of temporality and movement through time. Takalani’s told story incorporates a combination of progressive and steep ‘step’ and ‘zig-zag’ patterns. She begins her told story with a steep ‘zig-zag’ pattern as she jumps back and forth to the challenges she faced in her first year at university and the support she received from the Oya scholarship programme. This ‘zig-zag’ flows into a progressive ‘step’ pattern when she talks about how her first encounter with failure was caused by a combination of connected events. This is followed by another steep ‘zig-zag’ pattern as she reflects on what she currently appreciates most about university life. In a steep ‘step’ pattern, she then talks about her aspirations for the future before ending her told story with a steep ‘zig-zag’ pattern as she reflects on the current effects of failure and supportive relationships.

Discordance, concordance and narrative identity

Similar to Kaiya, Takalanialso organised the ‘telling of her told story’ (Wengraf, 2011) by narrating how she has created concordance or ordered the discordance within her life. Takalani’s told story oscillates between progressive, regressive and stability narratives as there is a constant tension between ‘discordant concordance’ or ‘concordant discordance’ (Ricouer, 1984), which creates the temporal and spatial shifts in her turning points that shape her complex narrative identity. Unlike Khanyisile and Kaiya’s told stories, Takalani’s story involves a dramatic engagement and stability narratives as reflected by the ‘step’ patterns, which build suspense over time (Gergen & Gergen, 1986).

5.2.4. Case four: Alala Celukwazi

5.2.4.1. The lived life

1998: Alala was born in Johannesburg.

1995: She started Grade 1 at Grace Primary School.

1997: She did not receive any formal awards at a prize-giving event however her art teacher gave her a hand-made certificate for the best practical work for art. Her father passed away.

1998: Her mother lost her job and could not afford to pay Alala's school fees any longer.

2001. Won an art competition. Awarded "girl of the year" for academic achievement. Selected by the Residential Education Committee and offered a 5 year scholarship to attend a former Model C high school.

2002: Started Grade 8 at Anne's Girls High School (former Model C).

2003: Media assistant at the library and participated in public speaking.

2005: Job shadowed an architect in Johannesburg.

2006: Prefect or peer councillor. Class captain. Leader of the Poetry Club. An executive member of the representative council of learners (RCL). Taxen award for best practical work in art. Nominated for the Oya Scholarship programme. Passed her Matriculation examinations with two distinctions and an exemption. Applied for and was accepted into Architecture and Fine Arts at Wits.

2007: Awarded the Oya scholarship. Enrolled for Architecture at Wits (Engineering and the Built Environment). Lived at the university residence for the duration of her studies. Sister dies at the age of 32. Passed first year of study.

2008: Passed second year of study.

2009: Failed third year of study.

2010: Failed 'repeat third year of study' and academically excluded. Final year of Oya scholarship funding. Dropped out of university.

2011: Internship as trainee architect at an architectural firm.

2012: Internship ended at architectural firm in March. Contract drawing work with her aunt. Unemployed

5.2.4.2. The told story pattern

With the aid of Life-story Diagram 4 (see overleaf), I will examine the plot of Alala's told story in relation to how her narrative identity has been constructed upon the model of 'discordant concordance' or 'concordant discordance' (Ricoeur, 1984).

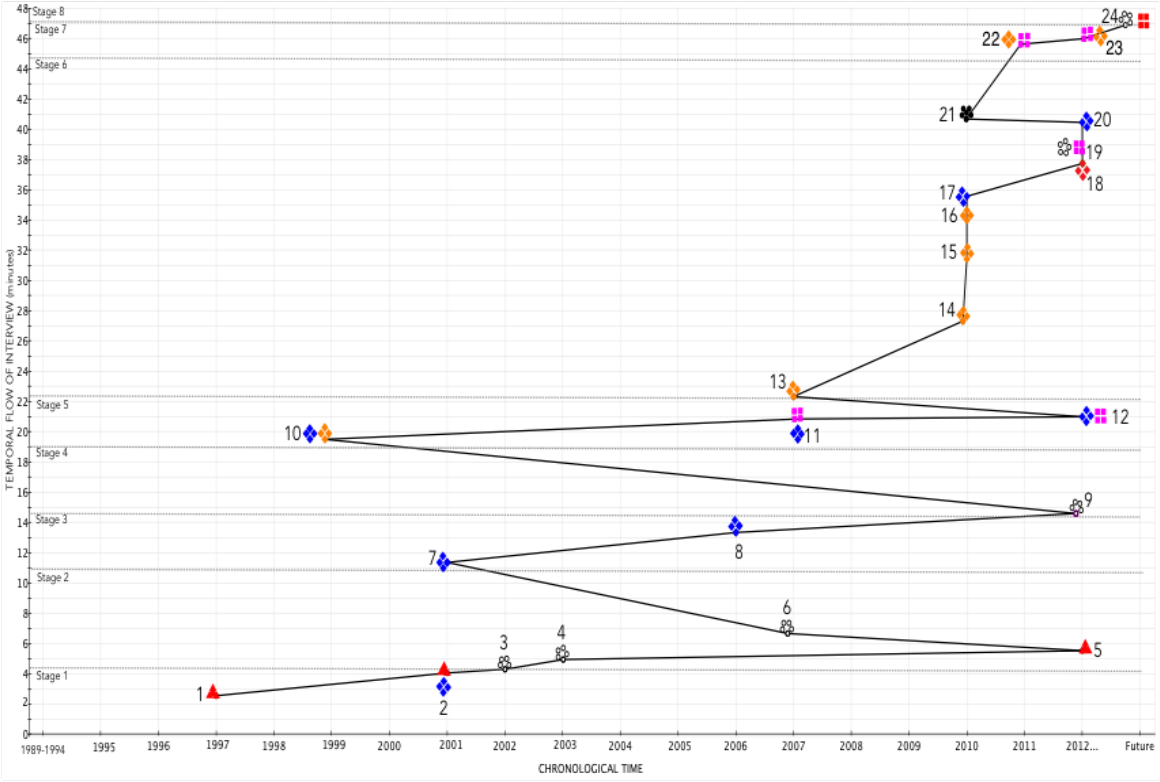
Stage 1: My mother's valuation of formal and informal recognition

At the beginning of her told story (her past), discordance was created by Alala's mother's valuation of formal recognition over personal acknowledgement. Within the first stage of diagram 4, there is a steady progression between topics 1 and 2, which Alala spends a total of four minutes (9% of interview time) talking about.

Alala recalls that when she was in Grade 3, she did not receive any awards at her school's annual prize-giving, though she did, however, receive a hand-made certificate from her art teacher commending her performance in art. Although Alala says this act of recognition by her teacher made her believe that she was creative, her mother was disappointed by the fact that Alala did not receive a formal academic award. Alala retrospectively argues that the effect of not receiving formal awards was that she decided to work hard at achieving formal recognition.

However, three years later, concordance was established when Alala won an official art competition and received a high school scholarship. Alala's mother triggers conflictual feelings about her academic adequacy and thus her mother becomes positioned as responsible for motivating Alala to move the plot of her told story forward in a particular way. Her mother's reaction acts as an impetus for Alala to work hard in order to achieve formal recognition that would make her mother proud. "*[S]o, so, so, at the beginning, that is what drove me … that is what drove me, and have always worked hard, and just try to do, the best, so that my mother can be proud of me (5) so that she can no longer ((laugh)) so that she doesn't ask me, <u>why</u> didn't you, why, so, so, that was the (.) beginning, that was, the drive*"

Life-story Diagram 4: Lived life and told story of Alala Celukwazi



Storylines

- Recognition
- Personality characteristics
- Significant others
- Challenges facing Black women in science
- Career and science identity
- Motivators
- Failure and/or academic exclusion

Topics

1. No awards at prize giving (PIN)
2. Won an art competition (PIN, GIN, EVAL)
3. Library and art studio, my sanctuary (ARG)
4. Found my voice with public speaking (ARG)
5. Awards are no longer important to me (ARG)
6. I would dream of saving the world (TIN, ARG)
7. High school scholarship because of a teacher (REP)
8. A teacher became like a second parent (REP, GIN)
9. I lost touch with my creativity (EVAL)
10. I became my family's retirement plan (ARG)
11. I chose architecture instead of fine arts (ARG)
12. My mother's dream (EVAL)
13. Worked hard but obtained average results (ARG)
14. No space for Black women in Architecture at Wits (EVAL, ARG)
15. Eurocentric education in Architecture (EVAL, ARG)
16. Fighting to be heard strengthened my values (EVAL)
17. Supportive friendships (ARG)
18. Music, poetry and creative writing (ARG)
19. My talent lies in translating imagery into words (EVAL)
20. Supportive people (REF)
21. It's sad that I failed (EVAL)
22. I was underestimated as an intern (EVAL, ARG)
23. Unemployment is better than being at Wits (EVAL)
24. I aspire to be free, explore, learn, and grow (EVAL, REF)

In the first stage of her told story, Alala introduces a recurring theme in her life, namely, that her ambition to prove that she is artistically and academically talented coexists alongside formal and informal recognition from others. This set of themes originates from a combination of interpersonal and ideological domains (Randall, 2014) because her driving force is not only activated by others but also by her pursuit of excellence or her fear of mediocrity. Thus, the first turning point that shaped her narrative identity lies in the shifting of selves from believing she had artistic ability to feeling academically inferior and then to being recognised as 'talented' three years later.

Stage 2: Who I was at the beginning (Point A)

Alala spends approximately seven minutes (15% of interview time) talking about the second stage of her life story, which is 'an effect' of the previous stage in the sense that Alala's 'retrospective resolve' to work hard at obtaining formal recognition set her on a path of 'self-discovery' or self-creation. Alala maintains a sense of concordance between being formally recognised at school in relation to who she believes her-self to be. As depicted by topic 3 and 4, Alala grounds her artistic and academic selves with her sense of belonging to particular places (i.e. library, classroom and art studio) and then explains her transition from being shy to finding a voice in public speaking.

This stage could be viewed as an anchor that grounds the beginning of her told story (i.e. 'Point A or her childhood'). Point A, which represents particular characteristics that Alala believes are intrinsic to her character, is depicted by the hollow circles in diagram 4. Alala then moves forward in time by nine years in order to explain how recognition 'kept her going' but it is no longer important to her at present (topic 5). Lastly, she moves back in time when she narrates a particular incident in which she would typically 'sit in the garden and dream of saving the world' (topic 6). Thus, her narrative identity is shaped by a second turning point, namely her description of her-self as being curious, creative, contemplative, artistically talented and someone who has a passion for deep learning (i.e. Point A).

Stage 3: Significant others

At the end of the second stage, Alala arrives at a point in her life story in which she becomes 'stuck'. When I say, "well, I love I love listening, especially to you (3)," she then moves back to the time when two teachers (from primary and high school) made an impression on her. *"And ja and people have always been important, I've always had support"*. Although my intervention helped Alala progress in her interview, it becomes evident that this stage is 'out of sync' with the flow of her told story. For four minutes (9% of interview time), she continues to preserve concordance within her told story by reporting on how her primary school teacher recognised her talent and helped her secure a scholarship in order to attend a former Model C school. Furthermore, another teacher provided Alala with a support system during high school and acted like a 'second parent' (topics 7 and 8). Thus, the third turning point that shaped her narrative identity lies in the support from significant others, which has encouraged her to preserve through the 'difficult times'.

Stage 4: I lost touch with my creativity in the end (Point B)

Whereas 'Point A' anchors the beginning of Alala's told story,' Point B' (i.e. her young adulthood) anchors the end of her told story. Furthermore, the concordance of Point A is in opposition to the discordance of Point B. 'Point A' (the beginning or past childhood) represents a time when artwork was "soul work" for Alala whereas Point B (the end or present young adulthood) represents a time when artwork was no longer enjoyable. As depicted in topic 9, Alala moves forward to the end of her told story in order to explain how she ended up at Point B, her current position in which artwork is no longer enjoyable to her (discordance). In this stage, Alala mentions that she cannot get back to 'Point A' because she has spent "so much of me" moulding her craft and her-self into the architectural way of being at Wits. "I lost (.) I do know-I didn't, I didn't lose it-but it's hard, to get back to that point [point A]". In using an evaluative tone (Wengraf, 2011), we realise that Alala selected and organised the aforementioned events in order to compare two points or spaces in time, her artistic self - then and now. The fourth turning point that

shaped her narrative identity lies in the shifting of selves from feeling inspired and creative to feeling despondent and unimaginative.

Stage 5: At the beginning, I was my family's retirement plan (Point A) but in the end, I am unemployed (Point B)

Alala shifts her story to a new topic in this stage but she repeats the same pattern from the previous; that is, she talks about a sequence of events from her past, which she then interprets in relation to the present moment (the end of her told story). In this stage, Alala implicitly maps 'Point A' (a space where artwork was soul work for her) onto her reasons for choosing architecture and Point B (where artwork was no longer enjoyable) onto her current position of being unemployed. She goes back to the time she chose to study architecture instead of fine art and explains that when her father passed away in 1997, she became her family's "retirement plan", thus, she chose architecture not only because it was her passion but in order to support her family in the future (topics 10 - 11). As depicted by topic 12, this sense of discordance extended to her current moment of being unemployed and dependent on her family for financial support. Furthermore, her mother's anxious dream is understood as a reaction to Alala's unemployment. The fifth turning point that shaped her narrative identity lies in the shifting of selves from being her family's retirement plan before university to remaining a dependant after university.

Stage 6: How I struggled in the middle of my story (from Point A to Point B)

In this stage, I will explain how Alala moves to the middle of her told story (still in the past), which has effected her present situation (or the end of her told story). In the middle of Alala's told story, she attempts to explain why she went from Point A to Point B or how creativity was educated out of her by the institution. Wits provides the setting from which Alala explains how and why her journey from Point A to Point B suppressed that spiritual, soulful and creative part of her-self who was captivated by art and mathematics. She feels that this part of her-self was slowly 'educated out of her' by the institution. For 22 minutes (or almost half of the interview time) Alala talks about the challenges she had

experienced at university (topics 13 - 21).

As depicted in diagram 4, she begins by introducing the following conflict within her told story: she was able to develop an academic identity over the years, by enacting a simple ‘formula’; working hard and listening in class and as an outcome, she obtained excellent marks that people recognised. However, her academic identity was threatened in first year when she applied the same ‘formula’ at university but did not get the same outcome (topic 13). This particular conflict remained unresolved for Alala (thus maintaining a sense of discordance) because she still did not know the exact reasons why she failed third year twice.

In retrospect, Alala was able to theorise possible reasons as to why her academic results were not a reflection of her work ethic. She utilises an argumentative tone to illustrate how several conflicts trapped her in particular positions that she continually tried to resist. For instance, she perceives the following reasons as ultimately leading to her academic exclusion and discordance. As depicted in topic 14, she believes that there is neither room for her ideas nor space for people from different backgrounds in the architectural department at Wits. She also talks about Eurocentric teaching in architecture and how she felt that the lecturers relied on their subjective sense of 'what kind of mark' she deserved (topic 15). Although she “over-designed” her models, she could not understand how her lecturers could fail her for overthinking. She also felt further alienated by her belief that her lecturers thought that she was crazy. As a result of these challenging experiences, Alala explains how her battle to be heard shaped or strengthened her belief that ‘we are all talented in our own way’ (topic 16).

Alongside the challenges at university, Alala then creates a sense of concordance by reflecting on the moral support she received, and the importance of music and poetry in reconnecting with herself during difficult times (topics 17 - 20). However, despite all her efforts, she was ultimately academically excluded by the institution (topic 21). It is ironic that she was recognised as being academically talented and chosen for a prestigious scholarship by the same institution that academically excluded her four years later. The

sixth turning point that shaped her narrative identity lies in the shifting of selves from being recognised as creatively and academically talented in high school to being recognised as a young black talented scholarship student, to feeling academically inferior throughout university to her academic exclusion.

Stage 7: I lost my voice, settled for being underestimated as an intern and I'm now unemployed (at Point B)

A commercial architectural firm provided the setting within which Alala felt underestimated as an intern (topic 22). As a result of being academically excluded, she believed that she had 'lost her voice' and thus settled for being underestimated by her colleagues during her internship (discordance). However, toward the end of her told story, Alala attempts to create concordance between the struggles she faced in-between Point A and Point B in relation to her future. She moves to her present situation of being unemployed (topic 23) and explains that if she were to go back to university, it would slowly lead to the destruction of her residual love for architecture. She also adds that she does not have the energy to fight against people who 'are against me' and that if she were to go to another university, funding would be an issue. In short, she hopes that by exploring her diverse interests (e.g. journalism) she will be able to 'find her place' in the world. Thus, the seventh turning point that shaped her narrative identity lies in the transition from being academically excluded to an underestimated intern and then an unemployed dependent.

Stage 8: In the future, I hope to get back to who I was in the beginning (Point A)

In the last stage, Alala continues to create concordance by linking her future back to Point A, that space where her love for learning and artwork was "soul work". She "*hop[es] to diagram out a way to do what I need to do*", to find a career that not only will be a source of inspiration for her, but one that will also generate an income for her family (topic 24). Thus, the 'final' turning point that shaped her narrative identity lies in her youthful aspirations and resolve that all the challenges she has faced have not and will not detract

from who she is and what she wants for her future - a self-sustained and fulfilled life.

5.2.4.3. The narrative form

I will now examine how the diagram and the summary of Alala's told story has been structured according to four components: (1) the developmental goal and storylines, (2) emplotment of developmental goal, (3) logical connection of topical events, and (4) concordance and narrative identity.

The developmental goal and storylines

Alala's told story is about the creative voice that was 'educated out of her'. The struggle for creativity to be heard encapsulates the "development goal" or "evaluative endpoint" of her told story (Gergen & Gergen, 1986). There are seven storylines that cut across Alala's told story, the most predominant of which are the challenges she faced as a black woman in architecture and her personality characteristics as she spends approximately 15 minutes talking about each topic (54% of interview time). She also spends approximately five to eight minutes each (35% of interview time) talking about significant others, recognition and failure. During the rest of the interview, she refers to what motivated her at university and her career development. Alala begins her told story with two storylines, 'recognition' and 'personality characteristics'.

She chooses two particular incidents in which she was informally recognised by her art teacher and formally recognised by her school in order to position herself as 'a creative artist' and 'a clever learner'. Her 'career identity' is entangled with 'significant others' because she chose to study architecture (as opposed to fine art) because of her family's financial situation. In the middle of her told story, Alala narrates a series of challenges she faced as a black woman in architecture, which she believes ultimately led to her failing third year twice and being academically excluded from the university. Alala continued to experience these challenges during her internship at an architectural firm. The 'aspirational' storyline completes her told story in which she hopes to continue

exploring, learning, creating, understanding and ultimately create a self-sustained and fulfilled life.

As depicted in diagram 4, at the beginning of her told story Alala mentions recognition three times and aspects of her personality four times. In the middle of her told story she generally talks about the challenges she faced as a black woman in architecture, which is then concluded by her experience of failure and academic exclusion from the university. Her told story concludes with a discussion of her career and aspects of her personality. There are also many points at which particular storylines intersect and entangle with one another, for instance, significant others intersects with recognition (topic 2), gendered challenges in science (topic 10) and career (topic 11 and 12). Furthermore, gendered challenges in science intersects with career (topics 22 and 23), while aspirations for the future intersects with aspects of her personality (topic 24).

Whereas she narrates two particular incidents when talking about recognition (see diagram 4; topic 1 and 2), she narrates one particular incident when referring to aspects of her personality (see diagram 4; topics 6). Alala provides three particular incidents narratives (Wengraf, 2011) which demonstrates the emotional significance of receiving 'recognition' from significant others and how this constructed who she believed her-self to be ('personality characteristics'). She adopts an evaluative tone (Wengraf, 2011) when discussing the 'challenges she faced as a black woman in architecture', which reveals her current perceptions and meaning-making strategies of failure and academic exclusion. Thus, the two predominant storylines play a significant role in establishing the "goal state or valued endpoint" (Gergen & Gergen, 1986) because Alala believes that the challenges she faces as a black woman in architecture changed aspects of her personality, as did recognition and academic exclusion.

Emplotment of developmental goal

Alala's told story covers the entire span of her lived life (from birth or childhood through to the time of their interview and her projected future), which she narrates in a non-linear

fashion (i.e. from past, to present, to past, to present, to past, to present, to future). Alala has constructed her told story by organising and interpreting apparently unrelated experiential events that follow the principles of 'emplotment' (Ricoeur, 1984, 1985, 1988). The plot of her told story has created a story about the struggle for creativity to be heard and how her voice was 'educated out of her'. Alala constructs her told story around two anchoring points. 'Point A' (the beginning or past childhood) represents a time when artwork was "soul work" for Alala, whereas 'Point B' (the end or present young adulthood) represents a time when artwork was no longer enjoyable. In the middle of her told story, Alala narrates her journey of the struggle she experienced in-between Point A and Point B. At the end of her told story, she links her future back to Point A. In other words in stages 1 - 4, Alala begins her told story with a sequence of events from her past, which she then interprets in relation to the present moment (the end of her told story). In stage 5, she shifts to a different topic and repeats this pattern by talking about events from her past (beginning) interpreted in the present moment (end). In stages 6 to 7, she moves to the middle of her told story (still in the past), which has effected her present situation. In stage 8 she concludes by talking about aspirations for her future or adulthood. It is clear that the end of her told story (or her present moment) is a 'hub' to which she continually returns, so that she may reinterpret her past (or beginning and middle aspects of her told story) as well as her future (or the trajectory towards the end of her life).

Logical connection of topical events

Alala's told story incorporates a combination of progressive and steep 'step' and 'zig-zag' patterns. She begins her told story with a progressive 'step' pattern as she narrates how a combination of events relating to (non)recognition impacted on aspects of her personality. When she becomes 'stuck' at this point in her told story, my response is "l love listening, especially to you". Thus, in a steep 'zig-zag' pattern, she then jumps back and forward in time while talking about significant others and she explains that she chose to study architecture (as opposed to fine art) because she was her family's "retirement plan". The middle of her told story comprises a progressive 'step' pattern as she narrates a combination of connected challenges she faced as a black woman in architecture. This is

followed by a short ‘zig-zag’ occurrence concluding the middle of her story with her academic exclusion from university. Once again, she ends her told story with a progressive ‘step’ pattern when talking about the events that led up to her failure, academic exclusion and being underestimated as an intern impacted on aspects of her personality.

Discordance, concordance and narrative identity

Similar to Kaiya and Takalani, Alala also organised the ‘telling of her told story’ (Wengraf, 2011) by narrating how she has created concordance or ordered the discordance or chaos caused by incidences, herself or interactions with others, which reveals her meaning-making strategies. Alala’s told story oscillates between progressive, regressive and stability narratives as there is a constant tension between ‘discordant concordance’ or ‘concordant discordance’ (Ricouer, 1984) thus creating spatial shifts in her turning points through time, which shape her complex narrative identity. Furthermore, Alala’s told story involves ‘dramatic engagement’ as well as a gradual build-up of suspense as reflected in the extended ‘step’ pattern in the middle of her told story (Gergen & Gergen, 1986).

5.3. Comparing narrative forms across four cases

In this section, I compare the diagrams and discussions of narrative forms across the four cases. First, I discuss four particular reasons as to why the visual representation of one’s told story is a useful device to analyse intricate narrative identities. Next, I propose that there are particular patterns of storytelling, namely a ‘labyrinth storymaze’, a ‘simply-connected storymaze’, a ‘multiply-connected storymaze’, and a ‘weave storymaze’.

5.3.1. A comparison of life-story diagrams

I will now demonstrate why the visual representation of one’s told story (as illustrated in diagrams 1 -4) is a useful device in order to analyse intricate narrative identities that are

complicated by multiple, fragmented and contradictory selves. These diagrams illustrate the span of their told stories in relation to chronological time. In other words, the diagram depicts whether they chose to begin their told story at their birth year and end at the anticipated future (or not). For instance, Takalani does not mention her childhood or primary and secondly schooling. Instead, her told story is about her life at university (i.e. 2007 - 2012). I would argue that "reminiscence bump[s]" (McAdams, 2001a) reside within the intervals of time which anchor their told stories.

Furthermore, these women have chosen particular events and experiences from their 'lived lives' in order to construct their told stories. I have plotted these events and experiences (i.e. topics) onto the graphs according to the year in which these events took place and when these events were mentioned in the interview. Thus, the topics (i.e. events and experiences) within the diagrams provide an overview of the skeleton structure that forms a gestalt story.

I also noted whether each topic was reported on, argued for, evaluated, described or discussed as a particular incident narrative. These components are important because they provide insight into intentionality or how these women understand the significance and meaning of the events that constitute their told story (Linde; 1993). These events and experiences have been ordered into key topics that are embedded within various storylines. Thus, these diagrams enable one to instantly identify which storylines comprise a narrative identity, in what year these storylines appear and the importance of each storyline as evident in the number of times it is repeated and the amount of time a person spends talking about it. Additionally, these diagrams illustrate the points of intersection between various storylines, which occur at a particular time in their lived lives, revealing inconsistencies and contradictions within one-self. I claim that these women use these storylines as "personal and symbolic mark(s)" that are continually reworked and retold over time (Boenisch-Brednich, 2002, p. 75 cited in Phoenix, 2008).

The temporality of their told stories and connective movement of their lived lives is captured in these diagrams. In other words, the 'step' and 'zig-zag' patterns illustrate how

these women continually jump back and forth in time during the telling of their told stories and thus (re)construct multiple selves. Furthermore, the diagrams demonstrate that there are differences and similarities in the structuring of particular storylines. Put differently, the 'step' and 'zig-zag' patterns could be used to analyse how particular storylines or themes are narrated. For instance, Takalani and Alala always refer to one storyline (i.e. "challenges facing black women in engineering/architecture") before another storyline (i.e. "failure"). The structure of storylines is important to examine because it demonstrates how sub-plots become meaningful by virtue of their intersection and entanglement.

Each diagram is divided into several stages that represent the topical shifts in the telling of their told stories and each stage comprising a set of topics. Importantly, each stage is associated with a particular 'biographical turning point' (Elder, 1986) in the person's told story, as discussed in each of the four cases above. Elder and Conger (2014) conceptualise turning points as radical shifts: "Chance events, and choices under the right circumstances, can set in motion a cascade of positive experiences and opportunities that literally change the course of a person's life trajectory" (p. 181). I claim that these turning points are biographically meaningful for these women because they select and reconstruct present meanings of key past events and experiences in order to explain the moments of change and radical shifts that have shaped their narrative identities over space-time. I apply 'space-time' or the Bakhtinian theory of chronotope to the notion of turning points, which is understood as space waiting to happen. Turning points are a trace of time, and time could be viewed as a marker of turning points. Thus, temporal shifts are spatial shifts. "[T]ime is known and actualized in space … space is known only in and through time" (Lefebvre, 1991, p. 219). What I call 'chronotopic turning points' are connected to particular emotions and values or selves. "In literature and art itself, [and in life] temporal and spatial determinations are inseparable from one another, and always coloured by emotions and values" (Bakhtin, 1981, p. 243). Furthermore, the diagram represents a spatial-temporal framework of meaning, which temporal and spatial marks (i.e. lines and topics) are inextricably connected and integrated in the told story. I argue that the process of tracing of biographical turning points provides greater insight into understanding the

dynamics of personal and social change.

5.3.2. Simple and complicated storymazes

With the aid of these Life-story Diagrams I have identified particular features that differentiate one story from another. By comparing and analysing these features across the case studies I will now discuss what complicates a person's told story (see table 7). As Kaiya, Takalani and Alala's told stories are all complicated to varying degrees, I compare their stories to three types of intricate mazes; whereas a labyrinth maze could represent Khanyisile's simplified narrative. Although, I do not imply that Kaiya, as a person, is not less complicated or multifaceted than is Alala. Similar to the structure of a labyrinth, Khanyisile's told story consists of one pathway from the 'entrance' to the 'exit' as she provides a series events that are in concordance with the valued endpoint (i.e. stability narrative). There are no 'branches' or movement between "discordance" and "concordance" (Ricoeur, 1984) within Khanyisile's told story. Conversely, I compare Kaiya, Takalani and Alala's told stories to a maze in that their stories comprise many choices of different 'entry' and 'exit' points as there is a constant tension between "discordant concordance" or "concordant discordance" (Ricouer, 1984) thus creating disruptions to a sense of stability within their told story. In other words, discordant or 'regressive narratives' produce a 'dramatic effect' in the audience as they become uncertain about an unpredictable 'valued endpoint' (Gergen & Gergen, 1986). Furthermore, as a maze route can be designed with varying degrees of difficulty and complexity, I have categorised Kaiya, Takalani and Alala's told stories into the following three storied mazes; a 'simply-connected storymaze', a 'multiply-connected storymaze' and a 'weave storymaze'. The word 'storymaze' has been borrowed from Terry Denton's preschool comic books.

Table 7: Simplified and complicated features of narrative identities

	Labyrinth storymaze (Khanyisile)	**Simply-connected storymaze (Kaiya)**	**Multiply-connected storymaze (Takalani)**	**Weave storymaze (Alala)**
1.Developmental goal	*The labels of what I am*	*What it means for me to be black in post-apartheid South Africa*	*How failure taught me not to be defined by circumstances external to myself*	*The struggle for creativity to be heard: The voice that was 'educated out of me'*
2. Emplotment of developmental goal	-Life span (birth to interview date) -Six separate storylines across told story mirrors lived life events -Linear: Past, to present, to past, to present, to recent past.	-Life span (birth to interview date) -Told story according to 3 storylines -Two intersecting storylines -Linear: Past, to recent past, to present	-University life span (first year to interview date) and projected future - Five storylines weaved across told story - Three intersecting storylines - Non-linear: From past, to present, to future, to past. - Juxtapose stage 1 (success) and stage 2 (failure)	- Life span (birth to interview date) - Seven storylines weaved across told story - Nine intersecting and entangled storylines - Non-linear: From past, to present, to past, to present, to past, to present, to future. - Juxtapose childhood and young adulthood (failure) and the story is about her self transformation in-between two points
3. Logical connection of topical events	-Steep 'zig-zag' occurrence -Progressive 'step' occurrence -Steep 'zig-zag' occurrence -Progressive 'zig-zag' occurrence	-Steep 'zig-zag' pattern -Progressive 'zig-zag' pattern -Steep 'step' occurrence	- Steep 'zig-zag' pattern - Progressive 'step' pattern - Steep 'zig-zag' pattern - Steep 'step' pattern -Steep 'zig-zag' pattern	-Progressive 'step' pattern - Steep 'zig-zag' pattern - Progressive 'step' pattern - 'Zig-zag' occurrence - Progressive 'step' pattern

4. Discordance, concordance, and narrative identity	-Concordant events -Stability narrative (Gergen & Gergen, 1986)	-Concordant discordance and discordant concordance pattern of events (Ricoeur, 1984) -Told story oscillates between progressive and regressive narratives (dramatic effect) (Gergen & Gergen, 1986)	- Concordant discordance and discordant concordance pattern of events (Ricoeur, 1984) - Told story oscillates between progressive and regressive narratives (dramatic effect) as well as stability narrative (momentary suspense) (Gergen & Gergen, 1986)	- Concordant discordance and discordant concordance pattern of events (Ricoeur, 1984) - Told story oscillates between progressive and regressive narratives (dramatic effect) as well as stability narrative over time (gradual build-up of suspense) (Gergen & Gergen, 1986)

I will start with the most complicated narrative provided by Alala's told story, which is representative of a 'weave storymaze'. I compare her story to a weave maze that comprises entangled storylines because it includes the following features: the developmental goal accounts for 'how and why I have come to be 'who I am'; the emplotment of the developmental goal is recounted in a non-linear fashion as there is much temporal movement within her narrative of disrupting and (re)constructing multiple, fragmented and contradictory selves; and there are not only intersecting but also entangled storylines that cross under and over each other. Furthermore, there is juxtaposition between progressive and regressive narratives (i.e. dramatic effect) followed by stability narratives over time (i.e. gradual build up of suspense). Failure is an important aspect that differentiates the more complicated narratives from the simpler ones. The metaphor of a hydra could be used to explain how failure rears its head in one's personal, social, academic and professional life. In this study, failure is examined in the academic context as in failing a university course, a year of study or being academically excluded from university.

For Aristotle, complex plots include "reversal" and "recognition," which could be compared to Gergen and Gergen's (1986) notion of "regressive narrative" and "dramatic effect." In other words, "reversal" or "regressive" narratives occur when an action or incident is in contradiction to the 'probable' valued endpoint. Simultaneously, the moment in which the narrator "recognises" that she has been subjected to a reversal of good fortune (e.g. failure), a "dramatic effect" is created within her story. Additionally, when these women (re)narrate a 'stability narrative' after "recognition" or their encounter with failure, suspense is gradually built-up in their story as the audience has learnt to 'expect the unexpected'.

As Takalani and Kaiya's told stories do not contain all these features, their told stories are compared to a 'multiply-connected storymaze' and a 'simply-connected storymaze'. Takalani's told story is 'multiply-connected' (as opposed to 'simply-connected') for two main reasons: First, Takalani's told story contains three interconnected storylines as

opposed to the one interconnected storyline in Kaiya's told story. Second, Takalani narrates her told story in a non-linear fashion (i.e. from her recent past, to present, to future, to recent past), thus creating many paths (i.e. past and future) that loop back into themselves (i.e. her present perspective). This 'double arrow of time' complicates a narrative because it creates a circular motion in the telling of one's story. Kaiya's told story is a maze without any loops or closed circuits. Thus, there is only one path to any point. In other words, as Kaiya narrates her story in a linear fashion (i.e. from her past, recent past, to her present), it creates one path (without any loops) in her told story.

The aforementioned discussion about particular features which complicate a person's told story, applies to the other cases as well. See appendix 8 for the Life-story Diagrams of the remaining 10 women, which I have organised according to labyrinth storymazes (Kgnaya, Ethwasa and Itumeleng), simply-connected storymazes (Ambani, Naila and Nosakhele), multiply-connected storymazes (Amirah) and weave storymazes (Welile, Mamoratwa and Odirile).

5.6. Conclusion

In this chapter I have explained how black South African women scientists construct their narrative identities through the establishment of a 'developmental goal' or a 'valued endpoint' of their told story, the 'emplotment' of their-selves within this 'valued endpoint', the 'logical connection of developmental events', and the model of "discordant concordance" or "concordant discordance" (Ricoeur, 1984; Gergen & Gergen, 1986). The comparison between their lived lives and told stories provides insight into their meaning-making strategies because through narrative they reconstruct the present significance of particular past events and experiences. It seems that their experience of failure amoung a group of high achievers ruptures and convolutes their sense of themselves, becoming an impetus for them to transform their qualitative characters. Furthermore, I have argued that the visual representation of their lived life in relation to their told story has been a useful device to analyse their narrative identities for four main reasons. First, the "reminiscence bump[s]" (McAdams, 2001a) resides within the span of time that anchors

the story of their life. Second, the events and experiences (i.e. nodes) that have been plotted onto the graph provide an overview of the skeleton structure that forms a gestalt story. Furthermore, I have noted whether each event (node) was either reported on, argued for, evaluated, described (Labov, 1972) or discussed as a particular incident narrative (Wengraf, 2011), which provides insight into how these women understand the significance and meaning of the events that constitute their told story (Linde, 1993). Third, these diagrammatic representations enable one to instantly identify the intersections, entanglement and structure of various storylines that comprise a narrative identity as well as the importance of each storyline in relation to one another. I have argued that these women use these storylines as "personal and symbolic mark(s)" that are continually reworked and retold, retrospectively (Boenisch-Brednich, 2002, p. 75 cited in Phoenix, 2008; Freeman, 2009). Fourth, each stage that comprises a told story is associated with what I call a 'chronotopic turning point'. I apply 'space-time' or the Bakhtinian theory of chronotope to the notion of turning points, which is viewed as space waiting to happen. I argue that the process of tracing chronotopic turning points provides greater insight into understanding the dynamics of personal and social change. By comparing these visual representations of their told stories I have identified particular features that complicate a told story. Thus, I have discussed four cases that represent particular patterns of storytelling. As Kaiya, Takalani and Alala's told stories are all complicated to varying degrees, I compare their stories to three types of intricate mazes, whereas a labyrinth maze could represent Khanyisile's simplified narrative.

CHAPTER 6:
(RE)CONSTRUCTING OTHER SELVES: A DIALECTICAL TENSION BETWEEN RECOGNITION AND MISRECOGNITION OF ONE-SELF BY AN-OTHER

6.1. Introduction

In this chapter, I explain how these young women (co)construct, (de)construct and (re)construct their-selves as scientists with and against the (mis)recognition of significant others. I conducted an intersectional analysis of the narrative content across all 14 cases in order to identify discursive themes that account for how these women (co)construct them-selves as scientists through recognition from significant others and (de)construct them-selves as scientists through misrecogntion and failure. Furthermore, these women were able to traverse barriers and (re)construct other selves through homespaces. Thus, I begin this chapter with a discussion of how their perceived worth as 'clever learners' emanates from a young age in interaction with their teachers' recognition and the high expectations of their parents. I then explore how their competence and performance as 'clever learners' was confirmed by their schools and various institutions when they were formally recognised with awards and university bursaries. As these women have internalised the standards of excellence within a merit-based culture, their experience of failure at university involves intense feelings of shame. Thus, in this chapter I explore the 'effects' of misrecogntion and failure on their science identities. Lastly, I examine the ways in which they (re)construct other selves through particular homespaces.

6.2. (Co)constructing selves through informal and formal recognition

These young women have constructed their-selves as scientists through the "ever evolving cycle of awareness - response - self-awareness" (Fay, 1996. p. 46) or recognition, performance and competence (Carlone & Johnson, 2007). From an early age, the women's *awareness* of their perceived worth as 'clever learners' emerges through

their teachers' *informal recognition* of their intelligence or aptitude for science (i.e. Physical science, life science, or formal science). Their teachers' recognition influenced the development of their love for science, which provided them with the internal motivation to work hard throughout their schooling and university career. Their teachers not only recognised them as persons, but as intelligent and talented persons with a particular worth (Fay, 1996). "Self-conscious being needs assurance but that it exists and that it is of value" (Fay, 1996, p. 43).

For instance, Mamoratwa retrospectively argues that she 'noticed' her mathematics ability when a teacher recognised her to be "too intelligent" to stay in pre-school. She uses this particular incident to justify why as an adolescent she became interested in national maths Olympiad competitions and received multiple awards for being the best learner in mathematic a few years later.

> *"I actually went to school earlier than other kids. I wasn't supposed to go to school in 1996 but I managed to get there because apparently (.) I was too intelligent to stay in pre-school. And there [i.e. Recognition from teacher] I was noticed with my maths abilities and from Grade 2 (.) I started, hmm, going to maths Olympiad competitions".*

When Mamoratwa was in pre-school, her sense of herself as 'intelligent' was actualised in interaction with her teacher and she reconstructs her identity as a 'maths person' when reflecting on how this early instance of recognition placed her on a path of being interested and excelling in mathematics. In Nkadimeng's (2011) research project, which explored the academic identities of high performers at Wits, she found that the high school teachers of the young women in her study acted as academic role models who significantly influenced their academic performance and helped them obtain entry into universities.

Similarly, Khanyisile's aptitude for mathematics was recognised by her teachers who subsequently encouraged her to "develop it even further". When she excelled in this subject, she developed a love for mathematics, which influenced her decision to study a

BSc.

> *"My love for science, it was more the love for mathematics (.) from I think around Grade 10 (.) by developing-just a liking for maths as a subject and, and (1) I started excelling in maths from Grade 10, and hmm it was just my thing, ja, it just it's just something I love doing, something I (2) was very good at and I think the teachers also (.) realised (.) how good I was at maths and so they tried to influence me to concentrate on it and to develop its even further and that was one of the reasons I chose to study at BSc because that's what (.) I love most (.) mathematics"*.

In Khanyisile's account, she claims that as she was 'good' at mathematics, she developed a love for the subject and when her *"teachers also realised [or recognised] how good I was at maths"* they encouraged her to develop her skills. However, it is also possible that this scenario may have happened in reverse; due to her teachers' (or an-others') recognition of her ability in maths, she may have developed her skills and become good at maths. This excerpt illustrates the continuous process of "awareness - response - self-awareness" (Fay, 1996. p. 46) in that Khanyisile became aware of others' recognition of her as a 'maths person' to which she responded on the basis of her awareness of this recognition. In other words, her identity as a 'maths person' derives from her relations with her teacher.

Odirile mentions how her maths' teacher instilled confidence in her ability to improve on her test scores.

> *"Miss Walden and she was a brilliant maths teacher and I'll never forget Miss Walden ((laughing)) and every time you got 60%, you did these mistakes and … she would scribble a whole lot of things (.) notes and write 'how stupid' … 'if you made a stupid mistake, how could you do this (1) you have the time,' she was like,' you know these things', that you were just so panicked and you don't concentrate"*.

In this account, Odirile presents her teacher as someone who views Odirile to be 'a clever learner' who "made a stupid mistake" on her test. This is evident when her teacher

attributes this “stupid mistake” to panic and lack of concentration as opposed to a lack of ‘natural ability’. Odirile may have chosen to narrate this particular incident in her told story in order to communicate her own belief that there are times when her performance is impaired by panic. This heteroglossic (Bakhtin, 1981) presentation of herself derives from the words of her teacher who has mentioned that Odirile made “stupid mistakes” on her test because she “panicked”.

Nosakhele also developed a passion for biological studies as her “supportive teachers” recognised her intellectual abilities and encouraged her to explore the field of biology.

> *“[T]hey pushed me and encouraged me to perhaps consider studying what makes me happy, right, and then I remember talking to my biology teacher in Grade 10, he said to me, ‘now it’s time that you identify [textbook] chapters which you really like’, right. And then I fell in love with genetics, ja .... I fell in love with genetics. And then that’s when I actually started now (.) going to the library, reading more about genetics, just the basic stuff on genetics. Then even when I got to Grade 12, I still knew that I wanted to do genetics, but I wasn’t sure about job opportunities which, hmm, one can be exposed to when they study genetics, right”*.

This excerpt demonstrates that the self as ‘a clever learner’ is (co)constructed through a conversation with “supportive teachers” (Crites, 1986). These women became conscious of ‘being clever learners’ through becoming aware of others’ perceptions of their intelligence or aptitude for science. As a result, these women self-identified with science or performed their identity as a ‘science person’ which might have led them to develop a love for science and an ‘internal’ motivation to excel in science. In accordance to Rotter’s (1975) internal and external control of reinforcement, the external reward of their teachers’ recognition creates an ‘intrinsic’ love for science and the perception that these women possess a natural ability for science.

Takalani reports that she did ‘very well’ in third year because the focus of the curriculum was on her passion, namely aeroplanes, *“I learnt to see what these planes are-how do they fly-what causes them to fly-like how do they look like (2) you have to draw them and*

it was very interesting so my third year was like one of the best years here I think, and (1) yes, I did very well for my first semester (2) I passed everything". In their research study, Hazari, Potvin, Tai, and Almarode (2010), found a positive relationship between 'learning orientation' and future productivity. In other words, their research demonstrates that students who enjoyed science were more productive (i.e. regarding publications and grant funding) than those who were less passionate about science. "Likewise, if students are intrinsically motivated to learn science, it is likely that their understanding of content, academic performance, choice of a science career, and, ultimately, their influence on research may follow" (p. 7).

In addition to her teachers' support, Nosakhele argues for the importance of receiving recognition from her peers. When Nosakhele was nominated for the 'Gauteng Biotech award', she recalls how one of her friends (and classmates) posed a message on Facebook along the lines of *"the work that you doing … we can see that … Don't think that we don't acknowledge much*". During the interview, Nosakhele interprets this message to mean "*people are aware, she [my friend] said that we are aware, ja ((giggle)). And you know she said-she even said to me you know; 'Please don't forget about us when you're … popular in science'. Ja, I don't want to be popular for anything"*.

These findings corroborate the ideas of Johnson, Brown, Carlone, and Cuevas (2011) who suggested that the women in their study did not need to be persuaded to enjoy science; rather they were drawn to "scientific ways of problem-solving". Several research studies about women in science have revealed that an eagerness to learn and a passion for SET are critical in their academic progression (Brickhouse, Lowery, & Schultz, 2000; Carlone & Johnson 2007; Davis, 1999; Fadigan & Hammrich, 2004; Gornick, 1983; Johnson, 2006; Kubanek & Waller, 1995). In terms of the process of becoming a scientist, these young women identified with Science, Mathematics and Biology in high school and were also identified by their teachers and significant others as potential mathematicians and scientists. Thus, they both positioned themselves and were positioned by others as 'scientists in the making' (Craig, 2010; Stevens, O'Connor, Garrison, Jocuns, & Amos, 2008).

In recent years, there has been an increasing volume of literature in science education investigating the role of recognition in the development of identity (Carlone & Johnson, 2007; Moje, Tucker-Raymond, Varelas, & Pappas, 2007; Tonso, 2006). Carlone and Johnson (2007) found that the act of recognition (by self and by others) as someone with talent in science was a key element in the development of all identity trajectories. These young women were able to develop their academic identities because they not only recognised themselves as scholarly kinds of people but also because their intellectual abilities were recognised by others (Carlone & Johnson, 2007). Further, the participants in Hanson's (2006) research study on 'success in science' reported that positive reinforcement from significant others "planted a seed" to developing an interest and passion for science among young African American women. These young women continued to receive recognition and support from their lecturers and tutors at university. Welile mentions how her Head of School gave her a "second chance" to proceed to third year while repeating a first year prerequisite course because "he believed in me". There was a period in which Mamoratwa failed several tests, however her personal tutor "just saved my life" and helped her pass her first year of study.

Furthermore, Odirile mentions that one of her lecturers helped her realise what she was "doing wrong" in her assignments which helped her improve her marks.

> *"[T]hen I went to my lecturer now [I said to myself that] I shouldn't be too scared to go to my lecturers (.) what is this you know (.) I need help so I went to my lecture-not like a lesson but this is my drawing, what am I doing wrong. [The lecturer then said] 'this is what you're doing wrong' and at the end of the year my marks-my percentage improved by 20% to like 70%. I was like my word, if I just did that (.) and I was pretty proud of myself".*

Amirah felt that her Honours graduation was a "major accomplishment" because it was a "really tough year [it] pushed [her] so hard". She was expected to do lab work every day including weekends and as she rarely took a break, she felt emotionally exhausted particularly because her father died during her Honour's year of study.

> *"The second graduation was something else because that graduation was for my*

honours, which was a tough year (2) it was really tough. I think, ja, Honours pushed me so hard because I was expected to do, hmm, I had to do lab work every single day … I was burnt out (3) I felt like I was burnt out".

For the first time in her life, Amirah felt resentment for her work, which was a *"weird feeling for me to be resenting what I was doing. No, it wasn't, it wasn't good, it wasn't good"*. She described her supervisor as a "slave driver" which was "a good thing" because her "motivation levels were down, completely on the ground". Her supervisor believed in motivating her to do the work and pass at the end of the year. She mentioned that her Honours did not teach but "forced" her to learn patience, especially when her experiments were not working.

"I feel like it broke me (2) but it healed me at the same time. Because I don't know when people ask me, I'm like 'I hated third year', I mean Honours and they are like 'no but it wasn't so bad' whatever, whatever. I'm like 'hmm, you don't know'. But ja, I'm glad that it's over (2). So when I got that graduation (1) it was a major accomplishment, I was like, yes, it's done".

In retrospect, the recognition of their intellectual abilities and support they received from their teachers motivated them in several ways. For instance, the lecturers believed in the academic potential of these young women during the times they did not believe in themselves, which inspired them to 'keep going'; people's recognition influenced their love for science and their belief in their intellectual ability; it further developed an interest in participating in extramural activities and competitions and; sparked their desire to make a name for themselves in science. It seems that these young women were enabled to break the barriers of their social location by their relations to supportive teachers and through the meeting of their passion (for education) and imagination (of a future as educated women) (Tamboukou, 2006). These excerpts illustrate that recognition by an-other (particularly teachers) is a primary factor that has shaped these women into 'clever learners' and 'science people'. They needed others to recognise what sort of people they 'are' to ensure themselves that they 'are' the science sorts of people. Their need for recognition is thus social because it can only be appeased by an-other (Fay, 1996; Taylor,

1994; Caverero, 2014).

Furthermore, their self-awareness of being ‘clever learners’ was confirmed by their schools and various institutions when they were *formally recognised* with awards and university bursaries. Throughout their schooling career, these women were able to enact a science identity because they not only assess themselves but are also favourably assessed by others in each of these overlapping dimensions of a science identity, “competence, performance and recognition” (Carlone & Johnson, 2007). In other words, their competence in science was recognised as credible when they were consistently in the top 5% of academic performers in their grade and communities. In addition, their good performance was also recognised by their school and Department of Education who offered them multiple academic awards and distinctions in their Matriculation examinations. These accolades meant that they were able to position them-selves and were positioned by others as ‘scientists in the making’.

They were acknowledged as being ‘competent, clever and talented’ when they were offered university bursaries from several companies and were chosen for the Oya scholarship programme that enabled most of them to complete their postgraduate studies. As these young women were recognised by others as being an ‘Oya scholar’, they felt a sense of belonging to the group of academically talented achievers. Further, due to the intersection of them being young black women who excel in science, they were offered a prestigious scholarship and access to institutional power. It is clear that these young women could only ‘be a clever learner’ or enacts an academic identity through performing their competence in science as recognised by members within a community of practice. For many of the young women, being recognised as an intelligent person became ‘who they believed themselves to be’. Their sense of self is entwined with recognition from significant others, achieving awards and excellent grades. Itumeleng explains that achieving academic awards is "*where I felt I was smart ((giggle)) it showed me and it made me into who I am”*. Echoing this view, Takalani mentions that after her Matriculation examinations, she was recognised as being one of the top 20 academic performers in her province. Consequently, she defined herself as being “*someone who*

knows, I am knowledgeable, I am a genius".

Itumeleng and Takalani become conscious of their-selves through others who perceived them as 'a clever learner' (with competence, as confirmed by the achievement of competitive awards). Thus, through the recognition of an-other, they recognised themselves as 'knowledgeable', 'smart' or a 'genius'. The particular self-perceptions that comprise who they believe themselves to be (i.e. "smart" or "knowledgeable") derive from others and an ideology of meritocracy. As their teachers and lecturers have the competence to perform particular tasks beyond the initial reach of the learners, through their instruction in the "zone of proximal development" (ZPD) (Vygotsky, 1978) these women produced "*a performance without competence* and in so doing the requirements for successful independent performance of the task are made available for conscious awareness and the transformation of performance into competence" (Miller, 2014, p. 40 [original emphasis]). The development of independent competence is therefore dependent on both the knowledge of teachers and importantly, their recognition of learners' potential to move in the ZPD. Receiving recognition from others and achieving awards for their individual talent provide them with the raw material or content that they use to describe and compare their-selves and the basis on which they develop their identity (Fay, 1996). Thus, what they acquired from others was "not merely the contents of [their] psyche but also the capacities distinctive of [their] selfhood" (Fay, 1996, p. 40).

For the reward of recognition to be reinforcing, it is essential that not everyone is recognised as 'a clever learner'. Obtaining scores that were the top 5% of their grades and receiving university scholarships implies that their academic performance was superior compared to most of their classmates. Their identity position as 'a clever learner' is defined by difference, which is by the other "group" who are not recognised as being academically talented, thus the marking of inclusion, involves performance and recognition (Woodward, 2007). Put differently, to be 'a clever learner' who receives awards presupposes that they are different from others learners who have not received academic awards. In a merit-based culture, these women were only able to construct their-selves as scientists by outperforming their peers and rising to the top of a 'hierarchy

of honour'. According to Taylor (1994), "in a system of hierarchical honor, we are in competition; one person's glory must be another's shame, or at least obscurity" (p. 54). Thus, their identity formation "is in part a process of self differentiation" (Fay, 1996, p. 46) from other learners who have not received academic awards, which they may differentiate themselves. Hall (1996) noted that the process of identification "operates across difference, it entails discursive work, the binding and marking of symbolic boundaries … It requires what is left outside … to consolidate the process" (p. 17). Drawing on the data from the Department of Education (2006), Gardiner (2008) reports that more than double the number of learners from urban schools (as compared to learners from rural schools) achieved a post-school qualification. Furthermore, learners from rural schools (as compared to their urban counterparts) are more likely to drop out of school. Thus, when these women enter university they are faced with the task of shifting their identity position of being a 'high achiever in their community' (Sennett, Finchilescu, Gibson & Strauss, 2003) to becoming an ordinary university student, who oftentimes fails a course or year of study.

6.3. (Co)constructing selves through parents' high expectations

These women's high levels of motivation were not only contingent on the external reward of recognition from their teachers and school but also on their parents' (particularly their mothers) high expectations of academic achievement. They have defined their identities in dialogue with and in struggle against the high expectations of their parents (Taylor, 1994). Beutel and Anderson (2012) report that only a few studies have investigated the educational expectations of the youth in the third world countries (e.g., Adams, Wasikhongo & Nahemow, 1987; Möller ,1995; Post, 1990).

Mamoratwa narrates her experience of 'middle-child-syndrome' as she feels that she needed to sacrifice her needs for the sake of her older and younger siblings.

> *"And then, hmm, I don't think-there's not much to talk about my academic life, except (2) I just had to be the best in everything-in all my subjects-in everything and then, it was a bit hard sometimes (2)I remember in Grade 11, my final year*

mark (.) I got a 90% average and my mother looked at my report and she was just like 'is that the best you can do'? (2) And then I was like what? Knowing that and it was so hard because for my sister (.) they [parents] would beg her just to, just to go get 50%, then they would buy her a phone or something just so that she can pass and then I would get 80% and then that wasn't enough (.) I had to get beyond that, and that was just (.hhh) I felt It was ridiculous it was (.) like being the second born at home was actually a bit of sacrificing, you have to sacrifice for your sister".

When she obtained a 90% final average, Mamoratwa argues that her mother would typically be disappointed which was particularly difficult for Mamoratwa to accept. Firstly, she feels that her excellent academic performance was not recognised by her parents because it was expected she would always excel; secondly, she could not under-perform because she believed that people would then perceive her to be 'weak'; and lastly, her parents would reward her siblings if they received an average of 50% on their report card. In addition, when Mamoratwa dropped down to the second best academic performer in her school in Grade 8, her father was 'shocked' and 'disappointed'. She retrospectively argues that in order to regain her father's respect (and her science identity), she worked hard and maintained her position as the best academic performer in her school, village and region until Grade 12. Further on in her told story, Mamoratwa mentions that during her first year she "*was forced to study economics (.) I didn't like it [and] forced to study accounting*". As a result of her apathy toward these subjects, she did not have the motivation to attend most of her lectures. But when she started failing tests, she put in the extra work in preparation for her examinations. But generally, Mamoratwa explains that she will only be determined to "*reach a certain level ... if [she's] told to*". In other words, Mamoratwa struggled to motivate herself at university because her parents did not ask her 'where are your A's?' like they did when she was in high school.

Similarly, Ambani believes that the reward of recognition became her driving force. *"And the whole thing about you study hard to-you were recognised (3) that is what was driving me (1) that motivated-that motivated me, that knowing that there would be a reward at*

the end (.) in the form of recognition". In her told story, she argues that although she is studying her passion (agriculture), it is still incredibly difficult for her to stay focused and disciplined. Although Mamoratwa and Ambani's parents drove them to excel at school, their drive may have resulted in Mamoratwa and Ambani developing an external locus of control (Rotter, 1966). In accordance to Rotter's (1975) internal and external control of reinforcement, for these young women the reward of recognition is contingent upon the reinforcement provided by an-other. Although they may perceive academic achievement as contingent on their own efforts, their efforts were driven by their parents' high expectations. Kierkegaard (1959) argues, "The unhappy person … is one who has his ideal, the content of his life, the fullness of his consciousness, the essence of his being, in one way or another outside himself. His is always absent, never present to himself" (p. 220).

Ambani also argues that she lost interest in her schoolwork in Grade 10 when she started dating her boyfriend (a top academic performer in her school). But he cheated on her and when they broke up, Ambani was motivated to work hard and "be better than him [academically]".

> *"So when we broke up, I was bitter, yes, oh my God, I was bitter ((laughing)) so ja (2) actually when we broke up, he cheated on me, yes that's what happened ((laughing)), I worked hard so that I could be better than him … so that standard eight and standard nine, actually my dad found out about that guy, about me and him dating and he did not like it (.) that's actually one of the main reasons I moved from that high school because my dad didn't want me to be close to him. So it was because of that guy ((laughing))".*

Numerous studies have attempted to explain how familial expectations influence academic performance (see, for example, Davis-Kean, 2005, Hao & Bonstead-Bruns 1998; Hossler & Stage, 1992; Sewell, Haller, & Ohlendorf, 1970; Sewell & Shah, 1968; Tinto, 1975). For instance, the "Wisconsin model of status attainment, view family background and academic performance as key determinants of educational expectations" (Beutel & Anderson, 2007, p. 350). Parents with higher socioeconomic status have higher

educational expectations for their children as compared to families with low socioeconomic status (see, for example, Astone & McLanahan 1991; Buchmann & Dalton 2002; Marjoribanks 2002; Qian & Blair 1999; Shavit & Williams 1985; Walpole, 2003). It is noteworthy that Mamoratwa, Ambani, Odirile, Takalani, Kgnaya and Amirah's parents are teachers and/or school principals. Thus, these results are consistent with the current research as these parents held particularly high expectations for their children. Although there seems to be little or no specific South African research on the educational expectations for children whose parents are teachers.

Kaiya mentions that her mother also had very high expectations, as it was "problematic" when Kaiya did not excel at school or gymnastics. Kaiya feels that her motivation to excel stems from her need to please people, particularly her mother.

> *"[M[y mother was a very strict woman (2) she had a very tough upbringing, she was one out of five siblings and, and from which she has mentioned over the years, she said to be the one that was always given responsibility and because of that, she kind of laid that experience on us [and her younger sister] in a way, she expected a lot from us and her expectations with school with-everything was high, even gymnastics was high (3) if you didn't excel, it was a problem. That for me-I think that also moulded a part of me, always trying to please people (3) ja, actually thinking about it is right now, I'll always aim to aim to please or not disappointing anyone because I could see what would happen if I disappointed her, it would be a very tense home (.) you wouldn't talk for a week or so, you end up feeling a lot of guilt and feeling a lot of sadness".*

Even after Kaiya outgrew or moved away from her mother when she attended university, the conversations with her mother stayed with her in the form of "always trying to please people". "Thus, the contribution of significant others, even when it is provided at the beginning of our lives, continues indefinitely" (Taylor, 1994).

Growing up, Naila explains that her parents had always pushed and encouraged her to be bold and 'try new things'. Whereas her mother was "supportive and loving", her father

was the "driving force:"

> *"[M]y dad obviously-my dad and my mom pushed me, they always pushed us [and her brother] … they were always the ones that encouraged you (2) today its made a big difference because of my dad (.) he's a good speaker and because-I love my dad, I try new things because of my dad, he is (strong) minded, when I always wanted to do something and that's because of my dad (3) and as crazy as we are because we are alike, we clash at times (2) I love him to bits because, I am because of him, you know-my personality is mainly because of him. My mum is very supportive and loving … my dad is the driving force-always pushing us. My dad is the one that says you know 'open up that business' … He's always looking out for us".*

Furthermore, Naila did not attend a high school near her hometown because her father believed there was a high rate of drug use and teenage pregnancy within these schools. For most of these young women, their fathers acted as roles models that encouraged them to enter and persist in STEM fields. This finding is inconsistent with Gallagher and Kaufman's (2004) longitudinal study in the US which indicates that parents provided their sons (instead of their daughters) more support in maths and science, in terms of purchasing maths and science toys and spending more time on maths and science activities with their sons than with their daughters. This may suggest intergenerational shifts in gendered notions of careers, with these young women (and their parents) envisaging futures for themselves that have traditionally been dominated by (white) men.

Whereas Khanyisile's mother was "very involved in our lives" because she had stayed at home to care for her children, her father "worked Monday until Sunday" so that he would be able to send his children to 'good schools' and provide them with everything he did not have growing up. As her father is an IT technician, she recalls watching him work with computers and she retrospectively argues that her love for computer science was initiated by her father's "moral influence" or his dedication to his work.

> *"And to get into computers and to get into computer science, that was more moral influence my dad's side-my dad is an IT technician, and he loved computers, he*

learned technical staff and so I got that influence from him-seeing him work with technical staff-seeing him work with computers (2) I started developing a love for that, so when I came to Wits (.) that's the reason I did mathematics and computer science, getting into computer science at Wits".

Similarly, Hanson (2006) found that parental support was associated with young women's interest and persistence in science. Welile provides an extended narrative of her supportive mother in relation to her absent wealthy father. As her mother "just loves the whole concept of education" and wanted to provide Welile with "a better education", she sent Welile to schools that she could not afford. When Welile was in her second year at university, her mother was still paying off Welile's high school fees.

"And going to primary and high school, my mom always took me to school that she couldn't afford because she always believed that she needs to try and give me a better education".

With limited finances, her mother also planned a 21st party for Welile. "*She even planned by 21st birthday and I didn't want a 21st because I knew that she couldn't afford, agh, but my mom being my mom (.) she just gives so much"*. Welile attributes 'where I am today' to her mother's support. For instance in this excerpt she mentioned that her mother sent her to schools that she could afford because she believed in providing her daughter with "a better education," so much so that she continued to pay off high school fees while Welile was at university. These findings are consistent with those of Hanson (2006) who discovered that mothers and other female family members, provided critical academic support to young African American women in science.

Welile talks about her class aspirations in relation to her mother. She hopes and 'prays' that her mother 'is around' for long enough for Welile to "do things" for her. For instance, Welile is planning a 50th birthday celebration for her mother and hopes to buy her a car. The love that Welile has for her mother is evident in the following excerpt.

"[M]y mom has been, <u>yo</u> (.hhh) <u>my rock</u>, <u>yo</u> (huh) my rock-I love that woman you know, when ever I pray, I just I asked the Lord to keep my mom (.hhh) around

((crying)) so that I can do things you know. To show her what life is about … [I want to] do things for her because she's done so much for me ((crying)), she really has done so much, ja, (hhh) I'm getting all teary (2) I love her, love her, love her".

Welile explains that her mother was "disappointed" when she 'fell pregnant' but she is determined to prove to her mother that she is a "good daughter".

"[E]ven now, she is with my son, I know she was a little disappointed (.hhh) obviously because she never thought that I wouldn't fall pregnant but I … I'm just going to prove to her-I'm going to show her that ((crying)) that I'm a good daughter so ja, that's just-there's no Welile without her mother (3) definitely not".

Drawing on data from 'The General Household Survey (GHS)', Wright et. al (2013) explain that in South Africa, 59% of all mothers are lone mothers and many primary caregivers are grandmothers. Furthermore, 90% of these lone mothers are black African. Reflecting on parenthood, Welile contrasts her mother, who would give 'in a heartbeat' even when she doesn't have, to her father who has not provided for her when she was a child even though he has the financial means to do so.

"*He didn't even know if I was alive and not … that's why I haven't kept much contact with my dad because I don't understand why … I think now-that I'm a mother as well (3) I think it's the worst when you want to provide for your child, with all of your heart but then you don't (2) but then at the end of the spectrum when you find that there is someone that can provide for your child-that actually, doesn't but it's weird how some parents are (3) but with my mom (.) she just, she just wants to but she can't and I think that's why I love her so much because even when you don't have something, it's not because she's stingy or whatever (.) but you know but if she could, she would have in a heartbeat".*

According to Statistics South Africa (2012), 39% of South African children lived with their mothers whereas only 4% lived with their fathers. Wright et. al (2013) notes that there has been little focus (and research) on non-resident fathers. Welile explains that

when she met her father in Grade 11, he had told her that he was an absent father because he was ashamed he could not financially provide for her. However, when Welile went to his house to visit her step-sisters, she realised that, "he's actually very wealthy ... and living in luxury". For instance, her step-sisters attended private schools, they have their own laptops and they can afford to attend music awards. She recalls how her mother had to save up for an entire year in order to buy her a laptop.

> "*I remember the other time, I saw one of his daughters at … an award show … is it is a music award show and the tickets was so expensive and she was dressed to the nines and I remember just watching that and thinking, <u>wow</u> (3) my dad is so-well not evil but evil, you know because they get so much and then I get nothing … you actually realise how much they have in comparison to what I have … But I'm close with my sisters because they are not at fault ((laugh))*".

Welile's current situation of becoming a mother and being unemployed, has led to feelings of resentment toward her father, who she considers to be wealthy.

> "*Honestly, I didn't realise that we are not a rich family, (.) but when you have everything-just having three meals a day is now-even though the meals aren't, you know, an English breakfast, my needs were always met … but I think sometimes I do resent my father because he's actually very wealthy because I think that I haven't kept in contact with them because when I met him in Grade 11, he gave me a sad story of how he was just ashamed knowing me because you can't provide for me … I thought that was the story, but when he actually took me to his house, I was like 'oh my goodness' (3) this man is actually living in luxury, his girls have gone to private schools, they've got laptops (3) I remember my mom was saving the whole of first-year to get me a laptop*".

When she becomes financially independent, she mentions it may be easier to forgive her father.

> *"So that's why I just decided-that it's good that I know him, and it will be hard to forgive him, but I have to do, you know … I think I'll be able to forgive him when I startworking-when I can do things for myself (2) because right now I think (hhh)*

like (3) little things (2) like, I wish I had (inaudible) and he can't even do that for me".

In Welile's case, her mother fulfilled the following three roles of a 'lone parent' whereas her father did not fulfil any roles: "(A) affective allegiances to the child or 'wishing the best for the child'; (B) providing materially (i.e. financially and in-kind) for the child; and (C) physical presence with and physical care of the child" (Wright et. Al, 2013, p. 12). These excerpts illustrate how Welile's sense of self entangled with and shaped by her relation to her supportive mother and absent father which has implications for the definition, evaluation and regulation of her sense of self as a daughter and as a mother (Andersen & Chen, 2002). Due to her mother's emotional and financial support, Welile is defined by her mother "there's no Welile without her mother," and she regulates herself by wanting to "prove [or] show [my mother] that I'm a good daughter". On the other hand, Welile argues retrospectively that due to her father's absence she defined and evaluated herself as unworthy, "he didn't even know if I was alive and not" and "[my step-sisters] get so much and then I get nothing". Moreover, she regulates her relation to her father by working toward finding a job and becoming financially independent, " I think I'll be able to forgive him when I start working in when I can do things for myself".

6.4.(De)constructing selves through misrecognition and failure

I will now discuss how self-destruction occurs through the misrecognition (and nonrecognition) of one-self by an-other. From an early age, the education and family system have socialised these young women into an ideology of individualism and meritocracy, which is the linchpin of capitalist democracies (Burns, 2012; Stevens & Lockhat, 1997). This merit-based culture becomes problematic when these women are led to believe that their advancement in science is solely dependent on their talent and hard work, and that their race, class and gender locations should not interfere in their pursuit of a STEM degree (Burns, 2012). However, in reality Collins (2002) argues that the "systems of domination" (i.e. race, class and gender which are pertinent in this study) create a "matrix of oppression" which positions young black women at a disadvantage

compared to white men and women. Furthermore, Ong reminds us that there are ‘‘strictly guarded sociocultural boundaries around membership in the science community’’ (2005, p. 612 cited in Johnson et al., 2011). These young women’s shifting locations within the “matrix of oppression” (Collins, 2002) is extensively and critically discussed in Chapters 7 and 8. Thus, these young women’s experience of failure is detrimental to their self-confidence because they have been raised to believe that academic excellence is dependent on their talent and hard work. The combination of hard work and academic excellence provided the “framework by which they judged the fullness of their lives” (Taylor, 1994). They have internalised the standards of excellence within a merit-based culture and when they do not live up to the ideal of excellence, their experience of failure at university involves intense feelings of shame, “require[ing] the real or imagined reactions of others” (Fay, 1996, p. 41). Put simply, these women are not only influenced by their significant others with whom they interact but they are also influenced by cultures in which they might define themselves as well as political and ideological forces against which they are subjected.

Kgnaya’s first experience of failure made her doubt her intelligence. "*My second year has been the hardest ja because I don't think it ever since I failed that one course my life has changed I'm never sure of anything any more”*. The recognition that Takalani consistently received for her excellent academic performance defined who she believed herself to be. However, when she failed her courses at university, she needed to re-define her sense of self which taught her that she should not allow herself to be ‘defined by external circumstances’ because when circumstances change, so do self-definitions.

> *“I probably should have mentioned this when I-when I (.) passed my Matric (.) I was one of the top students in my province-I think I was like number twenty one in the whole province so (2) I defined myself as being someone who knows, I’m-I’m knowledgeable-I’m a genius .. And coming here (.hhh) and realising I’m so far from where I thought I was-so I found myself with (hhh) no definition (2) I couldn’t define myself anymore but (1) now, I know it wasn’t just because-you don’t have to have definitions for your life or you don’t have to say ‘I’m this’-I have to live cause now what happens when that thing is gone (2) so being here (.)*

I learnt that (.hhh) I am me and I can't be defined by the circumstances around me and yes, I think, it was a very great journey (3) though I wouldn't want to come back here [Wits] ((laughing)), like its over (.) I leave this year, I'm just going to go do my Masters somewhere else, but it was a great, was a great journey".

In the university context, Takalani did not receive recognition or awards, thus she 'found herself with no definition or content which she had previously used to describe and define who she believed her-self to be (Fay, 1996). She felt misrecognised in the experience of failure because this is in contradiction to who she believes her-self to be. When Takalani failed, she learnt (retrospectively) that she had defined her-self with this content that was contingent on recognition or "circumstances around me". Although she was devastated by the thought that "I'm so far from where I thought I was [being a genius]," it allowed her to view her-self as changeable instead of being "defined by [or fixed to] the circumstances around me". In this instance, Takalani redefined her-self in her own terms by reflecting on failure and avoiding being dependent on recognition or 'external circumstances' to define herself (Taylor, 1994).

Kaiya argues that her aunt's 'misrecognition' of her academic potential became her "drive" to succeed.

"Honestly, this is also one of the reasons why I was so serious about my goals Sabrina-I wanted to prove a point to her [my aunt] she felt that (.hhh) I never had the potential to succeed in anything ((crying)) … it's the things that she would say randomly, Sabrina, that 'I would never amount to anything' ((crying)) that 'I'm just a pretty face' and 'I just know about boys and that is it' and I think that even though I thought I forgave her (2) I don't think I did, and that was always at the back of my mind (.hhh)-whatever I did-whatever I did (2) she was partially in my mind, so when it came to doing well in something, I would think of her, show her, she was mostly my drive ((crying)) and and that's why I want to study further and do my Masters or my Ph.D, so that I can prove her wrong".

These young women's academic identities were not only constructed through recognition

and their self-identification with other academically talented learners but also through failure, which they perceived as a misrepresentation of themselves.

As their academic identities were never threatened by failure, they defined themselves by their academic performance and being rewarded for being in the top 5% of academic performers in their schools. But when they experienced failure at university for the first time in their lives, they felt that their academic talent was misrepresented and they were faced with the task of re-defining their sense of self-independent of external circumstances. This demonstrates how identification is always in the process of articulation (Hall, 2000) and how their intellectual sense of self is fractured through the complex interplay of their internally conflicted intersectional identities. These excerpts illustrate that their selves are not a “pre-existing container of experience” but rather “an ongoing entity of self creation” (Fay, 1996, p. 39). The experience of their multifaceted selves could be described as “force fields” which are actualised in interaction with others (by recognition, mis-recognition or non-recognition) and “self-reflexive acts” (in making sense of being ‘a clever person who fails’) (Fay, 1996, p. 39).

As a result of failing for the second time and losing her scholarship, Takalani became "emotionally depressed” and she started losing hope that she would finish her degree. However, when she was appointed a therapist (Thandeka) by the scholarship office, she realised that failing is part of succeeding at Wits. She also felt that Thandeka loved and cared for her "like her own daughter" which created a sense of home at Wits for Takalani. She began to develop an internal locus of control by choosing to (re)define herself with new content that was independent of external reinforcement.

> *“Okay, then I realised-for me coming here [Wits], it wasn’t just like probably to study science, to be an engineer or whatever (3) it was more like growth, for me, cause (.hhh) I had to go through so much, not just academically but like emotionally as well (.) like it got to a point where (1) this whole studying thing affected me (2) like just me, like you know (.hhh) I got so emotionally depressed, if I can say and it was hard but I had a therapist she was, hmm, she was appointed to me by the scholarship as well, so I went to her and the she explained to me that*

> *I'm not the first one that this thing [failure] happen and, hmm, it usually happened, I, and-must just see what happens now and stuff and failing the sup [supplementary exam] means the scholarship wasn't going to sponsor me anymore (.hhh) so it was like 'ah this is the end', cause they were like, if you fail second year, we always give a second chance (2) so now it was like, it's all done, so I got to that (2) turning point, when they like 'Wits gives you the edge' ((laughing)), I was in my edge, there I was-in my edge".*

Throughout her life, the favourable recognition that Takalani received from others, directly influenced her understanding of 'who I am', "someone that is knowledgable … a genius". But when she came to university and failed multiple times, she experienced misrecogntion from others and herself, in that she doubted whether she is really intelligent or "a genius" (Taylor, 1994). Takalani distances herself from her identity position as 'an academically talented scholarship student' and creates meaning from failure because of process of internal socialisation or the inner dialogue with herself (Miller, 2014). She appropriates the meanings of failure into her sense of self through the heteroglossic (Bakhtin, 1981) words of her therapist who said "I'm not the first one that this thing [failure] happen … it [failure] usually happened [to other students too]".

When Takalani became an engineering student at Wits, she placed her family, friends and boyfriend "on halt" in order to focus on her studies.

> *"[T]he thing is when you are at Wits and you're doing engineering, everything else stops (4) I think that's the worst feeling (.hhh) as well like, your friends, your boyfriend, your family, like you just, like, put them on halt (2) and you just focus on your own life and which, I think it's a very bad idea, but it's the only thing that seems to work cause now if you entertain your friends, your boyfriend and whatever, you end up failing ((laugh)) so badly".*

In retrospect, she believes that isolating herself from her support system was "a very bad idea" because when she failed, she felt completely alone. "*Its what I chose, so probably I could at least finish quickly and stuff but the thing is you end up (.hhh) so lonely but you*

don't want to be lonely and failing at the same time". As it was "it was all about school [or studies]" for six years and nothing else, she felt that she 'missed out a lot in my life'.

> *"I'd spend like 80% of my life in the library studying, like weekends-I'd be studying (2) my friends would be out partying, they want to come, like visit me and I'm like 'no, I'm busy', my boyfriend as well, 'can I see you this weekend?', 'no, I'm busy' so you get to be so lonely at the same time … and sometimes, you end up losing very beautiful relationships and stuff just because you're more focused on your studies and yeah, I think socially that's how I got affected over these years but now I'm trying to like mend up some relationships and, try and explain how hard it was and stuff"*.

Toward the end of her told story, Takalani mentions that when her peers failed the year, they decided to drop out of university and find a job that was unrelated to their degree. However, Takalani has had the resilience to keep pushing forward and complete her degree because she felt that all her energy 'would have otherwise gone to waste'. She argues that "*if you are not strong enough … you'll end up even switching universities so that you go do an easier [degree]"*. Drawing on data from higher education trends in South Africa, Letseka (2009) report that 50% of students enrolled at higher education institutions drop out within their first three years, approximately 30% drop out in their first year and the other 20% in their second and third years of study. Furthermore, 70% of these drop-outs come from families with low economic status (Letseka & Maile, 2008). Although students might drop out due to their under-preparedness for university studies, research has shown that these students were unable to afford, even with bursaries and loans, registration, tuition and/or resident fees (Letseka & Breier, 2008).

Similarly, Welile's also emotionally devastated when she was academically excluded from university.

> *"[A]nd then it was the whole exclusion part (.hhh) never, ever, thought I would ever get excluded, ever, ever, not even in my life did I think that is something-that, that would happen to me, so when I was excluded (.hhh) and then made a decision, an arrogant decision, you know, to leave Wits and just go do something*

else and I think, that I also felt that I disappointed … my sponsors you know, never mind my family, I just felt that people that had invested … so I am failing and you know that's (.hhhh) (hhh) I just remember that (4) I just cried all the time ((nervous laugh, begin to cry)) and then I told [the project manager] that I didn't want to come back … [they] must give the scholarship to somebody else who is more deserving because I'm just a failure, and [the project manager] being the person that she is, she was like 'no, you're not a failure, you are going to ask to be brought back to the University'".

It is clear that Welile internalised failure as she told the project manager that they should give her scholarship to someone who is "*more deserving [because] I'm just a failure"*. Welile did not want to apply to the readmissions committee because she *"didn't want to bring [herself] down to that level"* which for her represented the opposite of being academically talent. But she was able to begin the process of reconstructing her academic identity when the head of school 'gave her a second chance' because "*he told me that he believe[d] in me*". However, this process was particularly difficult when she realised that the high school learners whom she had previously mentored were in her first year Chemistry class.

"[T]hat was a killer Sabrina (.hhh), I just sat at the back of that class and I knew that I needed to attend my classes and I couldn't do what I did the last year and that (3) I think that was the hardest (huh) that was really the hardest (3) being in their class with those students. I think, I guess what kept me motivated was that I was actually doing my third-year courses as well, so when-if I passed my classes, I would graduate … I really worked hard, I remember getting an A for that first test in chemistry (.hhh) (hhh)"

In this instance, Welile realises that there is a difference between how the [pre-university talent project] students see her and how she perceived herself. There was a disjunction between what she appeared to be (a failure) and what she was (a soon to be graduate). Welile argues that having close friends from the Oya programme as well as the scholarship office 'helpful' and provided her with a support system. Her friendship with

Itumeleng has been particularly important for her because she says it ‘helps to have a friend like Itumeleng’ who has "touched your life and wants the best for you”. For instance, after Welile failed Chemistry and was academically excluded, Itumeleng played a critical role in encouraging Welile to ‘never give up’ and talk to the head of school. It's the kind of friendship she says, where "we are always just looking out for each other”. These excerpts illustrate that these young women continually work at re-constructing their science identities which are never established, instead “[e]very time they entered a new setting, they had to return to making careful orchestrations and tentative bids for recognition, and warding off unwanted ascriptions, to see if they could find ways to author science identities that were not at the expense of other identities they valued” (Johnson, Brown, Carlone, & Cuevas, 2011, p.53).

As mentioned, when Takalani came to university, her academic identity was challenged by failure and mediocrity. As a result, she could no longer define herself by her academics because she believed that "I'm so far from where I thought I was”. Her experience of failure not only made her feel “lonely, stupid [and] depressed” but she thought failure was punishment from God because she could not understand what more she was “supposed to be doing”.

> *“I failed the [supplementary exam] and I went back 2009 and it was like (.hhh) ‘oh God what do you want from me?’ ((nervous laugh)), like, (.hhh) ‘ain’t I trying hard here’ … Then from first year, then, it was second year … like it was (hhh) very crazy [laughing] it was the year I found myself failing for the first time in my life (5) and you wonder (.hhh) what went wrong (3) like what changed (2) what did I do wrong (.) is this a punishment (hhh) is there something I’m supposed to be doing that I’m not doing (2) and you hardly find answers to that [question] cause you are doing exactly what it is you are supposed to do and you end up so confused (2) I ended up so confused (.hhh) feeling so lonely, feeling stupid and all that and I, hmm, like the, the, the one thing that I defined myself is, is (2) I always thought I’m a smart person, like you know, I can do this, I can struggle in all other way but academically, I’ll never struggle and finding yourself struggling academically (.hhh) it was like can this life end or something, but I managed to*

get through it, I failed my second year".

At the end of her told story, Takalani has come to believe that sometimes "timing" is more important than "hard work". *"I realised that things don't just come easy sometimes (.hhh) and it doesn't matter how much you work, how much you pray, how much energy, how much you do (hhh) it's sometimes (2) it's just about timing and growing up"*. When she failed third year twice and thus lost her Oya scholarship, her religious beliefs may have limited her sense of agency. She says *"oh Lord, what am I supposed to do now (2) but I think as, as, I'm also-like I have a-like I'm a Christian, so like have this spiritual background so I think that also helped me, as well so I was like, I will wait and see what happens"*. However, she decided to 'wait and see what happens' after she applied for several bursaries, thus her "spiritual background" may have given her 'peace of mind' that she would receive a bursary that would assist her in completing her degree. In this example, Takalani's academic identity is inscribed in religious discourses. In the process of developing her sense of self, Takalani positions herself with an ideological religious view of the world that involves the notion of punishment, giving up control, and waiting for the 'right time'.

Furthermore, Takalani goes on to explain that the experience of failure is similar to being "beaten up" or a feeling that one internalises and becomes part of who they are.

> *"[L]ike some of them [students who fail], they feel so beat up, they feel so beaten up (2) like they just at a stage that they just want to give up and, and just do something else because they feel they have wasted too much energy, so much years, so much life … I've got couple of friends that graduated last year … they still like… I hate Wits, there's still, you know, so I, I, I, think that pain sometimes-it has become so much (2) that you have to live with it, for the rest of your life … you had to cry, you had to like-you to like study so hard and you still fail (3) to like spend so many sleepless nights and things still don't work out-so sometimes it becomes too sinked in (3) that sometimes you just have to live with it … even if it's over … what I'm trying to say is (3) I don't think it ends when you graduate, it doesn't-I mean the pain is over-sometimes you-like it becomes part of you"*.

In this story, Takalani talks about what failure felt like and still feels like, which implies that the emotional impact of failure became inscribed onto her body leaving a scar that remains unresolved. Fay (1996, p. 37) aptly argues, “the self would be more like a verb (an organised temporal flow of mental states) and less like a noun (a particular thing)”. Although in Takalani’s case, the mental state of feeling “beaten up” by failure resulted in ‘a particular thing’ or residue that became “sinked” into her selfhood.

6.5. (Re)constructing other selves through homespaces

These young women attempt to reconstruct other selves at the point of intersection between recognition (self-construction) and misrecognition (self-deconstruction). I argue that these young women reconstruct their selves in the ‘safety’ of ‘home spaces’ (e.g. friendships and significant places). These young women constructed a sense of home within the institution through a dialogical interaction with ‘significant others,’ particularly the women from the Oya programme. The friendships that developed between the women in the Oya programme created a “homeplace” (Hooks, 1990) which provided them with a safe empowered space where they resist the “matrix of oppression” (Collins, 2002) in making new versions of themselves or other selves through narratives that link them to others and locate new trajectories of possibility. For the purposes of this study, friendship is defined as “dynamic, ongoing, social achievements, involving the constant interconnection and reciprocal influence of multiple individual, interpersonal, and social factors’’ (Rawlins, 1998, p. 64). In recent years, there have been a few published studies on friendships among African American women (e.g. Denton, 1990; Hall & Fine, 2005). These studies have found that friendships among black women are characterised by companionship, acceptance, and support toward resistance against oppressive structures. In this study, I do not examine whether they ‘feel at home’ at Wits but rather “[w]here, and with whom, doing what, and to what end, do you feel comfortable enough to be able to say, "I feel 'at home' or 'in place' in this institutional culture"? (Thaver, 2006, p. 18).

Amirah attended an Islamic school in her community from Grade R until Grade 9. When

she changed schools in Grade 10, she was exposed to people of all races, classes and religions. At this school she experienced instances of racial discrimination because some people were ‘nasty and adopted a racial attitude’. But when she started university and became friends with the students from the Oya scholarship, she began to question her identity as a Malay, which spawned the process of "understanding who I am". She argues that although her ‘Oya friends’ who she now "considers [her] sisters”, came from different backgrounds to her own, she could relate with them.

> *“So, from the very beginning, I think high school and all of that, that’s not, it’s not, hmm (2) ok shame, it is important and I think, it started the definition of who I am. That started my process of understanding who I am, what I want in life and all of that, hmm, but not as much as the first year of varsity of course (4) that’s when it really started, I don’t know, I think that’s when maturity actually hit and things became more clear, more obvious and all of that stuff. In every sense-like spiritually, academically, socially ((laughs)) ja. But just like a holistic growth (.) I think that really happened first year and that’s Oya-that’s when Oya first started (4) for me Oya (.hhh), oh wow (3) I think a lot of the changes that I see, when I look back and I’m like, ‘how did I change?’ ‘how did I grow as a person?’ (.) a lot of it is owed to Oya and maybe because firstly, hmm, Oya started my social experience ((laughs)) because that’s when I met the people who eventually I consider them my sisters. So that’s when everything started cos I am-I met these girls and weirdly enough as different as we were, we were so similar and I think that really that resonates so much because I could relate to people that I would never”.*

If she had not received the Oya scholarship, she doubts whether she would have made friends with the other recipients of the scholarship because she would have most probably “stuck to [her] kind”. Amirah argues that whereas in high school people identify ‘their kind’ based on their religion, race and culture, there is cultural diversity in the university environment.

> *“If I had just come to varsity and was not a part of Oya, I doubt that we would have become friends just because (2) you are in your own little world and you*

would never consider hanging out with certain people and all of that. You would just be like, 'I will stick to people I know, I'll stick to my kind' or whatever. I think those identities come from high school, because high school was very much about identifying who you are, who you fit in with and all of that and that was dictated by the religion that you are in, your race and your culture, all of that. I think those were very set ideas. Then I came to varsity-Oya and it's just this whole new cultural (.) change. This mix of people, it was so exciting-it was so different-it was so new. I met all these friends and they became now my best friends".

In this instance, Amirah demonstrates that this safe space provided a site of resistance from religious discourse and "sticking to my kind". Hooks (1990) explains that a "homeplace" provides "a community of resistance [for black women] in white supremacist societies" and religious norms (p. 42). Likewise, Ambani's sense of belonging and emotional connections to friends at Oya and a particular pre-univeristy programme for high school learners helped her 'learn through experience' and 'develop as a person' which contributed to her sense of maturity and ability to make difficult decisions that would be beneficial for her in the long run *"and [now] studying at the University of Pretoria, Wits still feels like home"*. She attaches this feeling of being at home with relationships:

"[T]he friends I've made here at this place [Wits], feels like home, whenever, I come back here, it feels like home … I still help out with that [pre-univeristy talent programme] during the holidays, so it's always good to see everyone, and what they are doing with the [talent programme] learners it is really amazing. Like I see myself-I was one of them at the time … I really appreciate what the [Oya] scholarship has done for me, sometimes I feel like they wasted their time and resources (.) that somebody else could have used them [but] no regrets [as] I'm doing something that I love".

She then reflects on the life skills she gained from being part of the Oya programme for two years.

"[M]aybe I did not walk out with a degree-but the experiences like with the

scholarship … and we had to warm relationships amongst ourselves, it was hard, there were elephants sometimes in the room and we learned to deal with it. So those are the kind of things you cannot learn them anywhere else. You can only learning through experience”.

It is through Ambani’s social relations “with other social actors [Oya women] in a given place that mutual assurances, fitness, belonging, etc. obtain and through which the feeling of being "at home" is ultimately generated”. (Thaver, 2006, p.18). The assistance she received from the Oya women, scholarship office and her parents during her pregnancy was particularly helpful for Mamoratwa. For instance, she explains that the Oya women would not involve her in their "wild fights" and the scholarship office also provided her with the psychosocial support she needed during her pregnancy. Mamoratwa's best friend from the Oya group, Kaiya, was the first person she told about her pregnancy, and she supported Mamoratwa in numerous ways during her pregnancy.

In addition, When Mamoratwa realised that she was pregnant she decided not to apply for the Oya scholarship however her parents "forced me to come to [Wits]" and write the selection tests. Mamoratwa's parents gave her the choice to either stay at home with her child, or go to university while they take care of their grandchild. Due to their support, Mamoratwa was able to complete her degree. Furthermore, her parents would drive from Limpopo to Johanesburg every month in order to take Mamoratwa to a gynaecologist. As a result of the love and support she received from her parents, she felt "*so grateful ... I actually noticed how much my parents loved me”*. For this reason, Mamoratwa mentions that not disappointing her parents provided her with the motivation she needed to overcome the challenges of being a university residential student.

Itumeleng mentions that two of her fellow Oya students, who were a year ahead of her, helped her with physiology. “*That was also, I got help from Ethwasa and Amirah [fellow Oya students] a lot, because they also did physiology. It was cool, I enjoyed a physiology lot more (than I did)”*. Coming from a “small close-knit family" and an all girls’ school, Khanyisile struggled to adjust to residence life and her lecture halls that were dominated

by white men. She attributes her successful transition to being part of the Oya group "*who you could always talk to or ... who [are] automatically your friends*". Similarly, Odirile mentions "*but I think, having the other Oya ladies there … as roommates, was really helpful because you know (.) that you're not alone (.) and we always used to work together"*. Said (1983) explains that there is a difference between the physicality of a home place and the social relations that produces a feeling of being at home. From these excerpts, it is clear that the friendships between these women provided a space that felt like home to them, where they had the opportunity to 'diversify their kinds of people' (Amirah), 'develop as a person' (Ambani), and receive support during difficult times. Hooks (1990) explains that "a homeplace [is where] young black women who are groping for structures of meaning … will further their growth, young women who are snuggling for self-definition" a space where we "renew our political commitment to back liberation struggle, shar[e] insights and awareness … feminist thinking and feminist vision, buil[d] solidarity" and a space where "we return for renewal and self-recovery, where we can heal our words and become whole" (pp. 42, 48-49).

The university environment became a space where Ethwasa and Kaiya felt that independence and freedom of expression was valued. For instance Ethwasa argues that leaving home and living at the university residence developed her sense of independence and self-confidence where she was able to "find out who I was". Similarly, when Kaiya came to university she felt free to express herself because she felt the university was an environment that welcomed diversity. In contrast, Kaiya felt that at home she didn't have the opportunity to express her mind instead she did "everything that I was told with the intention to please". Initially, she mentions that it was difficult to adapt to an environment where "people had that freedom of thought, of expression," but the university soon became a place where she was able to experiment with new modes of being.

> *"And then varsity came, Sabrina, ((laughing)) yes, I was so excited, I was-I found a place that I could be free … when I finally get to varsity, it was quite difficult (2) awkward to meet up with people that had that (.) freedom of thoughts-of expression (3) I came from a home that was suppressed (.) so it was exciting, so I was in a place where I could finally be in diverse environment and find people*

that got along with me … so, now I was literally faced up of the world and through that, I think I got to to learn more about myself (2) after all, 'birds of the same feather flock together' so I think that's how I ended up really, really, learning who I am as a person, what I really want from life-not just that I want a degree but in general".

The development of individual identity and autonomy is a particularly valued objective of higher education (Wardekker, 1995; Renn, 2004; Walker, 2006). In this context, Ethwasa and Kaiya explain how their engagement with other university students and with "deep" bodies of knowledge have opened up new modes of being and the possibility of self-construction (Soudien, 2008).

Amirah mentions that when she started university, she befriended people with diverse cultures who questioned her religious rituals; as a result Amirah began to interrogate her own practices. Furthermore, she was exposed to "different people" at university who did not dress in a certain way (e.g. wear a scarf), which was "weird" for her because she was not "used to that". She then realised that she did not fully understand why she practised certain religious rituals.

"[T]hen on the spiritual side the growth happened, because of this mix-this cultural mix [at university] and this change-and a lot of questions were raised about why I do certain things (3) why pray, why do I-and I even questioned that myself. Like oh my goodness, I don't even know why I do certain things because I grew up just doing it-it was just what I did and there was no need to question because you don't question such things-I mean its religion-it's who you are (.) It's just like whatever, do it. Varsity was so different because I met different people who would not wear a scarf, who would not dress in a certain way, not do certain things (.) which was always so weird because I wasn't used to that".

As a result of these experiences, Amirah was able to strengthen but also change her spiritual beliefs through her understanding of how these practices made her feel a sense of spiritual growth and fulfilment.

> "*And then we would, like, ask questions about stuff and do certain people-do certain things and it strengthened my spiritual beliefs because then I finally understood why I was doing what I was doing. And I think, that's when I made the choice to, like, I know why I'm doing this and I'm happy doing it, I feel, I feel spiritual growth when I do it. It fulfils me and I think that was really amazing, that growth (3) It still continues, it always… but I think, ja, its good to mix with other cultures, in order to understand your own, hmm (4) ja, so that was spiritual and social growth*".

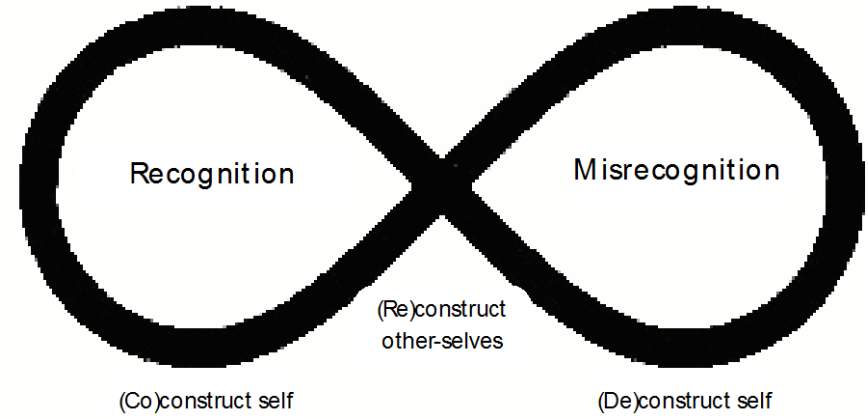
In the university context, Amirah's engagement with students from a 'wide cultural mix' has opened up new modes of being Muslim and the possibility of self-construction (Soudien, 2008). The Indian participants in Pattman's (2007) research study also viewed the university environment as 'free' and an opportunity to 'break away' from religious constraints, although others contrasted their religious 'homes' with the university environment in which religion was insignificant to them.

6.6. Conclusion

In this chapter, I have explained how these women have (co)constructed their-selves as scientists through recognition, performance and competence (Carlone & Johnson, 2007). At a young age, the women's *awareness* of their perceived worth as 'clever learners' emerges through their teachers' *informal recognition* of their competence for science which was confirmed by their schools when they were *formally recognised* with awards and university bursaries. As a result, these women self-identified with science or *performed* their identity as a 'science person' which might have led them to develop a love for science and an 'internal' motivation to excel in science. Furthermore, these women's motivation to excel was reinforced by their parents' high expectations of academic achievement. I have discussed how misrecognition and failure ruptures and convolutes their sense of themselves. In their stories, they talk about depression and how the emotional impact of failure became inscribed onto their bodies leaving a scar that remains unresolved (Haraway, 1991). In this chapter, I also argued that these women

(re)construct them-selves in homespaces that reside at the point of intersection between recognition (self-construction) and misrecognition (self-deconstruction). To use an infinity symbol as a metaphor (see diagram 5 overleaf), in this chapter I have argued that recognition and misrecognition are entangled or bound up in an endless process of constructing the self through recognition (alongside expectation), deconstructing their self through mis-recognition (as well as failure) and reconstructing other selves at the point of intersection. Thus, there is an endless conversation between reconstructing self-destruction and deconstructing self-reconstruction.

Diagram 1: The infinite symbolic entanglement of recognition and misrecognition



CHAPTER 7:
THE INTERSECTIONAL POSITIONALITY OF BLACK SOUTH AFRICAN WOMEN IN STEM

7.1. Introduction

In the previous chapter, the focus is on the dialectical tension between recognition and misrecognition of one-self by an-other. This chapter is a continuation of chapter six as it examines (in detail) the workings of misrecogntion and the (de)construction of one's identity. I provide a discussion about how misrecogntion, failure and several other barriers have influenced the (de)construction of them-selves as scientists. This discussion is of critical importance because from an early age, these women have internalised the standards of excellence within a merit-based culture. As a result, these women believe that their advancement in science is solely dependent on their talent and hard work, which is problematic because their 'race', class and gender locations coalesce into a "matrix of oppression" (Collins, 2000), positioning them, as young black women, at a disadvantage compared to men and white women. I have used an intersectional methodological approach of 'intracategorical complexity' (McCall, 2005) to analyse how their science identities have been constrained within their location in the 'matrix of oppression'. Based on my analysis of these women's intersectional identities, I present the complex intersections of 'race', class, gender, language and religion in relation to their past secondary schooling, present university or working life and projected futures.

7.2. Secondary schooling: Juxtaposing former Model C schools against rural and township schools

In South Africa, the schooling system and higher education policy framework have historically been shaped along racial lines. A racially differentiated education system was established through the Bantu Education Act of 1953, which entrenched the privileged position of white people by providing black scholars with inferior education (Kallaway 1984 & Gwala 1988 as cited in Mabokela 2000), especially in mathematics and science

(Mouton & Gevers, 2009). These young women's contrasting narratives about attending former Model C schools versus rural and township schools demonstrate how class and racialised structures continue to create inequalities within the schooling system.

Naila likens her former Model C school to a private school in terms of teacher support, laboratory equipment, scholarship opportunities, extramural activities and career guidance. She believes that her exposure to these learning resources prepared her for university in which she graduated as an engineer.

> *"[I]t's a really good school and it might not be a private school but we had everything in terms of how chemistry lab was full, if you didn't have clothes, she [principal] would give you clothes, we had extramural activities and we were competing with private schools in terms of debating and public speaking (.) so we were exposed to what I feel private schools are exposed to-we might not have had everything, but we had it was awesome. So I did a lot of things at school, and from academics and you know cultural activities to sports, I did dancing modelling, so you see at [Southwood] high you really get to explore everything, and I mean modelling ((laughing)) but you see that's the thing, they give you confidence (.) you can do anything, so that was my school, and I'm glad that I went to that school … it does help that you know you can do so many things, you get awards for-its … motivation".*

Naila entered university with the background knowledge that better prepared her for academic success. In other words, her school not only offered her with opportunities to excel in academics and cultural activities but also rewarded her for good performance, which increased her motivation and confidence that "[she] can do anything". On the other hand, the rural high school that Ambani attended did not provide her with basic learning resources.

> *"[L]et me just mention the infrastructure in that school because it was really bad (.) like we didn't have tables, we sat on chairs, we wrote on our laps, ja, so, so the infrastructure was really poor (2) I didn't really care much about that because, that's all we knew, we didn't know, yeah …we didn't really mind much about that".*

In retrospect, Ambani evaluates her school infrastructure as "really bad [or] poor" but during her school years, she "*didn't really mind*" not having tables to work on "*because that all we knew*". By comparing the former Model C school that Naila attended with the township school that her cousins attended; she concludes that her school was better (or more like a private school) because it offered a vast array of extramural activities and the teachers were committed to their students.

> *"But it was okay, because I realised, I did so much more, I did extramural activities-and even though I stayed far, there was always a way to get home. Whereas like my cousin and my friends went to school there they didn't do anything, it was really sad like to them school was school and you just come back. And I'm not judging them or anything, I understand, I just-I really think I was lucky because the school that I went to, it might not have been a private school but the teachers would focus on you as if it was a private school"*.

However, for Takalani who had attended a rural school, she believes that she was not provided with the "proper" background knowledge to adequately prepare herself for aeronautical engineering at Wits, she says "*it's, very hard if you don't have like a proper background"*. According to Takalani, the process of studying to be an aeronautical engineer has been "[life's] biggest challenge" due to inadequate career guidance and her unfamiliarity with technical drawing. *"[S]tudies wise, in first year, it was much (.) easier I think, or probably it was because of the excitement like yes, so I got through my first year very easy, though I had problems with my drawing (2) there was this other drawing course that was like very tricky and all that (.) that was the main problem but everything else was fine"*. It is apparent that Takalani was not offered technical drawing or career guidance at her high school, which made it difficult for her to adjust to university during her first year. This finding is consistent with Potter, Van der Merwe, Kaufman and Delacour's (2011) research which found that first year female Engineering students needed academic support in Engineering graphics as these students had not taken technical drawing at secondary school. Furthermore, Mokone (2008) explicates that the participants in her research study reported that they did not take technical drawing in high school because it was viewed as a course for boys.

In contrast to Naila, whose school made her feel confident that "[she] can do anything," Takalani mentions how her academic under-preparedness had a negative impact on her self-confidence.

> *"[Y]ou end up asking very stupid questions in class and you end up answering very stupid answers and the lecturer will come back and be like guess what I saw ((laugh)), someone wrote this on their paper and like what is 'what?' And you're thinking ah, that is me ((laughing)) I'm very thankful you [the lecturer] didn't mention the [my] name but that is me right there so like yeah (2) and sometimes it would like, really put you down, you'd be like (.hhh) oh probably I'm not meant to be here, you know".*

Takalani's account alludes to the "articulation gap" (Department of Education 1997, p. 22) between schooling and her preparedness for the academic demands of the engineering programmes at Wits. The educational and socio-economic backgrounds that Takalani, Mamoratwa and Ambani have come from, manifest in unequal levels of background knowledge in preparation for university. This 'articulation gap' is wider for these young women, who came from townships and rural schools which are characterised by the unavailability of particular subjects, less qualified teachers, ineffectual pedagogical practices and a lack of learning resources such as technical, laboratory and/or computer equipment. It has also been noted that South African school learners from historically black schools perform poorly in the areas of literacy, mathematics and sciences due to poor quality secondary schooling (Bloch, 2009; Christie, 2008).

Naila argues that her cousins, who attend township schools, "didn't get a career counsellor" whereas she had access to career guidance at her school, "we had that, we had everything". Mamoratwa explains that people who grew up in "small rural areas" (such as herself) are at a "huge disadvantage" in terms of not obtaining career guidance. As she is the first person in her village to graduate with a BSc degree, she argues that the people in her community could not sufficiently advise her on degree and career options.

> *"And that's when I actually noticed that, there's a huge disadvantage in being in,*

hmm, small rural areas, where there aren't people to tell you about, hmm, who actually give you career guidance. They, you know, you just get assumptions from people, you never get told the real thing. And still even in applied maths, I was probably the first one in my entire village (.) who has ever done such a degree, and I didn't know what I was going do with it … and I was getting worried, now to me, I didn't want, I'm no academic".

She felt that the career advice she had received was based on people's assumptions instead of factual information. For instance, Mamoratwa says that she was told that people who were mathematically inclined should only study actuarial science. Similarly, Ambani was concerned with the quality of career advice she had received. She ultimately decided to study biomedical engineering because she thought it "sounded fancy". Although Ambani had a passion for agriculture, she was under the impression that this career only involved "farms; and producing food; animals livestock etc. like those things". However, as a second year engineering student, she realised that there was a whole spectrum of careers one could pursue in agriculture. Following her passion in architecture and being 'true to herself' motivated Ambani to make the difficult decision to give up the Oya scholarship and drop out of Wits. During this process, Ambani obtained information about agriculture from her faculty, she also applied to three universities, asked her aunt to convince her parents to pay her first year tuition at UP, and by the end of the year she obtained a bursary. In Chetty and Vigar-Ellis's (2012) needs assessment of science students entering the University of KwaZulu-Natal (UKZN), they found that the most important need for 96% of their student participants was career advice, which may be a result of poor standard of education and the lack of support structures. In South Africa, as Mckinney (2007) notes, English proficiency is associated with 'whiteness' and is the most highly valued form of linguistic and cultural capital in South Africa.

Whereas Naila's first language is English, Ambani communicated in Venda during her schooling. In Grade 2, she was taught English 'but not how to speak it' because she attended a school in a rural area where everyone communicated in their own languages.

"Okay well, in Grade 1, we were talking Venda … and then (.) we started learning

English and Grade 2 (.) so it was a school in a rural area, they were teaching us-they were not teaching us English (2) they were not rarely teaching as how to to speak that. There was just, okay, we could understand English but then, the speaking at-we never really even saw the need for why we should speak English because we communicate our own languages. So from that was my primary career [but then] in lectures [at university] the medium is English, like we are used to things being explained to us in our own language".

Similarly, when Mamoratwa was nine years old, her parents were concerned that she would not be able to speak English therefore they sent her to a private boarding school in Polokwane. As a result, Mamoratwa retaliated because she felt that she was too young for boarding school.

"*So I went to boarding school from Grade 4, hmm at [a] private school, that was in Polokwane, hmm, there I did my Grade 4 and Grade 5 there-but then I couldn't survive the boarding school life at that age, I just couldn't and I just told them that I want to go back home and I couldn't care whether I was going to be, hmm, studying everything, hmm, in my home language, I wasn't going to be speaking English no more, I just wanted to go back home".*

These excerpts illustrate that in addition the challenges of background knowledge and career guidance, the medium of instruction at university is English, which is not the mother tongue of the majority of students, particularly from rural and township schools. For instance, Ambani and Mamoratwa allude to this as a big learning hurdle during their university studies. Similarly, the black participants from rural and township schools in Kapp's (1998) study reported difficulties with the English medium of instruction at university because their high school teachers interpreted content in their first languages whereas university lecturers could not. This collaborates Ambani's sentiment, "in lectures [at university] the medium is English, like we are used to things being explained to us in our own language". Furthermore, these participants felt that "the University of Cape Town recognizes the English way of life as the only custodian to civilization" (Kapp, 1998, p. 23). Woods (2001) found that young black students were subjects of racism at Wits when they experienced intolerance for their languages and cultures by white

students and lecturers. In South Africa, English is cypher for class. The dominance of particular forms of "cultural capital" (Bourdieu, 1986), such as the English medium of instruction at Wits, lead to experiences of cultural marginalisation for the women in this study (see, for example, Dominguez-Whitehead, Liccardo & Botsis, 2013; Liccardo & Bradbury, 2014). Put differently, as these women "inherit" cultural capital from their families (and schools) whose social class unequally influences children's educational prospects (Bourdieu & Passeron, 1977), black students at HWUs may experience feelings of exclusion (Jansen, 2004; Makobela, 2001). Erasmus (2003) contends that black students are left with the task of dismantling the 'burden of the racial experience' because the institutional cultures at HWUs are aligned with the languages and cultural orientations of white students.

7.3. University life

7.3.1. The Oya programme and the financial pressures of first generation students

A considerable amount of literature has been published on how the financial constraints faced by first generation students make the pursuit of higher education particularly challenging for them (Hand & Payne, 2008; Tierney & Venegas, 2009; Dowd & Coury 2006; Inkelas, Daver, Vogt & Leonard, 2007). However, these women viewed the Oya scholarship as an opportunity to break away from their 'disadvantaged backgrounds'. The scholarship served as a vehicle for upward social mobility which enabled them to shift their family's class positions. As these women received full tuition and a monthly stipend for the duration of their studies, they rarely faced financial aid concerns at university, in fact they are able to access middle-class comforts and even luxuries. For instance, Amirah refers to the yearly retreats in which the programme would fund their trip to a game reserve or spa etc. She explains how these experiences "*introduced us to this (2) different life, where you can have all of these things and if you have money, you can do all of these things*". This introduction to a different world affected her as it gave her incentive to work harder, to complete her degree, and make money so that she would be in the position to allow her family to experience what she has experienced. "*Because it*

was always … come[s] back to your family" who do not have the financial means to have these experiences, "*it's like a different concept you know ... if only I could give you that chance, like it was given to me"*. Amirah feels guilty for participating in a "different life" that her family cannot afford to experience. She straddles two worlds; by living a 'luxurious life' she becomes alienated from her family but she also becomes conscious of her agency to change her family's class position, and "give [them] that chance, like it was given to me". Similarly, Soudien (2008) argues that students from 'disadvantaged' backgrounds are faced with the possibility of being alienated from their communities when they choose to attend elitist universities.

Being first generation students, these women explain how their families expect them to be the financial provider upon completion of their degrees. Takalani argues that as she is the first generation in her family to attend university and as she is the oldest sibling; her younger sisters 'expected things from her'. Although her mother had told Takalani that she should not feel responsible for supporting her family.

> *"[T]he thing is (.) with us (.) like at home I think, not my mom though my mom is very supportive (.) like she (.) she understands like she doesn't expect me to finish and to startworking when then to support her and whatsoever (.) I remember the other time she said to me 'don't get too pressurised, I don't expect you to support me like I'm your mom and I will support you in whatever way' but you find your your sisters and it's probably because they are young and they not matured (.) sometimes they expect things from you because you're their big sister"*.

Furthermore, as Mamoratwa's older sister died in 2012, she is now expected to financially provide for her younger siblings, in addition to her daughter. Takalani feels pressurised by the financial expectations that people (especially her younger sisters and cousins) placed on her.

> *"[B]ut that's they thing sometimes people will expect things from you just because 'you are a smart person you should have been done you should have been working now or probably you're working now and just trying to keep quiet about it' and you're like 'you know how much I want to work' and and you're still saying*

that sometimes it hurts me but (.) it's one of things that I'm like you know what I'm studying aero [laughing] … and you're like I said I don't have and sometimes you feel that they now just want to prove a point that you're not doing what you're supposed to do like so it's sometimes it gets, it gets really hard like I can find myself crying, blaming myself, that I'm not supposed to (.) like I'm not I'm not doing this".

As Takalani has not yet completed her degree, she feels guilty that she is unable to meet these expectations.

"[A]nd you are like I don't have so it's it's like very hard looking at your age and thinking 'oh my word I should have been working for like two years now, like you know I should have been doing this and this for my sisters, for my cousins and whatsoever' but you end up you don't have nothing and () they keep on asking [laughing] … and this thing is hard so can you just be patient with me 'when I'm done I'll give you that whatever it is that you want me to give you (.) and you need' yeah (.) yeah (.) that was one of the things as well and people expect so much from you and you're like working so hard to get those (.) but they don't understand (.) but at the end of the day you realise it's all just about you sometimes () its yeah (.) you have to come first (.) [laughing] yeah".

These excerpts illustrate that the multiple roles that Takalani occupies are injected (by her family members) with particular duties and responsibilities. She explicitly mentions that as her family views her as 'a smart person,' she therefore feels that she "should have been working [by] now". These expectations are intensified by her position as a first generation student and also being the oldest sibling, which she believes comes with the responsibility of being the financial provider in the family. It seems that Takalani has internalised her family members' expectations of what she is "supposed to do" in her position as a 'clever older sibling and graduate'. As she has not been able to fulfil 'her responsibilities', she thus feels "hurt" and "finds [herself] crying, blaming [herself]". However, with the support of her mother and friend, Takalani has learnt to 'put herself first', and be patient with her progress.

"[B]ut I remember a friend of mine told me I'm not responsible for them, like so sometimes I must just tell them that I'm not like your sister that I can support, I'm not your cousin that I can support you, I'm your sister that I'm there for you if, if, if, if conditions allows me so yeah (.) and I think that was one thing I had to face but I was like I know what I'm doing they not doing what I'm doing so this is my way and let it be my way (.) I think yeah cause I think yeah (.) if you're not very strong you'll end up even switching universities so that you go to an easier one and finish and do whatever and like lose out on what you want yourself".

Through supportive relationships, she becomes aware of her agency to assert herself and create 'her own way' of fulfilling the duties that she believes are associated with her multiple identity positions.

7.3.2. The intersections of gender and merit-based education discourse

Drawing the discourses of virginity and 'being a good girl', Khanyisile and Ethwasa mentions that their 21st party was significant to them culturally because "*they [family or cultural tradition] say you are still a girl ... that pride your family feels when you are 21 and you are still a virgin [Khanyisile*]" and "I hadn't given them any problems [Ethwasa]". Similarly, Nosakhele explains that if she remained a 'good virgin girl' by the time she turned 21, her family would 'throw a huge party for her' which motivated her to not 'galavant and dolly around with guys'.

"But my major problem with (.) guys was, you know, guys try to force you into doing stuff, that you don't want to do, for instance, the most important one is like (.) sexual intercourse, right. And like I was raised up in a family where they say, 'if you have slept with a guy or if you have a baby by 21 or before 21', forget it, like, you are no longer a baby. It's-it's not that they will (.) throw you away but they won't even throw a party for you because, you know, 21st's are very important to everyone … ja, so that's what kept me going, that 'Phew' I don't want to miss out on the big party that my parents have been planning (3) and you see, like that's something amazing that I kept it, like to myself, like I kept-I was honest to myself and to my parents, I didn't say 'well they can't see me, I can like

galavant and dollying around with guys'… ja, I did well, got the 21st party and I wasn't feeling guilty about anything, ja, it was so nice it was combined with my graduation party".

When Khanyisile got married, she says that she "*mov[ed] from being a girl ... to being a woman,*" that one can "*differentiate between me before that's and me after it [because] in my culture [I am now able] wear certain things [and] all these things are told to you".* These accounts illustrate the ways in which gender is constructed through cultural values and belief systems. It seems that Khanyisile, Ethwasa and Nosakhele have come to accept and internalise existing gender relations and norms. If they were to challenge the traditional construction of their gender as a 'good virgin girl,' it may threaten their personal values as well as familial, cultural and traditional belief systems (see for example, Lynch & Nowosenetz, 2009). For instance, the consequence for their retaliation would mean that their families would not 'throw a huge 21st party for each of them'. In this example, Khanyisile and Ethwasa, Nosakhele's gendered and youth identities are inscribed in the virginity and 'good girl' discourses. In the process of developing their identities, Khanyisile and Ethwasa, Nosakhele position themselves with an ideological gendered view of the world that involves the notions of virginity, "slut shaming" (Bazelon, 2013), maturity, and guilt. These kinds of ideological beliefs "serve hegemonic ends and preserve the status quo [thus] identity or identification … becomes a colonising force, shaping and directing the individual" (Benwell & Stokoe, 2006, p. 23). In their research study, Phoenix, Pattman, Croghan and Griffin's (2013) found that the young participants from UK secondary schools 'do' gender by drawing on women's bodies and clothes in ways that are 'culturally intelligible'.

The following excerpts demonstrate the ways in which meritocratic discourse is entangled with 'blackness', class and gender. Mamoratwa claims that in "black families," young women are "not allowed to" have a boyfriend until they get married otherwise they would "have to sneak around". This was particularly difficult for Mamoratwa because she was seen as the 'good and smart girl' at home.

"I think, and-hmm, but then with black families, you know (2) you not supposed to

have a boyfriend up until the day you get married, you cannot have a boyfriend you have to sneak-you have to sneak in and out, you can't-it's not allowed (2) so you know it was it was a bit hard, especially coming from my family (3) I used to be seen as the (.) good child at home, out of all my sisters, I was the smartest one, the kindest one, the sweetest one and I wouldn't dare do anything wrong (2) that's what they thought".

She "*used to be seen as the good girl*" in her community up until she had sex with her boyfriend after her sixteenth birthday and fell pregnant, after which she believes that people's perceptions of her changed. Mamoratwa felt that she could not tell her mother "*about such things [pregnancy]"* because if she did "*you will just be dealt with"*. In addition, as Mamoratwa was seen as "the perfect girl at home", she could not confide in her older sister because "she was just waiting for that moment to turn me in".

"[A]nd still-I mean if you can't have, hmm, you're not allowed to have a boyfriend, you can't even tell your mother about such things-you can't-you don't mention such things at home, otherwise (2) you will just be dealt with. Yes, so it was something you just had to do alone with your friends, you can't mention it to, hmm, anyone, and I just-by that time, such things-I couldn't talk to my sister about them because, hmm, you know siblings sometimes (3) you just fought so much sometimes, you know, I was seen as the perfect girl at home, so she was just (.) waiting for that moment to turn me in, so I couldn't even tell her, I knew she was just going to, hmm, tell my mum".

Kgwerano, her current boyfriend and father of her child, was in the same situation because he was also expected to be the 'good boy' at home.

"I just always had to be an A student and my boyfriend as well was in the same situation as I was in (.) he was expected to be the good baby at home, smart boy and all of those, we were actually competing at high school-competing I was-yes competing and helping each other that type of thing".

Mamoratwa thinks Kgwerano is "scared" of her parents because he was *"supposed to me*

marry me by the time I got pregnant" but Mamoratwa's parent's believed that getting married at a young age instead of focusing on her career would be pointless. As a source of mobility, research suggests that the families of 'women of colour' (in US) do not encourage marriage but rather education and independence (Hanson, 2006). Although she loves Kgwerano, she only allows him to see their child when her parents are not around, "*because, in a black community [and families] that is just (.) wrong, wrong, wrong, wrong"*.

In addition, when Mamoratwa realised that the Oya scholarship would provide her with the support she needed throughout her pregnancy, she draws on the discourse of 'mercifulness'.

> "*[G]o register and then we [the Oya scholarship] will give you more support and then I was so shocked, you know, like (.hhh) I don't get (3) I'm not a person to be crying over, hmm, sad situations but when they're just like-when someone is just being so merciful, I just, I just sat at the stairs and I just cried like I couldn't believe it you know"*.

In summary, Mamoratwa's intersectional identities exist within restrictive cultural, gendered and academic norms. For instance, she believed that coming from a "black family" she was "not allowed to" have a boyfriend until she married especially because she was seen as the "*good [and] smart girl*" in her family and community up until she fell pregnant. When Mamoratwa found out that she was pregnant, she was "*so shocked, so scared [and] in denial"*. For months, she kept her pregnancy a secret because she felt that she couldn't trust anyone, "*I wasn't just free, I mean, I had to hide myself so that people couldn't notice that this girl is pregnant"*.As a result, she felt completely alone because she 'could not' confide in her mother or her older sister. She also felt that as a result of her pregnancy, she had 'destroyed' her family's social standing in the community. "I*t was, at home, they [parents] are seen as those, hmm, you know a home, a home where you have that certain position and now and you, now I just destroyed it, ja, it was (.hhh) yo, it was rough* (hhh)".

Mamoratwa's use of the terms "black communities" and "black families" is to be understood in relation to social class and the 'good girl' discourse. In other words, as her parents are teachers and principals, her family has experienced relatively high social status ("that certain position") in the community. Thus, her dual positionality of being a teacher's child and 'a clever learner' in a meritocratic culture is expressed in the form of being 'good girl'. She mentions that allowing her boyfriend to see his child in the company of her parents "*is just (.) wrong, wrong, wrong, wrong"*. In other words, it is not just not "wrong" in a "black family" but also "wrong" in a family of teachers who possess social status in the community. In addition, it is "wrong" because of the stigma attached to teenage pregnancy but especially "wrong" because Mamoratwa and her boyfriend are smart youngsters who were expected to pursue a degree at university.

In the following quotation, it is clear that Mamoratwa continues to perform her identity as a 'good girl' at university.

> *"[A]and then I, I came to Wits, I wasn't the person to party and all of those-it was just not in my interest, I guess, I had already grown-grown that responsibility (2) that I'm a mother, whether I like it or not, you know, there's someone at home who is relying on me (.) and I think that's the other-just thing that got me going"*.

However, being 'a good girl' at university involved being good to her baby, she thus likens adulthood to motherhood.

> *"I just looked at things (.) now, from a perspective of I'm doing it for my baby, no one else but my baby, I cannot disappoint her, like, I, I brought her to this world (2) maybe before time … I couldn't-I wasn't the type to do-to mess up anymore, you would find me at res at this time, you will never ever, ever find me at a party … after my last exam, I never had that sense of feeling that I would lie to my parents and tell my parents 'no I'm still writing' ((laugh)). I could have done that-I used to do that in high school, I used to lie, you know, when you just want to sneak out ((laugh)) but then I couldn't, like it was no longer even about my parents, it was just about me being faithful to my baby"*.

In this excerpt, Mamoratwa draws on the medical and psychological discourses of motherhood by describing her experience of mothering as transformational in the sense that she became more "mature", self sacrificing and honest (Kruger, 2006; Richardson, 1993; Mamabolo, Langa & Kiguwa, 2009). Similar to Mamoratwa's narrative of pursuing further education in order to be "faithful to [her] baby", literature shows that many teenage mothers are motivated to complete their secondary schooling so that they may provide for their child (Chigona & Chetty, 2008; Chohan & Langa, 2011; Chohan, 2010; Grant & Hallman, 2008, Kaufman & de Wet, 2001; Waite & Moore, 1978).

Welile believes that the sciences are "very challenging" because women are "very emotional people". As a result, she views the demands and responsibilities of home life as particularly stressful and overwhelming for women.

> *"[B]ut sciences, it's very challenging, it's really a shock-challenging … I think the reason [why it is challenging] it's male-dominated … but also [women are] feeling people, we are like very emotional people, whatever happens at home affects you directly, not to say that people don't get the same amount of stress but we actually take on lots, I think we taking too much sometimes you know".*

Welile, as a gendered subject situates herself in the discourse of emotionality, implying that women may not be able to handle stress. This account illuminates an essentialist view of women as emotional or feeling type of people, an identity which is discursively produced and 'performative' (Butler, 1993). As a result she feels that to be a woman and a graduate is a great achievement because it means that one is not only intelligent but has also been able to 'learn holistically,' prioritise and balance multiple responsibilities. *"I think as women, we are friends, we are sisters, we are mothers, we are all these things (.) and we are still able to be graduates … It's good to be women, sometimes".*

Welile mentions that "it is good to be a woman *sometimes*" because her experience of giving birth and mothering was physically and emotionally exhausting.

> *"Yoh, but can I tell you labour (.) is the worst Sabrina ((laughing)) it's over the top, that's something that I never want to do again, I didn't even get a panado-I*

got nothing (.hhh) (hhh) I experienced everything. That pain is low they say, Yoh! (hhh) Sabrina, I thought I was going to (.) die, I called my boyfriend and I told him that 'I hate you, what have you done to me', I, I, I felt that I was going to die (.hhh) and it was 21 hours … It is painful, no epidural … it actually puts you off from ever having children, I actually think I, I, I, I hope that this is my last child because I don't think I could go through that again, it's the worst, and even when they start sucking the whole breast feeding thing and it's also painful (.hhh), is also painful (3) nothing is just easy ((laugh)) I got used to it after two weeks because I knew that I had to breastfeed-but I did not want to-but I just-I couldn't be selfish you know, I have to. So it's just one of those things you know, being a mom, everything is painful, everything is painful (2) I just remember having stitches and crying … And my mom had to be tough, she said 'no you have to do this, you must breastfeed, you must do whatever' but she helped me".

In these excerpts, Welile provides a counter narrative to the dominant discourse of how motherhood ought to be self-fulfilling and that all women should have a 'maternal instinct' to breastfeed. But as Welile is situated in South African culture that constructs a particular notion of a 'good mother', her anxious feelings are silenced and she performs an identity of a 'self-sacrificing' mother. *"I knew that I had to breastfeed-but I did not want to-but I just-I couldn't be selfish you know, I have to"*. Conversely, Chadwick (2006) argues that dominant discourse also constructs women (who find mothering "painful") as pathological (as cited by Mamabolo, Langa & Kiguwa, 2009). Thus, being pressurised by dominant discourse and her mother's 'tough love', Welile decides that she "must do whatever" to nurture her baby, even if self-sacrifice leads to postnatal depression. "*Now, I understand why people had postnatal depression (3) because it is just, overwhelming you know because you just feel like (.hhh) one person can't do this, you need help … I respect mothers all over the world [because] whatever they are doing is not easy"*. Welile accepts dominant discourses of motherhood as unavoidable by stating " it's just one of those things".

Furthermore, Ambani mentions that she dropped out of Wits in her second year of study not only to pursue a degree in Agriculture but also because of her desire to have a family

of her own one day. Completing two degrees, one in engineering and the other in agriculture, would have been unrealistic in her opinion because she would have 'no time to look after her kids,' a responsibility she attributes to women.

> "*And I just thought that engineering is four years and agriculture is also four years and they doesn't go well with the females because I also want to have kids and if I do engineering then when I'm going to have kids? So for males, they can do whenever-they don't have to look after kids … they [her parents] gave me a whole lecture of finishing what you started but I want to have a family of my own, I have to stay in varsity for eight years-I just ((laughing)) no ways, that's not going to work out*".

Ambani's positioning within the discourse of traditional gender roles is consistent with Lynch and Nowosenetz (2009) findings which showed that South African students in SET, position men as the financial providers in the family whereas women are viewed as care-givers of children. From their research, Lynch and Nowosenetz (2009) deduce "that both male and female SET students construct gender in a rigid manner where they value the perceived stability offered by traditional gender roles. Within this traditional division of labour, where men provide financially and women assume domestic responsibilities, there is little room for women to work" (p. 53). Furthermore, it is a widely entrenched stereotype that women who prioritize their careers lack commitment to their family, thus making them 'bad mothers' (Ambrose, Dunkle, Lazarus, Nair, & Harkus, 1997).

7.3.3. Reflections on race and gender relations in white, male disciplines

As Khanyisile attended an all girls' school since primary school, she felt that the transition to university was particularly challenging because her classes comprised majority white men. As a result, she mentions that she did not make many friends in class "which is strange for me" because it took her a while to "*cope with the diversity*".

> "*[C]omputer science at Wits, firstly it was a very different environment-a very different atmosphere and especially because I was in girls schools, my whole life and I went to a field that was male-dominated and my computer science class*

there was a few females, and so, that was the hardest part, I think it was getting used to class in males, getting used to being surrounded by so many of them".

Similarly, Itumeleng mentions that as a black student it was difficult to "*find yourself in the class and make friends*" because her School at university was dominated by white lecturers and students.

"It was a bit, that school is very white dominated, being-I don't know-I can't even remember like exactly how many black people they were in class but it was very difficult because you felt that, okay not very, it was a bit difficult because you need to find yourself in the class and make friends, well obviously Welile [her best friend from high school and fellow Oya student] and I stuck together [laughing] we had similar classes".

In the above excerpts, Khanyisile and Itumeleng express their experience of cultural estrangement from their fields of study (Thaver, 2006). The combination of entering a historically white university as well as white and male-dominated fields was a 'culture shock' which made them feel 'out of place' within the university and their fields of study. Although Khanyisile and Itumeleng not only experience feelings of estrangement within their discipline, but they still have a desire to belong or "to find [themselves] in class". Similarly, Makobela (2001) found that the black participants in her study had experienced intense feelings of alienation at a historically white university. There is research evidence that suggests collaborative teaching-learning strategies, such as pair programming or peer programming, is particularly helpful for women in science because it creates an environment that is conducive to the formation of support networks and an inclusive culture that encourages the development of social interaction skills necessary for collaborative activities (see, for example, Ross & Schulz, 1999; Hanson, 2007; Irani, 2004; Mitchley, Dominguez-Whitehead & Liccardo, 2014; Williams & Kessler, 2001; Werner, Hanks & McDowell, 2004). Pursuing a degree in this particular school was "a bit of a battle I guess" because Itumeleng argues that she was never taught by a black lecturer. In other words, she feels that there were no role models in science with whom she could identify, as the majority of lecturers in her school were white men. One of the

many recommendations from Lynch and Nowosenetz (2009) and Shackleton, Riordon and Simonis (2006, p. 579) research studies is that more opportunities should be created for young aspiring scientists to interact with other women who have been successful in the field, as "'the powerful impact that women exert as role models to other women and students cannot be over-emphasised". Odirile reports that her lecturer and mentor, who is also a black woman, decided to leave the department of Architecture at Wits because "*the politics [racial and gendered discrimination] were just too heavy for her to handle, so it's too sad, it's too sad from the students point of view*". The reason she views this situation as *"too sad"* is because her mentor *"has fought so hard [but] it's out of her power as you can't do anything about it and she can't can't handle it"*.

As a result, Odirile wonders *"how do we [Black women] deal with, with this, how do we deal-how do I assert myself?*" if even her lecturer could not 'handle the politics'. She implies that being exposed to this kind of 'political environment' has influenced her self-doubt.

> *"[G]etting my confidence … when I was in Matric because I was way more confident than I am now, not dealing with this and uncertainty about myself but I got a Masters, how can I get a Masters if I'm so unsure about myself, you know. So it's all these psychological and political things that I'm going through, you know, I'm having a lot of dialogue, a lot of questions within myself and a lot of prepping myself-prepping myself up during this time"*.

Odirile's account demonstrates how her location in the "matrix of oppression" (Collins, 2002) or the intersections of race and gender within an academic setting elucidates the workings of power and structure ("the politics were just too heavy for her to handle") as well as agency ("how do I do assert myself [in a political environment]"). Intersectionality illuminates how the social order is maintained (Johnson, Brown, Carlone, & Cuevas, 2011). Through her relation to her mentor, Odirile feels safe and secure or at home at the institution, however when she is exposed to "office politics" through her mentor's experience, she realises "that home was an illusion of coherence and safety based on the exclusion of specific histories of oppression and resistance, the

repression of differences even within oneself" (George, 1999, p. 26). Similarly, there is a growing body of literature in science education that investigates why women in science consistently report lower confidence than men and underestimate their abilities, particularly in computing, despite obtaining equal or higher academic scores than their male counterparts (see, for example, Clarke & Chambers 1989; Galpin, Sanders, Turner, & Venter, 2003; Henwood 2000; Irani, 2004; Sanders & Galpin 1994; Scagg & Smith 1998; Shashaani & Khalili 2001; Irani 2004; Mitchley, Dominguez-Whitehead & Liccardo, 2014; Varma 2002; Beyer, Rynes, Hay & Haller 2003; Zappert & Stanbury 1985).

Welile mentions that racial and gender discrimination is often made out to be a "*very petty issue but it's not because it's very real"*. According to Welile, being a black student in the sciences means that you need to have "a tough skin". For instance, she explains that her supervisors "want to push us [Black students] a little harder" which helped her become independent.

> *"[T]here is also the whole black and white, so they only choose-they choose twenty Honours students but like five black people … the sciences from first year (2) you can see that racial segregation … I had the pressure to pass chemistry and to actually get 65% and above everyone of those five black females … and Honours was also hard (.) and I think a lot of the times they make this whole race thing (.) like a very petty issue but it's not because it's very real you know, hmm, I think being black and sciences, shoo (hhh) is very hard-it needs you to have a tough skin, my supervisor and my co-supervisor … you know, I love and I appreciate them and you know they have taught me a lot but I think they want us to push a little harder (4) I do know (.hhh) I don't know how to put it (3) that like all the white counterparts get all the help and all the assistance and then you need to just do things yourself and it's a good thing, because it helps you to be independent but sometimes you just you do need that the same love that the others get … the relationship between lecturer and [white] students became more intimate so you can see that there was that difference".*

In addition to receiving ‘less assistance’ with her academic work compared to her white counterparts, she also views the relationship between lecturers and white students as more “intimate” than the relationship between lecturers and black students. However, instead of challenging "those dynamics,” she converts the dynamics into a value for herself. “But I'm glad that I went through it, and I guess that's how life is you know [laughing] is that there are always just always be those dynamics you know, you just have to you be used to them”. It could be argued that Welile’s trajectory toward obtaining her STEM degree was more burdensome compared to her white counterparts because her bids for “love” or recognition from her lecturers was obstructed by race (Carlone & Johnson, 2007).

Being a black woman in Architecture, Odirile felt discriminated against when she was ‘treated differently to her white male counterparts’. For instance, she provides an example of how a white fellow student, who had made the same mistake as her in a class project, was given the opportunity to “say what he wanted to say” whereas she was not given the same opportunity.

> “*[Third year] was difficult for me, it was the first true reality check of the issues … of the way things are run in the architectural department and specifically-but I just felt a lot of discrimination as I picked up certain things because my first and second year (.) I didn't speak up (amid) how different people treated me and people treated my white counterparts … one incident-and for me, at that time when that happened to me and this and the white counterpart had the same mistake and he was given a chance to say what he wanted to say and I was questioning like you know, ‘why am I here?’ then I feel like this is so unfair”.*

In this instance, Odirile felt that her lecturers withheld the recognition that she was also worthy of voicing her opinion. “Not only contemporary feminism but also race relations and discussions of multiculturalism are undergirded by the premise that the withholding of recognition can be a form of oppression” (Taylor, 1994, p. 36). Odirile goes on to explain that this incident has had a negative impact on her sense of self-worth. She believes that her lecturers have made her feel ‘inferior and unworthy’ of becoming an

architect. “All [she] wanted is a fair chance” to defend her work and to receive feedback that will assist in developing her skills.

> *“[A]nd it was a sort of-lecturers that didn’t-that always made you feel like (.hhh) inferior and just put, put you down and (hhh) just make you feel like you're not supposed to be there, or you’re not worth you being there, you know (2) and there are other lecturers who are willing to help just the same as everywhere else, what I'm saying is that all I wanted is a fair chance and free treatment (.) don't discriminate against me because me being female, me being black or anything else you know, and just because my quality of-the way I do things-I’m trying to do the best as I can with the resources I have but if I try this and I understand it, why can't you look at it and give me appropriate credits and give me the chance-if I get a 50% or 40%, why can’t they fully explain to me why I got a 40% so that I don't make the same mistake, but they don't give me a chance to explain myself (.) or you don't explain to me, how I'm supposed to learn”.*

The preferential treatment of her white counterparts projected a message that Odirile was ‘not suppose to be in architecture’ which was oppressive for her to the extent that she internalised this message and felt ‘inferior and unworthy’ of becoming an architect (Taylor, 1994). Taylor (1994) explains that the work of feminists has shown that women in patriarchal societies may internalise demeaning images of their perceived inferiority and thus they do not make the use best use of new opportunities. Furthermore, white supremacy projects a depreciatory image of black people, which they too may internalise. “Within these perspectives, misrecognition shows not just a lack of due respect. It can inflict a grievous wound, saddling its victims with a crippling self-hatred. Due recognition is not just a courtesy we owe people. It is a vital human need” (Taylor, 1994, p. 26). This racialised, gendered and class “habitus” in Architecture at Wits could be viewed as a form of ‘symbolic violence’ (Bourdieu, 2004) in that it has not only provides her access into a system that rewards those who possess particular forms of cultural capital (i.e. predominantly white men) but it also blocks her progression within this system which creates ancillary feelings of inferiority for Odirile and other young black women in architecture. In this example, Odirile experiences limited “epistemological

access" (Morrow, 1992) to her discipline as she felt that she was not given an induction into the "epistemological activities underpinning a systematized form of inquiry" (Slonimsky & Shalem 2006, p. 37) in architecture. She says, "But…you don't explain to me, how I'm supposed to learn".

Odirile argues that the "*issue of colour in the architectural department [and the] dynamics of [her] spaces*" was so disconcerting that it contributed to her "terrible breakdown". In other words, she explains how one of her lecturers "*divided the non-whites [sic] and the whites one side*" which became a topic of conversation for 'Black students outside of class'.

> "*[S]o ja I had that one incident that I didn't know how I was going to get through the year, I had a terrible breakdown at the end of my review at 'construction' last year and it was the dynamics of my spaces you could see even the class we were setting, with one lecturer he divided the nonwhites and the whites one side, I am a very analytical person so I will see and I will look how you do things and why you do things, maybe for him it wasn't subconscious, it wasn't conscious, but we could all see, we talked about it outside of class as black students we talked about it"*.

None of the students in the classroom voiced their concerns about their lecturers racist segregatory classroom practices because Odirile claims that black students were not given an appropriate platform and "*most of us … were so scared to talk about it"*.

> "*[A]nd then actually there was this thing people can't raise their voices (.hhh) and raising the whole black and white issue but most of us who were so scared to talk about it … even if they gave us a platform (2) like, like it wasn't an appropriate platform for us to voice our-the issues that were really happening at the time, so third year was the biggest realisation for me dealing with the issue of colour in the architectural department, and it was difficult (.hhh) it was very, very difficult, it was tough"*.

These excerpts illustrate how black students were 'silenced' when they were restrained by their fear to voice their concerns and not having an appropriate platform to confront what

they believed to be racism in the institution (Collins, 1998). Breaking this silence would represent an instance of insubordination in relation to power; explaining in public how "*[their] lecturer divided the nonwhites and the whites" which black students "talked about it outside of class [in private]"*. These findings support other research studies which have reported on how women (particularly black women) experience covert discrimination in the everyday classroom practices that are difficult to contest (see, for example, Acker, 1994; Brooks, 1997; Stanley, 1997; Luke & Gore, 2014).

Takalani reports that in her third and fourth year of study, she was the only black woman in her class of 19 students. As a result, she argues that her lecturer treated her differently, which led her to believe that her did not "trust" her academic ability because she is a black woman. For instance, during class her lecturer would "keep his eyes on me" and asked her, in front of the class, whether she understood the content that was being taught.

> *"Some other challenges (.hhh) that I faced was when I was doing my third year-fourth year, last year I think it was only (.) 19 of us in class and I was the only black girl in class and the rest were whites and Indians and few coloureds, I think of there were two black guys (2) I was the only black lady in class so I never really experienced [sexism] cause we were always a group (2) in second and third year but when you get to third year the class really narrows down and it becomes very small so being in a small class and being the only black lady I think, I don't know if I saw this wrong but I think (.hhh) lecturers lack to trust me, they didn't trust me and also the-because the lecturers couldn't trust me the kids in class also couldn't cause the thing is while he's busy lecturing there, he would keep his eyes on me and he'll always ask if I understand, he'll never ask the whole class if they understand, he'll just bring it to me like, 'do you understand?', and then after the class, he'll be like [call my surname and say] please stay behind', then I would stay behind and he would be like 'did you really get that?' and I was like, 'yes I got it', 'you can come to my office if you need more lessons and stuff' and it was like 'why me?' ((nervous laughter)) I got what you're saying-even if I didn't get it ,I'll just go back and study so".*

Similarly, in Lynch and Nowosenetz's (2009) research study which explored the ways in which South African SET students perform gender, they found that the women participants were treated differently compared to their male counterparts. In these accounts and the one that follows, it is clear that Takalani is subjected to mis-recognition by her lecturer and peers who do not view Takalani as a competent engineering student but rather a black woman 'incapable' of learning engineering. In other words, Johnson et al., (2011, p. 1203) refer to this phenomenon as "disrupted recognition" in that women of colour in science view the recognition of their "gender, race, or ethnicity as [getting in] the way of professors recognizing their science abilities". In her told story, Takalani mentions that she felt "emotionally depressed" due to her encounter with failure and the misrecognition she received by others who mirrored an image of her as 'an incompetent engineering student' which was incompatible with who she believed herself to be, that is academically talented. "Nonrecognition or misrecognition can inflict harm, can be a form of oppression, imprisoning someone in a false, distorted, and reduced mode of being" (Taylor, 1994, p. 25).

Takalani believes that her lecturer's distrust in her competence as an engineering student may have influenced her peer's perception of her academic ability as they would either be reluctant to or refuse to work with Takalani in a group setting.

> *"[A]nd also I think that also started creating that-the other kids starting seeing that I was the only black lady in class, so when we had to do groups, cause there were assignments where we had to work in groups (3) it was I think 19 of us, so they would just pair up like two- two-two-two-two and I would be there left with no one (.hhh) and then the black guys as well would be like reluctant to work with me as well (3) so sometimes I find myself with no group and I'd just go to the lecturer and then he'll ask some people to just like put me in and some would even say no (.hhh) like just say no (hhh) we can't work with her, we like-we-ok just working-just the two of us, so it was like what?"*

In order to cope with this situation, "*I just told myself, I had to be strong and then we started to mingle … I remember, I worked with this other project with like two whites (2) I*

was the only black in the group and it really went well, so I was like yeah, so I think that was the-that was one of the challenges". In the constrained setting of her classroom, Takalani is ascribed an academically deficient identity by her lecturer's sexist and racist stereotypes, to which she must fight against when looking for a group of classmates with whom to work with. "[In such instances], these small incidents were vehicles through which established members of a setting indicated that they were rejecting [Black women's] bids to be recognized as legitimate science people and were instead ascribing unwanted negative [academic] identities onto them, questioning their worth and appropriateness for the setting" (Johnson, Brown, Carlone, & Cuevas, 2011, p. 73). Furthermore, in her research study, Ong (2005) found that 'women of colour' did not feel a sense of legitimate belonging to the field of physics due to their experience of discrimination (cited in Johnson et al., 2011). Hooks (2000) refer to these instances of discrimination as "rituals of disregard [in other words] Often, our spirits have been broken again and again through rituals of disregard in which we were shamed by others or shamed ourselves'' (p. 217). Stereotypes that are associated with 'feminine' and 'masculine' careers (see, for example, Clegg & Trayhurn 2000; Fisher, Margolis & Miller 1997; Wilson, 2003; Bjorkman, Christoff, Palm & Vallin, 2008; Fennema & Peterson, 1985) tend to influence people's (such as Takalani's lecturer) attitudes toward women in STEM. Although Takalani decided to 'cope with the situation' and persist in engineering, numerous studies have indicated that negative stereotypes about young women's abilities in mathematics lower their test performance as well as their aspirations for STEM careers over time (Nosek, Mahzarin & Banaji, 2002; Valian, 1998).

When Odirile became a postgraduate student, she did courses that exposed her to issues relating to the oppressive structures of race, gender and class in contemporary South Africa, Africa and globally.

> "*It was during this time when I] started to read a lot and understand and really terms of what is it mean to be a black woman in Africa, what is it mean to be a black architect in Southern Africa (2) in the world, what is it mean just to be black as well, as a whole, you know and to be a person and to be a woman and to be, a lot whole lot of roles that you wear and to deal with different kinds of issues, not only on a social level but also the academically, for me (.) it was a challenge*

academically”.

She believes that engaging with these theories and ideas, equipped her with the confidence she needed in order to ‘think critically’ and “assert [herself] and her opinions”. As a result, she advocates that undergraduate students should also be exposed to critical race and gender studies.

> *“I realised how much of time we missed in undergrad and engaging such things in your honours, you get to do that-and for me that was the biggest issue was how the course was structured (2) so why should I learn about these things only in honours, why don't I have to learn about critical thinking”*.

It is interesting to note how Odirile has appropriated a Westernised curricula into her science identity, which has allowed her to create new ways of being a black architect in South Africa. In discussing how science educators have used the idea of hybridity in exploring identity in science learning, Rahm (2008) notes “the colonised appropriate the language and culture from their colonisers, yet also combine it with their own ways and hence, develop their own hybrid forms” (p. 101).

If she were exposed to these studies at undergraduate level, she mentions that it would have helped her make sense of her background in relation to how the larger socio-political context has informed her current position as a young black woman in architecture at Wits.

> *“[I would have had] more time to read and engage more in my subject matter … because of the way I grew up (.hhh) I don't know these things and I want to explore these things because of disadvantage and learning and knowing difference between white privilege … seeing the fact that you as a white person, the way you were born and come from does influence where you go to (.) because you have been exposed to hmm computers … I didn't get experience with computers in high school … and it was in first year and that's when I learnt how to use the Internet, resources … looking back, the small things, like that don't occur to you”*.

Through her postgraduate education, Odirile had access to feminist and radical ideas, which enabled her to perceive personal experiences of 'disadvantage' or marginality as social issues, rather than personal inadequacies (Middleton, 1987). Education was thus the vehicle through which Odirile was able to recognise the possibility of changing her life and the lives of other black women in South Africa (Middleton, 1987). In other words, through her engagement with critical studies on race and gender, she reflected on and re-interpreted what it means to be a black South African woman in architecture, today. This process of cultural production facilitated the development of a redefined science or architectural identity, which may have helped Odirile persist in Architecture (Carlone & Johnson, 2007; Lewis & Collins, 2001).

7.4. Career or unemployment

Many of these young women, who graduated with an Honours degree, struggled to find employment due to a lack of work experience. According to the DoL's National Scarce Skills List (DoL 2006a), engineering and built environment occupations are experiencing shortages of skilled persons. Furthermore, Kahn (2008) argues that the "[lack of] availability of scientists and engineers to conduct R&D remains the single most critical weakness in the system of innovation" (p. 146). When Itumeleng could not find a job she volunteered to capture data for a Unit at Wits and she subsequently stayed there for a year. Itumeleng intended to return to Wits and pursue a Masters degree, as she could not find a job in her field of study.

Being unemployed has been particularly difficult for Welile because she wants to financially provide for her baby, however she has remained dependent on her mother.

> *"[I]t's hard (.hhh) it's, it's hard (hhh) it's hard applying for jobs when you don't have experience. And I've only started, she's [friend] been applying the whole year, she hasn't even got anything and you know it's kind of scary because I don't want to be sitting at home next year you know. So I think …experience is important … it's hard getting a job, yoh, (.hhh) it's hard".*

She argues that it may be even more difficult to find a job if one has an Honour's or a Master's degree as "*the higher your qualification the harder it gets because [companies] don't want to [use all their moneys on one post]*".As she has "*always loved TV production and presenting*" she became a TV presenter for two months, which ended because of a "breach of contract". She plans on doing volunteer work at the Department of Water Affairs in order to gain the experience she needs to be able to work as a biodiversity officer. Although she needs to financially provide for her son, Welile argues that volunteering at this department is the "extra step" she needs to take in order to find a job in her field. "*"I'm going to be there because I think in this life you really have two push your hopes you need to find hope and if it don't come to easily then you have to take the extra step"*.

Once Kaiya had returned home after her graduation, she submitted several job applications, many of which were unsuccessful. However she found solace in her belief that she would ultimately 'follow what is destined to her'.

> *"And I was depressed a bit this year but came out feeling completely different Sabrina, something told me that, you know, what's-whatever path I take life it's fate (2) it's something that I meant to be doing, all I know is my passion is people and what ever it is I'm doing, it will end up doing just that. I think that's even why even though I have been rejected here and there for the applications [to jobs] I'm not as disappointed (.hhh) as I would have been before this experience, so it is sad (3) don't get me wrong being rejected is a sad thing (.hhh) but I think I now know how to handle my emotions, so that is why even with this application, even though I did not get through, I actually prayed that whoever did get to became an asset to the company, you know, worth-valuable in a way, so I'm now moving on-to forget about it ((laughing)) and I'm going to-I'm going to follow what is destined for me"*.

The inclusion of black South African women in STEM careers is important not only for political and ethical reasons but also for socio-economic development and for new

intellectual and political possibilities. The advancement of science and technology is driven by a diversity of perspectives and these young women offer the insertion of fresh perspectives on STEM problems. However, these women's narratives of unemployment and volunteering their services free of charge illustrate that black women's access to economic ownership, prestige and power in the labour force are limited. One would question how is it be possible for black women to be able to achieve equity in society if they continue to be marginalised from STEM careers and associated economic empowerment. The experience of unemployment has been particularly difficult for these women to accept because they occupy multiple positions of power in that they were hand picked for a prestigious scholarship, educated at an elitist institution, and graduated with Honours and Masters degrees within STEM fields.

As a result, it would seem that being a young black woman scientist would guarantee a 'promising future', especially because there is a current and increasing shortage of critical STEM skills in South Africa. However, the participants "quickly realise[d] that this is not a future that is guaranteed to all, but is rather racialised, classed and gendered toward white males and white women in our labour market context – one that is still keen to exclude black graduates" (Qambela & Dlakavu, 2014, para 8). According to a survey on graduate pathways to work, "[e]mployment by race continues to reflect apartheid-era patterns of discrimination" (Cape Higher Education Consortium, 2013, p.13). For instance, the following graduates from Western Cape universities are employed in the private sector; 61% of whites, 58% of Indians, 44% of coloureds and 35% of black Africans. Furthermore, whereas 9% of white graduates experienced unemployment three years after their graduation, 23% of black African graduates have the largest unemployment rate. White graduates reported that 'social capital' was a powerful device that assisted them in finding employment (Cape Higher Education Consortium, 2013).

For those women who managed to find employment after their graduation, they reported on the challenges they faced within racialised, patriarchal and meritocratic corporate cultures. However, these women were able to persevere within an uncongenial working environment because of the mentorship provided by other women professionals. During

her internship at an architectural firm, Odirile perceived the working environment to be 'unfriendly' and her boss's practices to be sexist.

> *"[M]ost of them [her colleagues] are black … it was okay, it was just the gender issue was the biggest. When I left (.hhh) I was like, you know, what (.hhh) I've learnt a lot ((laughing)) and I have been that much stronger from that you know … the workplace wasn't the most friendly, friendly place in the world-I hated it ((laughing)), I hated it (hhh) I don't like my boss-not him as a person-I didn't like his leadership style, the way he did things, I didn't like the way he treated women in the workplace, I don't think it's a reflection of his character, maybe a little bit on his character, but maybe a little on his perception on women, the way he does things and the way he thought about women in the workplace, for me (3) I find it very sad, I mean, the year that I worked was, was that when I really started being confronted with the real issues of things in the real world (.hhh) in terms of being Black, being a woman, being an architect and wanting to be an architect in this field and being a woman it was very tough … [For instance] my boss was standing right next to you, what you got to say is 'please do this is' [it's] that simple, don't have to go and tell the manager to tell me when we were all standing (.hhh) in the same area that and then the same space, I was so like (.hhh) furious, I had a lot of that that year … I was always, like fighting".*

This finding supports previous research about how women have attempted to combat gender and racial discrimination in order to survive in the workplace (Boiarsky, Earnest, Grove, Northrop & Phillips, 1993; Tomaskovic-Devey, 1993; Etzkowitz & Kemelgor, 1994; Deitch, Barsky, Butz & Chan, 2003). Furthermore, several research studies have reported that gender and racial discrimination begins at the educational level and continues at the workplace (Bar-Haim & Wikes, 1989; Davis, et al, 1996).

However, one of Odirile's colleagues, who was a woman and an architect, provided Odirile with the moral support she needed in order to persevere and complete her internship.

> *"This one woman was (.hhh) gosh, if she wasn't there, I would have never*

survived (3) she's an architect, she did extremely well in her last year as an architecture student, she was top of the class, she won this prize and she was always saying to me 'It's okay, I've been here for four years now, things work, you'll be fine, just do what you need to do and don't compromise on the way you do things, do what you are here to do produce, the best you can produce and here that's the way he runs things, that he's going to realise later in life when we are gone and he's company has lost the people that work for him' and so she was the one that was always keeping me up (3) reminding me that I mustn't compromise my standards and just push forward, you know".

It is evident that Odirile's work mentor is also experiencing difficulties with her boss. It seems that she has 'accepted' her boss's sexist practices will not change as she says "*that's the way he [boss] runs things*". Odirile and her mentor convert their experience of gender discrimination into a value for themselves, *"I mustn't compromise my standards and just push forward*". In doing so, Odirile's mentor believes that "*he's going to realise [the value women have to offer] later in life when we are gone*". It is noteworthy that the lecturer who had mentored Odirile at university faced a similar situation as she decided to leave the department of Architecture at Wits because "*the politics [racial and gendered discrimination] were just too heavy for her to handle*". Once again, Odirile feels 'at home' within the architectural firm because of her relation to her mentor, however her boss's sexist practices which undermine even the strong woman mentor illustrate the illusory nature of home (George, 1999).

On the other hand, Naila, who graduated as a civil engineer argues that she did not experience racial or gender discrimination in the work context. Although Naila graduated with two of her colleagues, the CEO of the institution decided to choose Naila as her mentee. *"And then the CEO of a company she has taken me under her wing. It is nice because compared to there's another girl who graduated with me also was hired and then another guy too and compared to them I have much more experience than the two of them"*.

The CEO of the institution entrusted Naila with the responsibility of managing her own projects which is 'daunting', but Naila explains that her supervisors and managers are very supportive of her career development.

> *"She [Hazel] really throws me in the deep end, she is giving me my own projects already, to small projects it's a renovation of a house into a guest house. And it is scary because although it's small and no where to do half of the time, it's like you scared that you going to waste money, so that you always have to talk to project manager, the architects, the town planner, the staff, and you don't know anything, you know, what the town planner always needs, so you have to do really sit and think and ask a lot of questions … and in my department, my supervisor and the lead manager of very sweet to me, they train me, and do whatever and whenever I have questions or I need to calculate something that will show you how to do it, which boosts your confidence".*

In a merit-based culture, Naila continues to construct her-self as an engineer by outperforming her peers and rising to the top of a 'hierarchy of honour' (Taylor, 1994). In this example, being a young black woman facilitated Naila's progression in the institution because the CEO is a supporter of black women's development. Research has shown that the experience of mentoring is enhanced by through shared cultural backgrounds and women who have experienced similar experiences of racial and gender discrimination (Reddick, 2011).

7.5. Future aspirations: The cultural production of science and creation of new imagined communities

Following Carlone and Johnson (2007), Takalani, Kaiya and Naila would fall in the "altruistic scientist" trajectory because it seems that their interest in science stems from their 'altruistic ambitions' and desire to be of service to humanity. Now that Takalani will complete her degree by the end of the year, she aspires to visit the kinds of high schools she attended in order to advise those who are interested in aeronautical engineering on how they could familiarise themselves with this field.

"[W]hen when I startworking and I have time and stuff, I think I'll, I'll go to schools, to like schools especially the school from where I come from because there have been a couple of kids who are coming from my school to do aeronautical engineering and I see them failing, going through the same struggle that I went through, so I think I'd just go back there and try to explain what this aeronautical engineering is and I'd just advise them to like take a course on just aircrafts … cause the thing is when I came here [Wits], I didn't even know what an aeroplane is unless if I see it flying in the sky, then I was like that's an aeroplane yay! But that's all I knew when I came here and having to study (3) .. in third year so they believe you are now well equipped, now you know everything and the thing is (2) like you don't even know what a wing is exactly, you just know there's this thing, that just stick out the body but you don't really know how they work and stuff and the thing is they don't start there (.) like they tell you it's a wing and you have figure out (.) what it is how (2) is how is it the way it is and stuff so I think it's, it's, very hard (2) if (.hhh) you don't have like a proper background".

She goes on to say that if high school learners, who are interested in aeronautical engineering, have access to videos or programmes on 'aircrafts investigation' they would be better prepared for university. During university, Takalani initially developed a "disrupted science identity" (Carlone & Johnson, 2007) because she was subjected to mis-recognition by her lecturer and peers who do not view Takalani as a competent engineering student but rather a black woman 'incapable' of learning engineering. In other words, her "bids for recognition were disrupted by the interaction with gendered, ethnic, and racial factors" (Carlone & Johnson, 2007, p. 1187). It seems that her experience of racial and gender discrimination, her academic under-preparedness for university and her encounter with failure, have inspired Takalani to develop an "altruistic science identity" as she plans to 'give back to her community' so that high school students will be better prepared for university studies, particularly those students interested in aeronautical engineering. In other words, she views her scientific knowledge, engineering skills and life experiences as inseparable from her altruistic

values (Carlone & Johnson, 2007).

Furthermore, Kaiya believes that her “urge to want to [help people]” stems from her difficult childhood. However, she hopes to establish a career which she could indirectly help people in "*a boundary set environment*” so that people don’t “take advantage of [her] kindness”.

> *“I think maybe that's why I understand the situation [emotion abuse and neglect] and I have this urge to want to help in some way (.) in whatever way I can, and sometimes … I go too deep and I end up the one in trouble, so I don’t really set boundaries when it comes to helping people. I think its something that I need to work on as well (.hhh) to protect myself, as well, it is about setting boundaries. So it has caused me a lot of trouble in the past in the past helping people (2) so people so take advantage of your kindness. And because I have this thing of not sharing my experiences with another, I will give you a clean slate, so you find it's a cycle where (.) I go through the same thing over and over again. I think at some point I did change, I do help people, I don't know-I don't want to use the term selfish or greedy but I do protect myself … I think that's why I felt that the urge (3) that if I could have a career where I could indirectly help people and do it in the right way (3) in do it in a boundary set environment, say I would work in a lab, be it through pharmaceutics or forensic science, I would give back even to the person I don't know and they may not know it was me that did certain things to assist them-their lives but the fact remains is that I did my part and it satisfies me”*.

Two possible reasons why Kaiya decided to pursue a degree in science was because of her “interest in humanity, including both human behavior and human physiology [as well as her] altruistic career goals that necessitated scientific competence” (Carlone & Johnson, 2007, p.83). Naila’s supportive working environment has influenced her aspirations for her future. Instead of "growing someone's company", Naila aspires to 'give back to the community' by becoming a member of Engineering without Borders, and assist countries that are in need of water and sanitation.

> *“I was telling my dad, like, I feel like you have to give back and it’s not, not a lot*

of, a lot of people just say this, but I feel like (2) I'm working … I want to give back to the community and do 'Engineering without Borders' and go to countries where they are in need of water and sanitation, so if I can get the experience and come up with ways (.) I will give back, that's what I want to do. Because what I realised now that when you working, you just work day and night … for a pay cheque … so I really want to do that, that's my future goal".

In this excerpt, it seems that Naila has used engineering as a vehicle for her ambition to join 'Engineering without Borders' which has allowed her to place herself within a community of practice (Carlone & Johnson, 2007). She also plans to do a Masters degree when she has decided on her area of specialisation but at the moment she has yet to enrol for a software development course due to her belief that software will result in the extinction of engineers in the near future. Currently, her main focus is on registering as a professional engineer in the next three years. Naila adds that before getting married and having children, she wants to first establish herself in her career. Although she is career driven, she mentions that she doesn't want to be like her mentor who hardly sees her family because she is always working. For Naila, being successful isn't about being "superrich" but rather *"being content with what you have"* and being able to *"look after [her] family comfortably"*. Naila's decision to establish herself in a career before having a family is consistent with Lynch and Nowosenetz (2009) study in which participants held the belief that women would have to choose between having a successful career or motherhood because managing both domains would be too demanding. However, despite this reproduction of gendered roles, through the cultural production of science, these young women are able to begin creating new "imagined communities" (Anderson, 1983) by redefining what it means to be a black woman in South Africa today. In addition, the category of scientist (engineer or architect) is also shifted and reinterpreted. Takalani, Kaiya and Naila are interested in using their knowledge, skills and life experiences in order to provide high school students with career advice, to make their contribution to "Engineering without Borders" and to find the causes and cures of diseases in laboratories.

7.6. Conclusion

In this chapter, I have discussed how these women's science identities have been constrained within their location in the "matrix of oppression" (Collins, 2002). Within the context of their past secondary schooling, it seems that the women from former Model C schools are better prepared for university studies in STEM fields whereas the women who had attended rural and township schools were faced with overcoming the "articulation gap" (Department of Education 1997, p. 22) between their secondary schooling and their preparedness for the academic demands at university. Thus, the scholarship programme was viewed by these women, who are first generation to attend university, as a vehicle for upward social mobility. During their past (or present) university life, these women struggled to adjust to a white and male-dominated space at university and many of them believed that white students receive preferential treatment from their lecturers. The silencing of young black women occurred when they were restrained by their fear to voice their concerns about what they believed to be racism in the institution and they narrate incidents in which they felt 'singled out' and publicly humiliated by their lecturers and peers. Many of these young women could not find employment upon the completion of their postgraduate degrees and those women who were able to find employment experienced gender discrimination in the workplace. Regarding their projected futures, a few of these women identified with the "altruistic scientist" trajectory because of their desire to generate an income for their families, give 'back to the community' and be of service to humanity through their career goals. Although many other women position themselves within the discourse of traditional gender roles where men are the financial providers in the family and women the caregivers of children. However, despite this reproduction of gendered roles, through the cultural production of science, these young women are able to begin creating new "imagined communities" (Anderson, 1991) by redefining what it means to be a black woman in South Africa today. In addition, the category of scientist (engineer or architect) is also shifted and reinterpreted.

It is noteworthy that the 'matrix of oppression' (Collins, 2002) is further complicated by the paradoxical position that these women occupy. What is particularly interesting are the

ways in which identity-making is taking place among these women by virtue of their coexisting membership to, identification with, and dual sense of belonging to and alienation from a marginal and an elite group. These women have (re)constructed their intersectional identities by identifying with particular social groupings (i.e. young, Black, woman, historically disadvantaged, intellectually talented, a science graduate student) and aspiring to belong to different communities of practice as engineers, scientists, architects, academics and mothers. Thus, their science identity, which is aligned with their class position, is complicated by their raced and gendered identity positions. To use the game of cat's cradle as a metaphor (Haraway, 1994), the three strands that structure all figures include the 'race strand', the 'class stand' and the 'gender stand'. In addition, two hands each hold these three stands. The one hand represents a 'marginal group' and the other hand represents an 'elite group'. It is argued that the notions of 'race', class and gender are not the same in each group (or hand). In other words (and as evident in this study), the 'elite hand' holds science and intellectual privilege whereas in 'marginal hand' holds blackness and feminine oppression. Put differently, these young black women navigate institutional and disciplinary spaces that have historically been dominated by whiteness and masculinity (in science and higher education) as well as specific privileged forms of knowledge-production processes. Most importantly, the 'race, class and gender strands' all intersect at various points, creating new configurations. In other words, these women's paradoxical positioning has creating unique intersections and configurations of what 'race', class and gender might mean for them. Through the intersectional nature of identities, people experience multiple lines of belonging and alienation through multifaceted and contradictory social categories which themselves intersect in 'an infinite variety of ways' (Anthias, 2006; Yuval-Davis 2011).

CHAPTER 8:
A NARRATIVE PORTRAIT OF ALALA CELUKWAZI

8.1. Introduction

This chapter presents a narrative portrait of one participant, Alala Celukwazi. In constructing Alala's narrative portrait, I have been able to consolidate all methods of analysis utilised in chapters five, six and seven. In other words, by conducting a narrative analysis of Alala's interview data, I have unravelled the relationship between the form, content and context of her life narrative. As discussed in chapter five, Alala begins her told story with how she (co)constructed her-self as a 'clever and creative learner' through informal and formal recognition from others. She juxtaposes her 'concordant' childhood (a space where artwork was soul work for her) to her young 'discordant' adulthood (where artwork was no longer enjoyable) and explains how being an architectural student at Wits resulted in the (de)construction of herself because she felt that her creative voice was 'educated out of her'. At the end of her told story, Alala attempts to create concordance by narrating how she is (re)constructing other selves in everyday home spaces in an attempt to reconnect with her 'childhood' or that space where her love for learning and artwork was 'soul work'. Thus, in this chapter I present the structure of her narrative as temporally told in the interview, which follows the primary structural and thematic foci of chapters five, six and seven, namely how she (co)constructs, (de)constructs and (re)constructs her-self as a 'clever, creative learner' and a future architect with and against the (mis)recognition of significant others. First, I provide a detailed discussion of how her told story begins, with particular incidents from her childhood that demonstrate how she began to (co)construct herself as an artist (and 'a clever learner'). Second, I explain how misrecognition, failure and several other barriers have influenced the (de)construction of her-self as a future architect. The focus is on how her 'science' identity that has been constrained within the 'matrix of oppression' (Collins, 2002). I have chronologically structured the intersections of 'race', class, gender, language, and religion in accordance with her past secondary schooling and university life, her present working life and her projected future. Thirdly, drawing on Tamboukou's

(2003) work on women teachers' "rooms of their own", I conclude this chapter with a discussion about the ways in which Alala (re)constructs other selves in everyday homespaces.

8.2. (Co)constructing herself through recognition and expectation

Alala begins her told story with particular incidents from her childhood that demonstrate how she began to construct herself as an artist (and 'a clever learner') through her teacher's recognition of her artistic ability and her mother's expectation of academic achievement. When Alala was in Grade 3 she did not receive any awards at her school's annual prize-giving, although she did receive a handmade certificate from her art teacher commending her performance in art. *"[B]ut then my art my teacher, Ms. Katz, she did little-did little certificates for us, and the one she did for me was one with art (.hhh) it was handwritten and had painted it herself, and it was for the best practical work or art or something, or, I don't remember something along the lines of art"*. Alala suggests that this act of recognition by her art teacher resulted in her believing that she was creative. *"And for me, that, that is where my, my sense of … believing in myself, in terms of creativity started … it made me feel good, I felt, I felt, like, yes I (.) you know I felt that I had done or that I had deserved it all of that I, I don't know, I don't know how it felt (2) it just felt right"*. Alala was able to develop her 'artistic identity' because she not only recognised herself as a creative person but also because her teacher recognised her artistic ability. As Alala self-identified with art or *performed* her identity as an 'artistic person', it might have led her to develop a love for art and an 'internal' motivation to excel at art. In other words, the external reward of her teachers' recognition creates an 'intrinsic' love for art (Rotter, 1975).

Alala seemed to value this certificate more than receiving a formal award because her creative sense of self was personally validated by one of her most beloved teachers. However as Alala's mother questioned the value of receiving a handmade certificate for art instead of a formal academic award, retrospectively Alala argues that being informally recognised for her creativity was disappointing for her mother.

> *"It was that prize-giving (3) it was that actual event, where people were being called on to stage and I didn't get award or a certificate like the former one, like handed over by the principal where are all the parents could see, but I got one on the side, a personal one … my mom was like to me (.hhh) 'ah but why' (hhh) she, she looked at that at that (.hhh) thing, at that certificate, and she was like, 'but why didn't you get the formal one?' and I was like (.hhh) (hhh) I was devastated, I was (.hhh) in Grade 3, and I thought to myself, why didn't I get one of those things … it was a bittersweet day for me, because it was upsetting that my mother was asking why etc. etc. etc., 'why haven't you got that' (3) so I felt like I had disappointed her but then on the other hand, I had made someone else proud".*

Her mother's 'apparent' disappointment made Alala feel that being creative was inferior to academic achievement, which acts as an impetus for Alala to work hard in order to achieve formal recognition that would make her mother proud.

> *"[S]o, so, so, at the beginning, that is what drove me … that is what drove me, to be academic, and to always work hard, and just try to do, the best, so that my mother can be proud of me (5) so that she can no longer ((laughing)) so that she doesn't ask me, 'why didn't you, why, so so, that was the, beginning, that was, the drive".*

In these excerpts, Alala tells of her recollection of an early school event of her mother questioning why she did not receive an academic award. Taylor (1994) notes that "in a system of hierarchical honor, we are in competition; one person's glory must be another's shame, or at least obscurity" (p. 54). At the prize-giving, "*all the parents could see*" which children received academic awards. Thus, in retrospect, Alala views her mother (and herself) as being left unrecognised and alienated from others through the event. Her mother's 'apparent' disappointment made Alala believe that formal recognition of intelligence holds a higher position in the "system of hierarchical honor" (Taylor, 1994) than informal recognition of creativity. "*[T]hat is what drove me, to be academic, and to always work hard, and just try to do, the best, so that my mother can be proud"*. Furthermore, as Alala's mother is a domestic worker, these results are very interesting as

much research (Astone & McLanahan, 1991; Buchmann & Dalton, 2002; Marjoribanks, 2002; Qian & Blair, 1999; Shavit & Williams, 1985; Walpole, 2003) that claims parents with higher socioeconomic status have higher educational expectations for their children as compared to families with low socioeconomic status. This alludes to intergenerational shifts as her mother's high expectations of Alala's academic achievement may reflect not her class but her 'middle-class aspirations,' particularly as invested in her daughter. Cooper and Subotzky (2001) argued that the main factor driving transformation or "the student revolution" in South Africa is not government policies but rather "the middle-class aspirations of black students and their families" (p. 231).

When Alala was in Grade 7, she was formally recognised as being 'artistic' when she won an art competition in primary school.

> *"And I remember also in Grade 7, there was this, this competition (2) that we did and it wasn't a major thing but it was a competition where we had to create something, something out of nothing (.) and what I did is, hmm, I created I used, hmm, bottles, coke bottles and I did a vase, like a duck, so I only used that a paper-mâché, and paint and (.) it came out on top"*.

Furthermore, she was also formally recognised for her academic achievement as she was awarded a five-year scholarship to attend a former Model C high school. For Alala, the reward of recognition is contingent upon the reinforcement provided by an-other. Although Alala may perceive her art and academic achievements as contingent on her own efforts, her efforts were in face driven by her mother's high expectations (Rotter, 1975). Alala becomes conscious of her-self through her teacher and school, both of which perceived her as 'an artistic and clever learner' (with competence, as confirmed by winning competitions and scholarships). Thus, through the recognition of an-other, Alala recognised herself as 'an artist' and 'a clever learner'.

By choosing to begin her told story with these particular incidents, Alala emphasises an aspect of herself that makes her who she is. *"[F]or me you know, those are the moments, that had, had made, they have made me my life and that have .. made me feel like, okay*

I've got it, I can do it". Her self-confidence is rooted in her artistic (and academic) talent and, importantly, the recognition of this. Achieving this recognition makes Alala believe that from a young age, she was a curious, creative and contemplative person who always had a passion for learning".*[B]ut, I also did like, I liked, I liked learning, I like, like finding out about things, I like talking to people, I like, I like seeing what they-what they have, what is behind …. what is behind, the face value, what is behind that, I like that. So I like learning. So I had that drive to learn"*. These excerpts illustrate that receiving recognition from her teacher and winning an art competition provided Alala with the raw material or content that she uses to describe and compare her-self and the basis on which she develops her identity (Fay, 1996).

Toward the end of her told story, Alala argues that receiving awards "kept me going" or continually motivated her to work hard at school, though she says, rewards are no longer important to her. *"[L]ike I had gotten a lot of awards and a lot of achievements and a lot of certificates of merit (2) but now I look back … They made [me] at that time, they were important but right now they are not"*. This shift in the valuation of awards becomes particularly important when dealing with challenges at university. When I asked Alala why she began her story with the root cause of her drive, she said that if I had interviewed her five years ago, before her encounter with failure, she would have started at a different point, most probably at Grade 7 when she was formally recognised with trophies and medals.

However, the incident she presented at the beginning of her told story *"is what made me, this is what encouraged me to do arts and, and that's I mean, that lead me through that shadow, that shadow that I walked with, and I would have said all those prizes and all those medals"*. Reflecting on her relation to competition and recognition, Alala explains that her parents had always told her *"you have to do better than 'so and so' at school, you have to be number one*," but when she was in high school she says she decided to detach her sense of self from achieving awards.

> *"[W]hat if, what if, what if I lose it all (4) and I did, oh my gosh that was the premonition ((laughing)) because I always thought to myself, fine you getting in*

the top 10, and your A's but what if I-what am I, I asked myself this question (3) I remember journaling about it, I was like, who am I without the marks and without people patting me on the back saying 'well done, you got 80% for that test'. I was like, I am this person, and I defined that person and that person has got me through, has got me through when I came to varsity and all I had was 45% and 49% that was weird, that was really weird (2) I never really thought about it".

Instead, she redefined herself as 'someone who always liked to create'.

"In high school, after I decided no but I saw it, by-they are not going to define me, I had to go back and redefine myself, as who you are (5) I always liked to create, to create things for myself and that's, that's what this prize led to, it captured that, it captured the reason I started because it captured me (2) at home, and me, at school, because that's where I learnt to do the things, I, to get, get interested, I mean what I did with the bees is terrible but I made a radio, and then put them inside and they sang ((laughing)) so it was just creating, it was, it was horrible but it was creating stuff for myself".

During her schooling career Alala internalised the standards of excellence within a merit-based culture and defined her sense of self through the 'raw material' that was supplied by recognition from others and through obtaining awards. However, she reflects back on a time in high school when she says she 'imagined' a situation in the future in which she would no longer be able to draw on this 'raw material' as evidence for her intelligence and competence. Thus, in retrospect she argues that she decided to "*redefine [her]self*" with new content as someone "*always liked to create, to create things for myself*" which she believes is intrinsic to who she is. Recognising that she has the agency to "*redefine me*" may have been liberating for her in the sense that it unlocked the possibility that she could be different from what she and others believed her to be (or not to be).

8.3. (De)constructing herself through misrecognition and failure

8.3.1. Secondary schooling: I chose architecture as a career because I am my family's

‘retirement plan’

Alala mentions that her family’s financial situation declined when her father died and her mother lost her job in 1998. During this time, Alala’s teacher helped her find a scholarship that would fund her attendance at a former Model C high school. “*[A]nd then there was this teacher, that’s-I do know, she believed in me, or she saw something (2) and she organised for me so that I could, I could, we could work out a payment plan, that my mom could-my mom had just lost her job in 1998, so so she she found a way, to a payment plan to work out”*. When she was accepted into Architecture and Fine Arts at Wits, Alala’s mother advised her to choose whichever career she was most passionate about. *“And, and I keep reflecting and going back to that moment when, I was like, I remember (.) asking my mother which, which I should do art, fine arts or architecture and she was saying to me ‘whatever you want’ ((laugh))”*. Ultimately, she chose architecture as a career for two main reasons. Firstly, as she was “*most passionate about maths and art*” it made sense for her to “*put them together*” and apply for Architecture which “*is a thin line, they say it’s a thin line between science and art*”. The second reason as to why she chose to study architecture (as opposed to fine art, as mentioned above) was because of her family’s financial situation. “*You have your school to worry about, you have your passion to worry about, you have your dreams to worry about, but you also have your family and people [to worry about]”*.

Being a first generation student, Alala chose her degree according to whether it was viewed as more likely to help her support her family. She refers to herself as her family’s ‘retirement plan’ and compares this situation to other people who have families that are relying on them financially.

> “*But then, but then looking at your background and where you come from, you don't come from the most, wealthy wealthiest family, you know and when you-when you choose your degree, you choose that according to, okay fine so I like it enough, can I do it, and can it, can it help me to support, to support, to support people-I don't know what I was watching but oh yes it was the Ellen Degeneres show ((laugh)) and this guy helped this other guy but the point is, he, hmm, his*

father started this car shop, and hmm … And now, the he's running-this son is running the shop-and he was saying to Ellen, that hmm he, is his father's 'retirement plan', so it sort of feels that way for us, for me as well".

Alala feels she "should've gone into the arts" even though she believes she would be in the same position. "*And I keep reflecting and I think to myself, that maybe I should've gone into the arts, not that I think that it would have turned out differently, but .. but somehow I feel, that I should've gone into it".*

8.3.2. University life

8.3.2.1. My background is not shared by the dominant culture

Alala believes that there is neither room for her ideas nor space for people from different backgrounds in the architectural department at Wits, and she sees this as ultimately leading to her academic exclusion. For instance, she feels that her views about architecture, which are informed by her background or culture, were not shared by the dominant culture and that the Eurocentric curriculum does not give black women the space in architecture to convey their ideas. Further, Alala implies that the staff members who are predominantly white men "*try and shape us into (.) what (.) they (.) want (.) us (.) to be"*. Alala alludes to a dominance of masculinity and white supremacy in the architectural profession (Fowler & Wilson, 2012; Heynen, 2012; Spaeth & Kosmala, 2012; Troiani, 2012) and in the institutional culture at Wits. Although Wits is committed to transformation and eradicating its past discriminatory practices (Wits, 2004), several studies have found that black people in general (and women in particular) still feel alienated on campus due to the dominance of a white male, Eurocentric institutional culture (see for example, Bradbury & Kiguwa, 2012). Furthermore, there is a growing body of literature about the experience of racism by black students at Historically White (English-speaking) Universities in South Africa (see, for example, Cooper 2005; Daniels & Richards 2006; Erasmus, 2003; Graaff 2006; Kapp & Bangeni 2006; Jansen, 2004; Makobela, 2001; Soudien, 2008; UCT 2004; 2005; Woods, 2001; Wits, 2002, 2004).

Alala believes that architecture ought to be “about the human and about humanity” and not “about monuments and creating things about your ego”. However, as an architectural student at Wits, she felt that if she had valued the latter, she would not have failed.

> “*If I go back, I will still believe and I will still fail because I believe in this, it’s, it’s a human thing (.hhh) it is so important in our lives, it’s a social art … but then I think the way you shape the spaces shapes society … And I think, it’s, it's important-we don't even realise, what spaces do to us … as people, we are, we are, we are blind to it, like we go through spaces but they affect us, they do-they have to, it's sort of our third skin .. And it's so important, as a social art, and I think it's about human, for me about the human and about humanity and about people and I think the way architecture is going, it's just about monuments and creating things about your ego and I didn't want to do that*”.

In Fowler and Wilson’s (2012, p. 71) study, their participants (who were all architects) claim that male architects generally built “monuments to themselves” and that there was “a lot of arrogance and big egos in the profession’’. There are few role models in architecture with whom Alala can identify, as it seems that the majority of architectural staff members at Wits are white men. In addition, Alala describes the teaching and curriculum materials as “Eurocentric” because she felt that, as a black woman her appropriation of the social relevance of architecture in South Africa was undervalued and excluded by the department. Goduka (1996) has noted that curricula in higher education are heavily informed by the European tradition and professors who are predominantly white males, particularly in STEM fields, may not be prepared to address diversity in the curriculum. Furthermore, Toni and Oliver (2006) found that students at a previously white South African university struggled to adapt to a new and unfamiliar environment that they perceived to be unwelcoming of their culture. Similarly, several studies report that women’s attrition in computing may be attributed to a classroom or workplace environment that is unresponsive to women (Weinberger, 2004; West, Ross, 2002).

Alala feels that as she “*didn't want to [create things about her ego]*” she struggled to

obtain good results because her ideas about architecture were informed by her background.

> "*[T]hen you have ideas you know, and also you're coming from a different background, and architecture was set, well the curriculum was set in a certain-in a different way from what your background is .. so you've got your ideas-you're from a different background and you come, and you present these ideas that are real to you (3) that it's, it's about culture, it's about creating …… I don't know, it's, for me we can bring each other-like society would be much better if architecture were way better .. and (.) you present these ideas*".

Based on these accounts, it seems that the undergraduate curriculum in architecture (as in science and engineering) not only exists within a meritocratic ideology (Eisenhart & Finkel, 1998; Johnson, 2001; Nespor, 1994; Seymour & Hewitt, 1997; Traweek, 1988; Carlone & Johnson, 2007) but is also aligned with dominant cultures of whiteness and masculinity. These values and norms have alienated Alala as "the curriculum [is] set … in a different way from [or does not accommodate] what [my] background is". This finding is consistent with that of Seymour and Hewitt (1997), who discovered that 'students of colour' embodied values that conflicted with the masculine norms with which the science departments aligns itself. Thus, they concluded that 'students of colour' in the US as well as white women were faced with more challenges in their pursuit of a STEM degree than their white male counterparts. In working towards a multicultural curriculum, there ought to be a greater place for black women. Through her education, which Alala describes as 'Eurocentric', she is not only missing important insights from the exclusion of black women from various cultures, but she is also presented with a degrading view of herself "as though all creativity and worth inhered in males of European provenance" (Taylor, 1994, p. 65). If "recognition forges identity" then it would seem that the 'Eurocentric' education that Alala describes has "entrench[ed] their hegemony by inculcating an image of inferiority in the subjugated" (Taylor, 1994 p. 66).

Alala provides an example of how her set of beliefs about architecture is inextricably tied to her background.

> "*I remember, I remember there was a discussion in 'schooltalk' about how, for example, hmm, it was about the whole Eurocentric teaching and (.)… I remember a key point was that hmm (.) In English houses or whatever you have when you enter you have (.) hmm an entrance hall, with I don't know mirrors or whatever, but with us-with black people, you have to go around the house, you don't enter in the front of, I was just, for me that just about cos those are the differences-I mean you grew up going around the house and for you, when you go in design that is imprinted in your mind-so when you put down stuff like that, that's what you have (.) and if people wont hear you, and would here, where you come from (2) then obviously they won't understand"*.

As she felt that her lecturers did not 'hear or understand' her point of view, it seemed that she felt forced to negate her-self as defined by blackness and femininity in order to embody the dominant notion of an architect (Stratigakos, 2001). In other words, Alala implies that she may have passed if she designed 'typical English houses' and 'created things about her ego'. It seems that by ignoring the 'cultural particularities' of Alala's background, the institution has contributed to the denigration of her cultural and personal identity. Alala and other students who feel like strangers to the dominant culture could be viewed as living at a 'cultural crossroads' as they experience "contrasting expectations as to how he or she should live, the subject becomes aware of the essentially artificial and socially constructed nature of social life, how potentially fragile are the realities that people make for themselves" (Plummer, 1983). In their research study, Leibowitz, Bozalek, Rohleder, Carolissen and Swartz (2010) found that students with particular life experiences, for example being marginalised or living at a 'cultural crossroads', are better able to meaningfully engage with the subject matter.

In addition to feeling excluded from her discipline as she felt that her background and beliefs were not shared by the dominant culture, Alala also felt ignored by the interactions between lecturers and white male students. When I asked her whether she believed that black and white students experienced the same difficulties with assessment and the curriculum, she feels that white, male students received preferential treatment

from lecturers in comparison to black [and women] students:

> *Sabrina: Where the white students able to fit in better, would, did they also struggle because like you said you come from a different background, you walk around the house instead of the front door because the curriculum is catered or Westernised and Eurocentric, so do think it was easier for them?*
>
> *Alala: I don't know Sabrina, you know I don't-I don't like to take away from other people's experiences.*
>
> *Sabrina: Ja okay, but if it's a picture of a leopard and it's ugly, it's ugly; I don't care how wonderful it is to that person ((Both laughing)).*
>
> *Alala: Like on face value and if I had to be judging, I would say that they [white students] had it way better than we [Black students] did, obviously it was rough for them as well because I mean the whole 'I'm going to give you a 60% thing' it's not nice for anyone, but they had it better … I mean Sabrina, I use to watch their [lecturer and white male students] interaction maybe this will help clear up, I used to watch the interaction with maybe it's us, black students or whatever that weren't friendly enough or whatever but some, some students when they got greeted [by lecturers] they got handshakes, like 'Hi Donald, Hi Peter, how you doing? How was your weekend? Did your father fix that? What work he needed to fix' and I'm like I'm thinking (.hhh) but you don't even remember my name and you remembering his father things and, that's that's the type of thing at times I mean it wasn't, it wasn't, it wasn't nice.*

In this excerpt, Alala feels that her lecturers treat white men as their equals by recognising their names and personal details, "*'Hi Donald, Hi Peter, how you doing? How was your weekend? Did your father fix that?"* whereas she, as a black woman, feels invisible or non-recognised, *"you don't even remember my name"*. Taylor (1994) notes that "Nonrecognition or misrecognition can inflict harm, can be a form of oppression, imprisoning someone in a false, distorted, and reduced mode of being (p. 25)". When I asked Alala whether "it [was] just with the men or all the women as well?" she explained how the women would try and flatter the lecturers with coffee and muffins.

> *"Oh no, the women, they would buy coffee for the lecturers and that's just awful,*

that was just disgusting and I was like whatever (.) just go and buy the coffee and the muffin or whatever just go, that was upsetting … the whole class is there and you know we are all there, I was like okay, it's just funny".

Alala understands herself as a subject of racism and sexism at Wits and she experienced intolerance for her background and culture by lecturers who 'tried to shape us into what they wanted us to be'. She was left with the task of dismantling the "burden of the racial [sexist] experience" (Erasmus, cited in Soudien, 2008, p. 9) because she views the institutional culture in architecture at Wits as being aligned with the cultural orientations of white (male) students. Bourdieu and Passeron (1977) argue that the transmission and accumulation of dominant forms cultural capital perpetuate structures of dominance and social inequalities because cultural capital is unequally distributed according to social class and education, and institutionalised as legitimate. Those who possess it (for example, white male students at HWUs), are placed in a position of privilege and power in society. Alala has 'inherited' different forms of cultural capital from her family, whose social class unequally influenced her educational prospects (Bourdieu & Passeron, 1977). Fowler and Wilson (2012) interviewed 72 architects in Scotland between 1998 and 1999 and found that only one woman participant in their study had a mother who was also an architect (Collinson & Hearn, 1996) whereas Spaeth and Kosmala (2012) argue that "the model for generational succession" of architects typically involves a male role model, which may perpetuate the masculine domination in architecture. For Alala, a young black woman, also the first generation in her family to attend university and pursue architecture as a career, her "habitus" in architecture at Wits make it difficult for her to navigate institutional and disciplinary spaces.

Alala expresses her view that the university should be a place where "everyone's ideas need to be heard", that everyone has something of value to contribute, and that no one should be silenced. *"I don't think, I think, I think if you went to university, and you made it through first year, and second year (2) that you're not stupid (.hhh) I don't think anyone is stupid you know"*. There are those people who "will create their glamorous stuff" but then there are also those people who will "create other stuff". One kind of creation should

not be privileged over the other "*there is a place for everyone but you just need to hear everyone out, it mustn't be a select few"*. She provides a critique of transformation at Wits in that its public discourses and policies may advocate transformation but in practice the 'old regime thinking' remains intact.

> "*Agh Sabrina, this is a conspiracy theory, I'm sure-but the University, the University is meeting their numbers that they need to meet and then that's set, I mean there is no actual exploration, I mean when, when you changed from the old regime surely you should have changed the old regime's thinking, practices and I'm not saying we change everything or throw everything out the window, that's just silly but we have to do, incorporate what has been, what has kept quiet for so long"*.

In this excerpt, Alala argues that "the old regime's [apartheid] thinking [and] practices" remains intact within the university's value system. In other words, she believes that although numerous students enter and leave Wits every year, including the increasing numbers of black students, the institutional culture remains unchanged. As a result, "what has [been] kept quiet for so long" continues to be silenced. This might be the case because obdurate institutional and disciplinary cultures view students as 'guests' rather than members, and the traditions of universities globally are very entrenched (Thaver, 2006). Thaver (2006) notes that the notion of 'not being home' means, "that the history or the socio-political sagas of an institution and its context bears upon its institutional culture like a "dead weight". It is written into institutions at their very "core" (p.19).

Alala provides an example of how the university fails to acknowledge the kinds of knowledge that have been silenced for so long, she narrates a time when she failed her oral exam for her architectural model, which was surprising for "*even the, I mustn't-the white students were like, 'no, but your work is good enough'"*. For instance, when Donald (her fellow classmate) saw her model "*he was like 'wow your model', and he was like 'what did they give you', and I was like 'they failed me Donald', and he was like 'that's not fair', he was like to me 'that's not fair'"*. As a result, her classmates asked her if "*she was going to fight it*" but she "*was so, I was so scared to speak out, and, and I*

mean it was so obvious we all agreed, even the, I mustn't-the white students [agreed]". Alala says that 'even the white students agreed' that "it" was obvious, which implies that her failure was informed by "it". In other words, Alala felt that the lecturer did not acknowledge her background, which inspired the idea for her model. She says:

> "*you're putting yourself into the work … I mean you're putting, I think in Honours and Masters, you're putting your energy (.hhh) your ideas into that, I mean that inkling of passion that is, I want to do this, that, that is putting yourself, that is putting yourself into into the work … it's a war (.) it's a battle"*.

In the university context, Alala should have the opportunity to engage with deep bodies of knowledge that open up new modes of being and the possibility of self-construction (Soudien, 2008). However, Alala's raced and gendered identities were further complicated by her academic identity situated in the discipline of architecture. Alala's experiences within this discipline suggest that the institution continues to adhere to the ideologies of a racialised patriarchy, implicating the very nature of knowledge production itself. Instead of recognising her background, Alala believed that her lecturers and tutors perceived her to be "crazy" because of her belief that architecture is a 'social art' but she says:

> "*I'm actually not, it's been done, there is evidence of it, all around us there's evidence of real architecture [i.e. her perspective of architecture] and yes, I mean it's beautiful when things are, are just shiny and glamorous but for me, that was a struggle that I went through"*.

But then Alala goes on to say, "it's not to blame the lecturers" but rather she attributes her exclusion to "*[not] expressing myself properly regardless of the hours of work that I put in-I put in a lot of work, I, I didn't sleep ((laugh)) when I at school (.hhh) I never slept"*. Perhaps the main problem was that "*I wasn't able to find a way, hmm, to find a different way to convey my ideas"*. Bourdieu (1993) explains that in a 'field', such as higher education, people ameliorate their positions of power through the use of economic, cultural, social, and symbolic capital. Further, Bourdieu and Passeron (1977) contend that teachers and schools are central agents of exclusion and play a critical role in reproducing

class inequality. It may have been difficult for Alala to get recognised as a potential architect not just because of her audience (mostly white males) but also because of the cultural meanings of being an architect, which (as she has argued) are aligned with white masculinity (Carlone & Johnson, 2007). Put differently, feeling “crazy” or being perceived as “crazy” by her lecturers and tutors could be viewed as a mechanism for ‘silencing’ young black women and reproducing the status quo in architecture (Carlone & Johnson, 2007).

Drawing on the work of Martin and Mohanty (1986), Thaver (2006) argues that there is a “tension between "fitting in", which to some extent implies assimilating, and reproducing a given institutional culture (process of re-socialisation) [and a] tension of expressing one's cultural identities even though they may be dissimilar from those of the institution and thus potentially running the risk of being stigmatised as the "other", the "outsider” (p. 20). In this case, Alala is ‘stigmatised as the inferior other’ because she is made to feel “crazy” for expressing her cultural identity in architecture at Wits. Fanon (1968) writes, “The feeling of inferiority of the colonized is correlative to the European’s feeling of superiority” (p. 93). For Alala and other students who feel that they do not belong to the dominant culture, they may be pressurised to repress their cultural identities in order to feel ‘at home’ within their institution and discipline. Hook (2004) writes:

> “To be a colonised subject, or the subject of cultural oppression or racism, in Fanon’s (1968) account, is to be continually fed with cultural values and understandings which are not one’s own, which are primarily hostile, and which consistently de-evaluate both me and my culture. It means to exist in a state of little or no cultural resources of my own, because they have been eradicated by the cultural imperialism of the coloniser (p. 95)”.

In commenting on Fanon’s thoughts about alienation, Jinadu (1980) argues that “psychological violence then becomes a form of cultural imperialism in the context of the colonial situation...its victim is an alienated person, in the strong Marxian sense of man becoming a stranger to himself” (p.48).

8.3.2.2. How creativity was assessed and educated out of me

Alala argues that the lecturers did not use objective criteria in order to assess the students' assignments; instead she believed that they relied on their subjective sense of 'what kind of mark' the assignment (and the person) deserved:

> *"[A]nd you know how Sabrina, they give you your marks, they go like 'let me see, hmm, I'll give you 45%' that's how they give you your marks (.) there is no there is no criteria when … I was there, there was no criteria, there was no 'okay fine you handed … your door widths are correct, your window correct, there won't be water in your house, we are building it was, hmm 'let me see, what [mark] I shall give you".*

In order to understand how the assessment of aesthetic or artistic aspects of architecture may be subjective and biased against black women, I ask Alala to talk about the relationship between the process of making art and doing architecture.

> *"Sabrina: So you've spoken about how difficult it is to be in architecture student at Wits … and you said that art was spiritual for you and that the two most favourite places were art studio and the library, so tell me about that in more detail for me, do you remember anything more about the process of making art? I always wondered in art how do you judge something to be great and something to be ordinary, how do you know, you know?"*

Firstly, she explains that people judge a work of art as relevant (or not) depending on whether they relate to the values and ideas embodied within the artwork.

> *"I think with arts you know you can't, I mean you, you have to do, because you're forced to by a, but (7) that's (2) in terms of people, I think there is links between people, I think there are people of similar personalities, so when you go in, you go in with your values and your ideas and you look at five pieces of different works, I feel like the one that you will find as the most beautiful or the most wonderful is the one that you can relate to".*

Secondly, she argues that through the process of making art, “you put yourself onto paper” or the work is a reflection of one’s values and ideas. She also links this “therapeutic” process with ‘losing track of time’, or “losing oneself to find oneself” (Ricoeur, 1994).

> *“I think that's how we judge it and that's where the difficulty comes with architecture and how subjective it is because you come in here with your values (3) and how you view architecture and then for me when I see art, I don't know about now, when I sat down and drew I just, I just (.hhh) left this world Sabrina (hhh) I just left this world and everything felt fine, it like (.) I don't know … it's a type of feeling that you get, you know you can take all those Bhudda quotes, and they makes sense in that moment, when you're drawing and you're putting yourself onto paper, your pieces of yourself”*.

I then ask Alala what motivates her to ‘put herself onto paper’, what fuels her desire for expression, and whether she has a concept in mind before she creates an artwork. In response, she likens art to writing and speaking in that she is inspired to create, express and communicate when she has an idea to convey or story to tell - a voice to share.

> *“For me alone, I don’t draw if I don't have an idea, it's the same, I don't write, if I don't have anything to say, I don't like to speak, if I have nothing to say (.) so I don't know about other people but with me I only put down something, that's when I am regulating myself, self-regulation ((laughing)) I only put down something when I have something, when I have a vision or feeling of something that I saw and I want to want to put down on paper I want to relay, I want to tell a story, I wonder who, say this is what I see the, this is (2) this is what I have to say through this painting through this piece of writing, that's how it happens”*.

It is evident that Alala endeavours to renegotiate the culture of architecture in relation to her personal reflections on what it means to be a black woman architect in South Africa. Gadamer (1982) and Ricoeur (1991b) explain that we continually participate in producing, determining, and creating new ways of belonging to tradition through the play of “sedimentation and innovation”. These excerpts demonstrate the complexity in

assessing the technicality and creativity of an architectural project. Whereas the technical aspects relate to one's understanding of building materials and structures, the creative aspects relate to a person's background, beliefs and ideas about architectural values. Bergström (2014) argues that architects continue to be "educated along traditional lines, despite the efforts made towards reform in architectural education, emphasising the individual skills needed to carry out projects in the early phases, while neglecting the social dimension of professional practice". Thus, it seems that the architectural department at Wits may be faced with the challenging task of (re)designing a curriculum that achieves "a workable marriage of applied science and artistry, classroom teaching and reflective practicum" (Schon, 1983, p. 171).

Alala argues that university students should be given the freedom to design buildings that are not only technically sound but that are also an expression of their architectural aesthetics and values, which have been informed by their background.

> *"[W]e should be allowed to be ourselves-but within reason, of course you can't, you can't be creating, I do know, things fall down, the technical part of it is important, but the essence of it, is that it's social art, I really believe that I .. It is about humanity and … its it's a need Sabrina, it's shelter, it's a primary need".*

In this excerpt, Alala argues that space is social or social space is a social product (Lefebvre, 2009), thus the "essence of [architecture] … is about humanity". Similarly to Takalani, Kaiya and Naila, Alala would also fall in the "altruistic architect" because she believes that architecture is a "social art" that should serve humanity (Carlone & Johnson, 2007). She identifies with her friend, Busisiwe's view of a people-centred architecture:

> *"In housing, she [Busisiwe] was upset about something, about people creating housing and not understanding what people need, so is so all these housing, these housing projects, they are just sort of (.) I don't remember what she said, like white architects, or architects that don't understand or don't, are not in tune with that sense of humanity, they just creating things so that they can have and she is like, for example, you can't take I mean people living in shacks and whatever they need, I mean they have managed to create a home for themselves with a little,*

very little-so they don't need so much … they don't need fancy stuff, they just need a home and her point was that you can't, you can't make our housing elitist especially when you're designing for a certain type of people, that don't need elitist, that fancy stuff (.) ja she get so mad … in creating housing for someone who lives in a house and someone the lives in a shack is two completely different things, and also you've got to understand why, why they needed housing where they come from, I mean it's the whole, story narratives".

Pellow (2012) argues that modern architecture in Ghana is regulated by culture and tradition. The architects' habitus and the kinds of cultural capital that s/he possesses could become problematic if the architect is unable to "translate cultural values and needs into design proposals which meet the requirements of clients influenced by Western styles and models, but who, at the same time, are bound by different colonial and indigenous traditions" (Grubbauer & Steets, 2014, p. 82). In the South African context, it is evident that diversity in students' backgrounds complicates the challenges facing contemporary architecture, university teaching and assessment. Teaching and assessment could be viewed as a social practice (see, for example, Broadfoot, 1996; Filer, 2000; Gipps, 1999; Shay, 2005) that is concerned with people's habitual acts of judgment making. The use of criterion-referenced assessment teaching and assessment practice poses numerous challenges for teachers and students because the meaning of the 'criterion' is located in space and time and changes in different contexts (Shay, 2008a). These habitual acts of judgment when formulating curricula and assessment criteria are predominantly performed by lecturers (white men) who not only come from a different background to black women, but who also occupying positions of power. This may lead to the creation of assessment tools that reward dominant culture-related competences (Bourdieu and Passeron, 1977) instead of Alala's competences that have been informed by her own culture and background. For instance, Alala believes that her architectural aesthetics are devalued by the institution because she not only received low marks for her projects but also due to the reactions she received from her lecturers and tutors, "they think I'm crazy". It is unclear whether, in reality, the lack of technical skills resulted in her failure, although Alala evidently believes she has the technical understanding. Instead, she argues

that her feelings of alienation are due to her architectural values, which she believes are not shared by the dominant culture in her department. *"[A]lso because it's an art and I understand the technical part of it (.hhh) I mean that stuff you can learn, it's, it's the door is whatever you can learn … You can get creative this way, you can get engineers to help you do this etcetera etcetera … But it's it's about people, it's the essence of it, whose, who's going to be using it".*

I returned to the topic that Alala had introduced regarding how the same 'formula' that helped her excel in high school was ineffectual at university. I was interested in how she made sense of this dubious formula and what feelings the experience of failure evoked. Her experience with failure not only made her feel 'defeated' and 'embarrassed' but also 'very angry' because she believes that her lecturers failed in their duty to teach their students independent and critical thinking, as well as failing to recognise her artistry.

> *Sabrina: Do you remember the first time that you realised that you had failed, do you remember how did that felt like, that in high school you hadn't felt anything like that how to make sense of that?*
>
> *Alala: You mean failed or failed for the first time in third year?*
>
> *Sabrina: Oh later this is what you were saying, that when you worked hard in high school, you got the results but then university you still worked hard and you, say failed a project or something like, how did you make sense of that?*
>
> *Alala: It was devastating (.hhh), hmm you just feel defeated you know, when you put your all into something, and you work hard and then (hhh) and then people don't see that [or] recognise it when they should, I mean they're lecturers, they are supposed to find the good in all of us, I know that we all don't know anything, (were) stupid when we come to mean (that idea), but you are supposed to find the light and harness that and try and help us grow. For me … that's what the teacher is, you don't try and say 'eat this, this is the book of life, eat it's this is what I'm telling you'. I do know, I was sad (.hhh) I was mad, I was very angry, very angry, but I was like 'okay fine I got back, I'll do it again' but then also I mean you worry about what people think, it was, said it was embarrassing (.hhh) it's upsetting, and then you go back… I tried everything when I went back I tried everything,*

[my tutor] came and he helped me, and he sat with me, he worked at me, lots of people helped me, I stayed up, I made models (3) it was just, is just like, 'what do you want from me?'

Alala continues to explain how she felt that the feedback her lecturers offered for her models was unjust and unfair.

Sabrina: Did they ever say to you, 'this is what is, this is what's wrong?'

Alala: Do you know what they kept saying Sabrina, 'you're just, you just not there yet'.

Sabrina: How are you supposed to work with that?

Alala: And I would ask them, and I remember, okay, I remember, I remember one thing now that in my last crit (.) I had it was a roof project for construction, and I had, I had over designed it, to-over thought it, that's what he said and I had, I mean there was a simple solution but I couldn't find one so I worked on it, I worked on the detail and I tried to figure out different ways to make sure that the water doesn't go into the building, it worked, it was expensive I understand, but it worked Sabrina and he said to me 'I had over designed it and that's why I would fail'. I mean if I'm over designing then doesn't that mean that I'm thinking about this and that I'm trying, and I actually got a solution, even though it wasn't an ideal one, it wasn't ideal, it would have been expensive, but then I had tried you know. I don't think overthinking is a problem, I don't think you fail a person for overthinking.

Alala argues that lecturers should not "fail a person for overthinking" because she believes that it is the responsibility of the lecturer to make their students think. But if students lose focus on the problem at hand because they have "over thought" it or 'got lost' in the details (as in Alala's case), then it is the lecturer's duty to guide his or her students "and try and help [them] grow" instead of failing the student because "you just not there yet". The design studio is a core aspect of the architectural curriculum; Cuff (1991, p. 126) argues that as "crit" and "jury" treats students as "passive recipients". The professional practice is structured in a way that discourages the interrogation by others.

Ahrentzen and Anthony (1993) argue that students fear design juries as "the Gods themselves" because the assessment of their models determines their future careers. Ahrentzen and Anthony (1993, p. 16) conceptualise the "Mister Mastery Mystery Phenomenon" within the architectural studio in which lecturers "rarely help students recognize the ideas and theories design decisions". Instead, they may say something like, "*you're just, you just not there yet [or] you had overthought it*", as in Alala's case. As a result, Alala is led to believe that 'mystery' implies the mastery of the lecturer, who is typically a (white) mister. These 'misters' or 'men as Masters' may occupy their positions of power without much reflection on the assumptions which inform their critique of different models, "[t]he master apprentice model that is reinforced in the design studio is highly patriarchal" (Ahrentzen and Anthony, 1993, p.98). The discourse of exceptionalism within architecture may explain "a sense of self enclosure within the discipline, a closed circle of conversation where only architecturally trained researchers, themselves inculcated and encultured into the discipline, are seen to truly understand the identities, motivations, and idiosyncrasies of architects" (Stead, 2012, p. 32).

However, it is noteworthy that it is not always the case that male architects do not question the assumptions of hegemonic design in architecture (or that women do). For instance, when I asked Alala whether there was anyone in the faculty that was willing to help, listen to, or fight for her ideas, she talks about two particular lecturers, Jewel (Black woman) and Peter (white man). Jewel was willing to listen to Alala's rebuttal of the marks she was given, but was unwilling to fight for Alala the way Peter did. The other lecturer, Peter, was not only Alala's 'cheerleader' but he had fought for her during an oral exam because he 'got me' or understood the ideas or viewpoint. Alala states:

> *"I did not like any of them and no one was willing to help me … Jewel [a lecturer] in second year, she helped me and Peter Jones [lecturer] got me at the end, at the end of third year, he got my ideas (.hhh) he got what I was trying to do and he was there, he was my cheerleader, at the oral exam and he was fighting for me and he was like 'okay, this is what you were trying to do etc. etc.' and that was the only time. And then Jewel, but Jewel was not really fighting for me, I was fighting her, I was, I was very angry in second year and I was like Jewel you know*

(3) architecture is different you know and I went to her and I was like Jewel 'I'm talented and I'm a genius and you're going to pass me', I, I went and fought, those are the exact words sort of half phrased, I said to her and she never forgets me for that ((laugh)) about how I went to her and I was like 'you're going to pass me, you can't fail me'. I understand that I'm not giving you what everyone else is giving you but I have it".

Although Alala had a role model in architecture with whom she could identify (i.e. Jewel, a black female lecturer), it was Peter (a white male lecturer) who defended Alala's work at an oral exam. Moreover, Alala felt that she needed to "fight" Jewel for a pass mark. This illustrates that white people are not synonymous with "whiteness" or men with "masculinity," and this excerpt involves the social construction of whiteness and masculinity as ideologies tied to social status. In other words, this story illustrates how the undergraduate curriculum in architecture seems to be aligned with the dominant cultures of whiteness and masculinity that serve to exclude people who do not share its cultural orientation. In her research study, which surveyed 629 architecture students from 92 schools, Anthony (1991, p. 51) found that most of the respondents were generally dissatisfied with design juries. In particular, women were "significantly more dissatisfied with design juries, design studios, design education, and architectural education in general" because of the public humiliation they felt during their critique. For instance, Alala explains, "*you worry about what people think [when you fail] … it was embarrassing, it's upsetting*". Similarly, the participants in Fowler and Wilson's research study (2012, p. 63) stated that "the women in [their] class had been taught 'by humiliation', so that only the thick-skinned remained". Furthermore, a survey conducted by the Royal Institute of British Architects (RIBA, 2003) in 2002 reported that the combination of several factors, for instance the dominance of phallocentric attitudes, contributed to the "gradual erosion of confidence and de skilling, leading to reduced self esteem and poor job satisfaction" (p. 2).

Retrospectively, Alala comments on the consequences of her struggles at university. For example, she mentions that artwork had always been "*soul work … like a calling [that put her] into a trance*" and made her lose track of time. "*When I was in high school, …..*

I really did like art, I still do, it was, it's, I do know it's soul work for me-when I do it it's it's, I go into a trance … And it sort of-it's sort of like calling, you just have to do sit down and do it". However, when she became an architectural student at Wits, she says *"you have to draw a certain way (.) you have to do to do things a certain way-things have to be straight lines"*. As a result, Alala invested all her time, energy and her-self into doing things a certain way because *"I had to, because it just took up so much of my time, so much of ... of me. Like I had to throw myself, put myself … Everything I had into it and, and things, have to be done a certain way"*.

Alala's current predicament is that she cannot get back to that "trance-like state" because she spent "so much of me" moulding her craft and her self into the architectural way of being at Wits. *"I lost (.) I do know-I didn't I didn't lose it-but it's hard, to get back to, that point"*. I asked Alala what it was about architecture that resulted in this shift from her childhood (a space where artwork was soul work for her) to her young adulthood (where artwork was no longer enjoyable), and she proceeded to tell me about how the architectural practices at Wits made her feel mentally and creatively confined to a particular box.

> *Alala: You know Sabrina, like I went in with my whole creative-I'm going to draw like this and even though it was, I understood that it had to be done a certain way, I thought I could bring something else to it, so I did what I had to do but I put myself into it you know, but architecture doesn't want that, they want straight lines.*
>
> *Sabrina: I remember long time ago you once said how they told you to draw 'architectural people' and you like 'what are architectural people?' ((both laughing))*
>
> *Alala: You know architectural people and I had to learn that … I mean it is a skill, it's an art but it's not for me, I want to draw, I want to be free, I want to draw free things and not to be constrained to a box, I will draw and I and I lost that because I had spent so much time drawing you know (3) I'll get back to it, it's in me, I have the time now.*

The aim of higher education should surely be to enable novel interpretations of the world by questioning phenomena in new ways. By contrast, if students are educated to "do things a certain way" it may perpetuate what Essed and Goldberg (2002) call 'cultural cloning' or the "reproduction of sameness" (p. 1067) within contemporary (and architectural) culture. However, on the other hand, having to "do things a certain way" demonstrates the balancing act involved in being and becoming an architect in that an architect is a "peculiar kind of artist who stays within certain boundaries" (Cuff, 1992, p. 124 in Bergström 2014). Being a young black woman in architecture at Wits, Alala felt pressured to develop an identity in compliance with the prevailing Eurocentric norms and values of her discipline. Stevens and Lockhat (1997) asserts that the assimilation of identities that are in line with dominant norms alienate young people from their own social realities. Thus, feelings of alienation and psychological tension that result in both the assimilation and subversion of dominant identities "constitutes a form of ideological and social oppression" (Bulhan, 1985 as cited in Stevens & Lockhat, 1997, p. 8).

At the end of her told story, Alala argues that her experience of fighting to be heard "*shaped or changed my values"*. She has always been of the opinion that "*we are all talented in our own way and each person has that (.) sparkle inside of them (.hhh) and that you just need to open your eyes and you will see it" but due her experiences at university "now I understand it more, it's real, it's not just an idea ,it's real, I've been through it all … ja, it's real, ahh, ja varsity, varsity was (.) not nice (teary eyed)"*. In other words, Alala was marginalised and alienated by her struggle to subvert identities that were in line with the dominant values in architecture. In addition, despite being academically excluded from university, she still maintains her belief regarding the valuable role architecture plays in people's lives and in society. When Alala repeated her third year she "*fought, I actually fought, I, I, I fought hard for my ideas, I worked myself into almost death state*". She recalls a time when her friend came to her room when she was ill, *"my friend came the one-time in my room and I was sick because I hadn't slept for, for days because I was fighting and I was fighting and as like 'I'm going to make you see'"*. Alala mentions that she does not know the exact reasons as to why she failed third year twice. "*Maybe I was going by it the wrong way"*, maybe it is not how hard one

works but the method one adopts, "*maybe the method was wrong*", she says. Although she fought for her ideas and worked extremely hard, she was nonetheless academically excluded at the end of 2010. "*[W]hich is why, I mean it's sad, it hurts (.hhh) (hhh) that, you know, I didn't make it through the entire degree (1) but, it's not (2) agh, it's not (.) ja, I'm not (.hhh) (hhh) going to jump off a bridge because of it, I mean it sad, you know*".

8.3.3. Career and unemployment

8.3.3.1. Institutions as incubators of "average Joes"

Alala decided to do an internship at a commercial architectural firm called Williams and Smith which she says "*maybe it wasn't the right move for me*" because she was uninspired by the work she was given. "*Within the first few weeks of working there … you learn so much technical stuff that they try and ram into your head*". Although Alala did not complete her degree, she argues that the architectural firm must have given her an internship because they 'believe in something'. "*[T]hey took me regardless of the fact that I had hmm, failed my third year, so they must see something, ^they must believe in something^*". Thus, by choosing to do an internship at an architectural firm, Alala simultaneously identifies and disidentifies with the collective identity of architects (Speath & Kosmala, 2012). By being academically excluded from the university, Alala felt that she may have 'lost her voice' and settled for "whatever you have for me, I'll do it". As a result, during her internship she was given "minimal responsibilities" and tasks that "everybody else [didn't] want to do". Getting "real work" was a constant struggle for her.

> "*[B]ut then also (2) hmm (2) there's the whole passion thing and and getting into work, getting into proper work, getting real work, I mean, I struggled, I struggled with that, hmm, I don't know after the whole exclusion failed thing, maybe I sort (3) of lost my voice (5) and I was like okay, whatever you have for me I'll do it you know, and, what they had window scales what what I was stuck doing was (3) it wasn't work Sabrina, it wasn't, like I could do so much more if I, had been allowed (2) to put more but then you're given so minimal responsibilities*".

This excerpt alludes to cyborg politics, which is “the struggle for language and the struggle against perfect communication, against the one code that translates all meaning perfectly, the central dogma of phallogocentrism” (Haraway, 1991, p. 175). During university, Alala attempts to break the logic of white male, Eurocentric culture in architecture at Wits. As a result, her lecturers and tutors have made her feel “crazy” for expressing her cultural identity. Thus, Alala’s cultural identity is produced on the margins, as she is unable to fully articulate her own experiences. Furthermore, language becomes a site of struggle because political ideologies attempt to protect the status of meaning from new identities that threaten to deconstruct “those forms of knowledge that constitute the subjectivities, discourses and institutions of the dominant, hegemonic [and phallocentric] formations” (Rutherford, 1990, p. 22). In her struggle, Alala says that she ‘lost her voice’. Williams (1989) delineates this “struggle for a voice as being at the very edge of semantic availability” (as cited in Rutherford, 1990, p. 22). For one year, Alala did not do “proper [or] real work” and she settled for less than she is capable of because she was ‘grateful’ that the firm hired her “regardless of the fact that [she] had failed”.

Erikson (1963) argues that the adolescent period (ages 12 to 20) is particularly important in constructing a unified identity as one transition from childhood to adulthood. The period in which Alala was academically excluded and unable to qualify as an architect could be referred to as a “reminiscence bump” in which she “first confront[s] the identity problem in modern society and actively formulat[es] integrative life stories to address the psychosocial challenges [she] face. Consequently, [she] may be more likely to encode personal events occurring during these years as relevant to [her] psychosocial goal of formulating an identity” (McAdams, 2001a, p. 110). Although Alala was encouraged to pursue a STEM career by being awarded a prestigious scholarship, the institutional culture and practices at Wits contributed to her socio economic and psychological subordination which not only led to role confusion and impeded her identity integration, but also inflicted “symbolic violence” (Bourdieu, 2004) on her psychological development because ultimately, her voice was ‘educated out of her’ by the institution.

In discussing her youthful career aspirations, Alala explains that she is energetic, excited about life and inspired to do the kind of work that is groundbreaking. She also argues that institutions are afraid of trusting young upcoming professionals who generally strive to be innovative. Instead, institutions are content with incubating the 'average Joe'; people who are stuck in their offices every day, bitter and unhappy.

> *"[A]nd I understand you're a first year, but you know (3) take the risk and then I don't know, what did they say hmm … take a like leap of faith (1) invest, invest (2) put some faith in the upcoming professionals and and then you might be shocked at what we might produce, I mean, I mean you've already taught-I mean you've gone through the motions of learning how to swim (.) If you throw me in the deep end I will remember what she said (.) 'This is how I have to move I have to be this way', I will remember just through me in the deep end let me swim (.) Just try and, and obviously don't, don't put yourself (2) in danger but (.) try, give them something give him something to work with, you know and and, and I don't know, I feel like we are so young and so excited about things, life has not gotten us down yet, we haven't worked seven years hating a job or whatever, so we are still excited and we still have this energy so give us something to keep us going, don't be like yeah just, just do this stuff that everybody else doesn't want to do, you know give us something to keep us going to be like oh yeah I want to keep working".*

The power dynamics of existing knowledge systems, particularly in architecture, means that institutions such as Williams and Smith is often in the business of what Essed and Goldberg (2002) call "cultural cloning". Put differently, these culturally cloned institutions, which are racialised, patriarchal and meritocratic, systematically reproduce sameness within contemporary (and architectural) culture. But unfortunately "it's not like that", Alala says. Instead, institutions are "scared", which is incredibly frustrating for her,

> *"[Y]ou spend all those nights not sleeping and then (.hhh) here you are doing things that you can do in your sleep ((laughs)) so it's frustrating, but it's, but it's not like that, and I don't understand why because because most of them I mean at that position where where they came straight out of varsity (4) and they wanted to*

learn so, I don't know (2) it's pretty interesting".

Speath and Kosmala (2012) argue that a dominant collective identity of architectural professionals is established via a regime of discursive practices and norms. This regime is problematic for Alala because, although she identifies with a collective identity of architects, she disidentifies with the traditional norms practised by "the average Joe" by attempting to choose alternative work that is aligned with her youthful aspirations (although she is unable to do so within the institution or in the workplace). Alala explains that although 'Joe' worked at Williams and Smith architectural firm for "a very long time," they still treated him "like crap" and did not give him "real responsibilities". She then comments on how she believes the transformation project has failed her, not only as a university student but also as a young, aspiring professional. Alala recalls several incidents of preferential treatment that Donald (white man) received from the same architectural firm that employed her and her friend, Busisiwe. Alala, Busisiwe and Donald were all classmates at Wits and also friends. For instance, during Donald's first day at the firm, he was introduced as "the future of Williams and Smith architects" whereas when Alala and Busisiwe started working at the firm, they "just sat around for a week" and did not receive a proper introduction. She says:

> *"[B]ut but also, it was Busisiwe and myself and then Donald came along oh my gosh (.) okay so Busisiwe and I are black women and Donald [a white man] comes along and (.) number one Busisiwe were so offended by Donald' introduction, they were like 'Hi Donald, you are the future of Williams and Smith architects', we didn't get that introduction, in fact we sat around for a week and, and no one introduced us to well we were introduced but we didn't get work and for Busisiwe it infuriated her but I was like you know at Busisiwe, you know it's fine. [The responsibility given to Donald] was different from what we got, Donald got to work on in entire building by himself (.hhh) (hhh). Busisiwe was mad ((giggle)) she wanted to explode ((giggle))"*.

The "star architect", such as Donald, has traditionally been a gendered (white) male (Heynen, 2012). It is clear that 'noble tasks' have been monopolised by male architects

through their cultural capital, thus they form part of the "State Nobility" (Bourdieu, 1998). In other words, Donald and his director or mentor constitute the "elite within the dominant class whose legitimacy is backed by the state's accreditation of their higher education" (Fowler & Wilson, 2012, p. 42). Thus, following Bourdieu (1998) and as stated by Fowler and Wilson (2012, p. 205), it is important to "identify, alongside gender struggles, the competing trend of the persistent regrouping of men to secure access to the most synthesising, dignified and theoretical tasks".

Donald was assigned a supervisor who happened to be the director of the firm, whereas Alala had an architectural technologist as her supervisor (Audrie). Although she initially learnt a great deal from Audrie, Alala felt that Audrie was exploitative and patronising.

> *"I didn't mind, she was a woman I, I, I, could learn a lot from her but then after a while, Audrie was a wonderful woman she taught me so much within a short frame a time, but after a while, she's, she's a lazy person, so she wanted to put all the work on me and and there was a lot of like patronising and the tone that I got from her and I was, that that frustrated me, that that really got me and at the end of the year, hmm, they moved me to a new project and I was like, they asked me if I, and Audrie was like 'Alala must come with me' and I was like 'no Erica I don't want to work with you'… but then they knew you know, they knew Sabrina and the directors knew, they know what type of person Audrie is, but they left me there, they let me suffer there, but (.) I got through it, I learnt a lot (2) I learned to speak up as well".*

The assignment of supervisors may be a typical example of how distinguished professionals (in this case, the director of the firm) are chosen as role models to other men (in this case, Donald) and as a result, how "[a]rchitecture reinforces this masculinist bias by a [mentorship] ethos of men among men … and by a culture of self-promotion and tough competition" (Heynen, 2012, p. 342). Furthermore, Alala felt that her supervisor was not only exploitative but also patronising toward her. Similarly, the participants in Fowler and Wilson's (2012, p. 57) research study described the profession as being "very competitive and quite bitchy".

During the interview, Alala was reminded of a slogan that encapsulated her life-long battle to be heard: ‘life is war, keep fighting’.

> *“[I]t’s a fight (5) this random man in the street, I think we were at Salfil ((laughing)) (.hhh) a poetry thing or something (.hhh) and we were buying gum, and he comes to me and Busisiwe and he’s like ‘guys, life is war’ ((laughing)) and Busisiwe’s like ‘Oh okay’ ((laughing)) ja he’s like, ‘life is war, keep fighting’, and Busisiwe was like ‘that man is crazy’ but I was like ‘what he said was profound’ cos life is war, you have to keep fighting, sometimes you don't want to wake up in the morning but you have to, sometimes you're away from your family, but you have to keep fighting”*.

This narrative illustrates the marginal positionality of young black women in post-apartheid South Africa, as Alala theorises,

> *“I mean, it's it's also that struggle that people don't believe in you, hmm, I mean those ideas, I know how ever many years into democracy, (.hhh) but but it's a long way before (.) things (.) really change and not everyone is welcoming to the ideas”*.

What was particularly infuriating for Alala was that Donald ‘pretended’ he had not received preferential treatment. She says:

> *“[T]hat is just not cool, I mean it’s happening, say it ‘okay guys you know, I know that this is what’s going on (2) it doesn’t matter if you’re happy about it or not, let’s just acknowledge it for what it is, don’t don’t wear a face for us, just say ‘this is what it is, this is what it is’ and for me ((nervous giggle)) that’s when Donald made me mad ((laughing)) I was like Donald get out of my face man ((laughing)), I mean it’s things like that”*.

Donald’s lack of acknowledgment of the role he has played in Alala’s experience of sexism and racism within the firm may allude to the way in which male privilege has trapped Donald “by the duty to assert his manliness in all circumstances” (Bourdieu, 2001, p. 50). We go on to discuss Black Consciousness and South Africa’s ongoing

struggle for freedom.

Sabrina: ja, I always wondered, during apartheid, what kept activists fighting, I mean where did they get their strength, I mean people were being murdered now like it's still, it's about fighting for ideas, but still but still for freedom.

Alala: I mean, I think, I mean, I don't want to get political like I said again.

Sabrina: But what's wrong with 'getting political'?

Alala: I get very crazy (smile) (2) about that but also, hmm what was I going to say (3) that (.) You know, fine it's not we're not, it's that whole Bob Marley thing, that quote, 'you raise yourself from mental slavery', it's that, it's that (.) And also in Biko's book he also always said, it's your mind, that that, it's your mind (.) And they talk about the colonised mind and all of that stuff, and, and we have to fight for ideas to be heard, we are still and, and for me (.) I really find it frustrating that, that I mean even, I find even our government frustrating even our black leaders frustrating cos of, of what they are doing and how distractions everything it just distractions from what's going on, and, and because everyone is pretending that everything is okay, and I mean (.) I mean, it's better, but it's not okay (.) You know everyone is pretending that it's okay, and when you go down that road, you know, 'you're a racist' or that 'you're playing race cards' all of that stuff so (3) That's why you don't get political but-but we're not there yet we have a long way ahead I mean even, it's it's like, we have to fight for our ideas to be heard (5) We still have to fight for a stake (.) We still have to fight with ourselves.

Sabrina: it's hmm it's an ism that tries to change who, who we are.

Alala: We mustn't change who we are, we have to be who we what we are when we are born and fight with that, it's a struggle to get heard Sabrina, it is (.) Like for me, I just find it frustrating sometimes when gets it's like undertones it's, nuances like little but it's they enter me I find it frustrating that they carry on and it's like it's fine … Because that's when we allow it to carry on … I mean, I mean Busisiwe and I couldn't say anything, we couldn't say 'no you are being biased toward us because you know Donald is getting better treatment', we couldn't because then, then we were out of a job and we don't get experience and if you wanted to come back then we have a bad record".

In this excerpt, Alala draws on Biko's (1977) idea of Black Consciousness as she states that black people must break from the shackles of the mind, "the black man of the need to … rid themselves of the shackles that bind them to perpetual servitude … to make the black man come to himself … to infuse him with pride and dignity" (p. 49). Alala implicitly links political power with the 'coloniality of knowledge' (Quijano, 2007). She argues that if "the colonised mind" is 'mentally enslaved,' then knowledge needs to be de colonised (Quijano, 2007; Mignolo, 2007). It could be argued that she is advocating for "epistemic delinking [that leads to] de colonial epistemic shift [which] foreground[s] other epistemologies, other principles of knowledge and understanding and, consequently, other economy, other politics, other ethics" (Mignolo, 2007, p. 453). However, despite her efforts, Alala has been unable to achieve "epistemic de-linking" within architecture because of her academic exclusion, she says "we have to fight for [our] ideas to be heard … it's a struggle to get heard … [w]e still have to fight for a stake". Drawing on the work of Wyrick (1998), Hook (2004) explains that racism or oppression "erases the black past, devalues black thinking, denies black individuality (p. 95)". In other words, Alala feels that "we [Black people] have to fight for [our] ideas to be heard … we still have to fight for a stake". Furthermore, she also declares "we still have to fight with ourselves". This sentiment illustrates how Alala has to "fight with" an inferiority complex that she might have internalised from her experiences of cultural oppression within the institution. Hook (2004) notes that "socially induced inferiority complexes, is one which Fanon repeatedly returns to, and it is one of the most important ways in which he thinks about the real damage, on the level of identity, the mass victimisation and enforced by dominant racist cultures on those they colonise" (p. 97).

8.3.3.2. Unemployment

Alala mentions that she wants to be a "cheerleader for architecture" but that she would "rather do anything than" go back to university and be forced to "constantly kill [her] passion". Her internship came to an end at the beginning of 2012 and "*I've been at home, since [laugh] ah, soo it's a little difficult at times, you know-there are times, so being*

unemployed it's not nice”. Ironically, although Alala chose to study architecture in order to improve her family’s financial position, being unemployed has meant that she has remained dependent on her mother. This has placed Alala in a difficult position because she wanted to earn an income to support her family.

Furthermore, Alala is placed under additional pressure by her own anxiety caused by her mother’s anxious dreams about “*my situation right now, me right now, and me doing nothing at the moment*”. Alala’s mother dreamt of pulling a bunch of carrots from the soil, however, when she realised that the carrots were missing, and what she was holding were the stem and leaves, she was ‘devastated’.

> “*Oh, my mother had a dream the other day, she’s she so worried ((laugh)) she’s so worried, hmm and my situation right now, and she had a dream, she had she had of carrots being, hmm she was, I don’t know, she was .. I don’t know what to say, but she was getting carrots out of the soil, and then when she looks at them, there is no carrots, you know, there is no that orangie part of it-it’s not there-and she was so devastated by that dream (.hhh)”*.

Alala goes on to explain an interpretation of this dream.

> “*[A]nd then ah, this man this man interpreted it for her, and he's like, hmm ‘you know sometimes we put in so much, you know into the whole planting, we plant we water it, and, and the farmer next door, and everyone his putting in hard work and sometimes we don't always-we don't always get the same, you know it's underground, you don't know the putting in the effort and it's it's a faith thing, you're putting in the effort … And .. As you work (.) And you're watering but when you sow your … Plant it doesn't always, it doesn't always come out, the way you want it to be. I don’t know maybe there was worms in the, but then but then he also referred to how parents invest in their children and, and how they, they invest and they put them through school, with the expectation that one day my child will come out and look after me*”.

Her mother plants and waters a seed in the hope that she will reap a harvest which is symbolic of her investing in Alala’s education with her ‘middle-class dream’ that Alala

will distribute the harvest to their family. The “farmers next door” (other families) also nurture their seeds (or their children’s education) with the expectation of a harvest (or their children becoming the financial provider in the family). However, as these seeds grow underground, Alala’s mother and the other families are ‘in the dark’ as to what will happen in the future. They cannot control the process and outcome of their seeds (or children’s) growth because of the unpredictability of nature (and life). Furthermore, the farmers (or families) “don’t always get the same” harvest because of their positionality in the world. The land and soil in which farmers plant their seeds are never the same. Similarly, our situatedness in social space influences different ways of being in the world. In other words, social locations not only refer to the intersections of social divisions but also the positionality of categories along an axis of power in society, which changes with different historical moments and contexts (Yuval-Davis, 2006). Presently, unemployment in South Africa is racialised, classed and gendered, skewed toward white people and against black people (Qambela & Dlakavu, 2014).

This dream is also symbolic of Alala’s told story. Alala plants a seed, which represents her desire to become an architect and be able to take care of her family one day. To become an independent professional is a shared aspiration among all students. Although she nurtures her dream by becoming a hard-working university student, she cannot control the outcome. For instance, over the years Alala was able to develop an academic identity by enacting a simple ‘formula’; working hard and listening in class, and as an outcome, she obtained excellent marks that people recognised. However, her academic identity was threatened in first year when she applied the same ‘formula’ at university but did not get the same outcome.

> *“[O]h my gosh first year was really difficult, first-year was awful, first year was awful, hmm .. Because you come from a place where, where you've where you worked hard or you listened in class and you produced the work and you got the results so it was simple and now you come in and you work hard, you don't sleep, you put in all your work and, you put in your heart into the work, and it comes back with these results that you like, but why .. But why?“*

It is clear that the under-preparedness of students “reflects a systemic failure by the educational system to initiate these students into the world of academic study and its implicit rules of enquiry and knowledge construction” (Bradbury & Miller, 2011, p. 8). Her schooling history not only contributed to her academic under-preparedness, but also Alala’s situatedness in the university space determines the process and outcome of her academic growth. To illustrate this point, Alala likens her idea of a university to a seed of a Baobab tree. If students represent the seeds, and the garden represents the university; then she says the responsibilities of the academic staff is to ‘water’ or nurture the plant instead of ‘telling the plant how to grow’ or replicating the same kinds of people and knowledge, or what Essed and Goldberg (2002) call "cultural cloning”.

> *Alala: We should be able to explore it's it's it is, can I go back to the seed, that seed you know, it's garden where you are taking care of your plants, when you plant your seat in the soil, you not going to go back to it and say ‘grow this way and grow that way’, you plant it, you water it, you know and I think that's what university should be-it should be about nurturing the talents that we have and matching it with the skills and the technicalities that that come with the profession whatever the careers that you have chosen, it should be matching that up, it should be taking your talents-I mean instead of creating copies, all little mini-me’s, it should be about learning and exploring and every person here-I mean maybe some people, I don’t-maybe some people just (10) just want to go to work and they just want to do a 8 - 5 but not everyone that comes in here – a lot of the people-that come in here have ideas, they have chosen what they have chosen because they like it, and that they passionate about it and that they wanted do something about it-I mean we all-I mean I'm sure we not the only one-they came into the world coming from high school with the idea of changing the world–I remember talking to some other guy who was in Honours already and he still wanted to change the world and I was like why, you know-change it, let’s alter it, we could have discovered so many things so many-it's like when you keep smacking your seed and it won't grow-it won’t-you will get nothing from it, it'll grow the way you wanted it, like an artificial seed.*

This analogy between a university space and the ground for the planting of a seed of a Baobab tree encapsulates the main themes of Alala's told story; that is, how creativity was ignored, silenced and educated out of her by dominant cultural values that she did not share. Despite the discourses of transformation at Wits and the changing demographics of the student body, students' identities "are shaped and framed within stable institutional culture that remain impervious to change" (Vandeyar, 2008, p. 28). Similar to Vandeyar's (2008) findings, in order for Alala to 'fit in' the university space, she feels pressurised to become a "little mini-me [lecturer]" or to act white, masculine and demonstrate "respect for the existing social order" (Swartz, 1977, p. 546). Thaver (2006) argues that feeling "at home" within an institution "is a function both of the acculturation and socialisation of individuals into the superordinate and subordinate academic culture(s), and of their cultural capacity to assimilate into such a cultural milieu(s)" (p. 22). Instead of learning and exploring, "nurturing [her] talents" and cultural identity (symbolic of an African Baobab tree), Alala feels that her lecturers expected her to "*grow this way and grow that way … it's like when you keep smacking your seed and it won't grow-it won't-you will get nothing from it, it'll grow the way you wanted it, like an artificial seed"*.

8.4. (Re)constructing other selves through home spaces

Drawing on Tamboukou's (2003) work on women teachers' "rooms of their own", in this section I argue that Alala (re)constructs other selves in everyday home spaces where she is able to resist the 'matrix of oppression' and "retreat, think about [herself], articulate [her] thoughts and conduct, find a way to voice [her] desires, ultimately put together fragments and pieces of [her] identity" (p. 74). The home spaces that Alala refers to include friendships, significant places, activities and future aspirations. Feeling and meaning provide the common thread between these home spaces. In the excerpt below, Alala and I discuss the relationship between feeling, meaning and thinking.

> *Alala: For me, meaning, if I think about it now (2) is that it doesn't go without feeling (.) so you find meaning in feeling, and if you feel something, then there is meaning and sometimes you, you can't always define it or say it, but you see*

meaning … for me, if you feel it, feeling is important, if it can feel it course I think about the most meaningful things in my life (2) and that it has never been without feeling, or emotion (2), so think about art and when I do art, I don't even, for me, when I draw, like (2) or when I used to draw (5) it wasn't a happy feeling, it was just a feeling, it was just a feeling, it takes you away

Sabrina: and thinking and feeling and feeling and thinking, how do they interact with each other?

Alala: but sometimes you can think about something and bring about a feeling or a feeling can bring about a thought … for me, it's definitely feeling is meaning, if I can't feel it, then I'm just doing it because I have to do.

It seems that through emotion, Alala is able to create meaning through friendships, places, activities and her hopes for the future. Solomon (1976) argues, "emotions are the meaning in life. It is because we are moved, because we feel, that life has meaning. The passionate life, not the dispassionate life of pure reason, is the meaningful life" (p. ix).

The support that Alala received from her family and friends fuelled her drive to persevere and provided her with a public platform from which she could voice her opinions.

"I enjoyed being with my friends, I enjoyed sitting on the lawn (4) and having a conversation that mattered, that we felt would be heard (3) it was sitting I do know at a bar and talking about (.) things that, you know (2) that we found were important (1) and it was a platform where you were heard, for me-that was nice … When people support you … it's them lighting your fire, so for me there has been very important and it is kept me going and throughout from primary school, and high school at home, I've had people that supported me, and varsity, the Oya the friends".

Alala's identity has been formed and challenged through recognition from her teachers and schools, high expectations from her mother, misrecognition, and failure. "It is not surprising that in the culture of authenticity, relationships are seen as the key loci of self-discovery and self-affirmation" (Taylor, 1994, p. 36). There are three significant places in

which Alala feels “free to be herself”, that is the classroom (interest in studies), art studio (creativity) and library (love for learning).

Alala argues that due to her passion for learning, she would actively listen in class and thus did not need to study for tests at school in order to do well.

> *”[S]o I learnt and I studied and I listened in class and for me I didn't have to do that much studying for tests in order to do well because I, I listened in class and I just remembered because I actually enjoyed learning … I enjoyed, I remember biology and art and I enjoy maths, I use to enjoy solving the problems, and in biology learning, I just like knowing things and understanding and getting behind”.*

Alala feels that art was a spiritual experience for her, the art studio (and library) were places she could to go in order to ‘zone out’ and ‘reflect’.

> “*[But] then art, art (.) art was something else, it was, was spiritual, for me … I just just zoned out … It was sort of like the library … Art and the library those are my favourite places at school, the art studio, hmm in high school, the art studio .. And hmm (5) and ah, the library-the library was quiet, like I could think .. I could go there to reflect”.*

The library was her “little sanctuary” because it was a quiet place where she could learn, think and reflect. “*I became a big fan of the [high school] library [laughing] and I started working at the library because I because I, I like learning and and (.) the library was like my, my little sanctuary”*. The library was a space in which Alala felt calm and free to think, “*I can draw the setup of the library for you I remember it very well, I remember exactly how I felt, I was quiet (.) I could hear myself think … it is where I got my inspiration for my artwork, from books, I used to page to page through books”.*

In addition, Alala self-identified with the school librarian. “*Ms. Johnson was crazy as well, but she was interesting ((giggle)) librarian, everyone thought she was she was crazy …. But I understood her somehow, I understood aahh*”. It is apparent that the young Alala

formed an emotional attachment to the library due to her love for learning but also through her social bond with Ms. Johnson, the librarian. These places bring to the fore Alala's sense of self, which impacts on how she interprets and understands herself (Relph, 1976, p. 48). Place is critical to the formation of Alala's artistic and academic identities as her "the subjective sense of self is defined and expressed not simply by [her] relationship to other people" but also by her relationship to libraries, classrooms and art studios (Proshansky et al., 1983 as cited in Brown, 2009 p. 23). By attributing meaning to these places, she in turn becomes attached to the meanings of these places and thus creates an affective and symbolic bond, which create these places as extensions of herself (Stedman, 2002, p. 563).

Alala also describes herself as a quiet and shy young girl until she did public speaking in high school and "that's when I found my voice and yeah I wasn't so shy any more [but] I was still quiet". In an attempt to achieve formal recognition, it seems that Alala developed a strong 'voice' or sense of self through particular activities, such as public speaking. Alala vividly remembers a public speaking story of how she found her voice through her relentless determination.

> *Alala: my goodness the public speaking story is so funny, well it's not funny, it was embarrassing, okay in Grade 8 we entered a competition … okay fine I was chosen to compete and it's in the hall and the whole school was there, so I was like okay I can do this, I can do this, I can do this, I can do public speaking so I prepared a speech … I had prepared it for a class … I was like okay, I'll rewrite it, I rework it … let's do it this way, so there I go, I rewrite it, I write so, hmm and I took the bus from home to school it was a long it was far, an hour and a half, so I spent, I read I read a lot … so there I was the morning of the speech, I was reading it, I was reading the speech, I was practising and I had the old speech with me as well, just in case I'd lost the other one, so I get there and I had practised the new speech, and I don't know where the new speech is (.hhh) (hhh)*
>
> *Sabrina: oh my gosh*
>
> *Alala: and I'm standing in front (.hhh) (hhh) I'm switching my blazers ((laughing))*

Sabrina: my worst nightmare

Alala: and I have like my old speech, and now it was like I can't say this I don't want to say that this, and so I'm searching Sabrina (.hhh) and I'm like okay fine go with it, just say the speech they are starting to to like get restless, I say it, I say it and then with all your speech actions, and then my speech fell out of my blazer pocket and everyone was just laughing [Both laughing]. and I was like are you for real, and then I didn't know which speech to do because now this one, this one had suddenly appeared and I started with this one, and everyone was laughing, and my confidence is like (.hhh) (hhh).

Sabrina: shame man

Alala: so I carried on with the old one and I didn't make it to public speaking in Grade 8.

Sabrina: Oh no

Alala: No I didn't but then, the next year I was like okay ((laughing)), last year do we do we go with that and not try out for public speaking or do I try, so I tried out, this time I prepared I threw away the old speech [laughing] put it in my pocket and I made it and for me it was not just finding my voice, it was also overcoming that whole thing of like 'oh I'd been knocked down and everyone had laughed about it so', so that's why that's what it meant.

This excerpt encapsulates the "valued endpoint" (Gergen and Gergen, 1986) of her told story which is a tale of her desire to convince others (and perhaps herself) that she is artistically and academically talented despite being (mis)recognised by others. Similarly, in this excerpt, Alala argues that she was determined to prove that she was a public speaker with a unique voice despite being "knocked down" during her first public speaking competition. Alala may have selected this public speaking story with the intention to convey that being academically excluded from the university (i.e. being "knocked down" or misrecognised) has not detracted from who she is, "a determined, curious, creative, contemplative and artistically talented individual who has a passion for learning" and what she wants for her future, "a self-sustained and fulfilled life". In other words, in accordance with the rhetoric of authenticity, Alala appeals to her 'inner voice',

which she believes is in danger of being “knocked down” through conformity, misrecogntion and lacking the resolve to fight back (Taylor, 1994).

I was interested in the ways in which journaling acted as a device for Alala to re-invent herself, and thus I asked her whether she remembered “anything more about that moment when you were writing in your diary, and you were like if I lose this [i.e. recognition and awards], then this is what I am”?

> *“Ja. for me I mean it was that a whole, I had a lot, I have a lot of people coming up to me and saying ‘oh I look up to you you're like top 10, always number two you and Portia, you’re always there at the top, your marks’ and a lot of teachers like me, like because I got the marks, for me I was like but but ‘what is that you know’, it's it's people defining you (3) I mean, but without that what would I be? what what I'd be if I didn't (.hhh) have that, and I realised that I am still Alala, I am still talented, I still have something to offer the world, and that that was great for me was (.hhh) and it doesn't matter if it's not a big number next to my name or a shiny star (4) on my forehead, I mean it goes back to the education system (.) it's horrible the way they teach us but anyway … But if I don't have a gold star, I'm still, I still have something to offer you know and it also goes back to the whole people thing because I had a lot of friends who weren't top 10 and didn't have the gold stars and they still … had stuff to offer you know, there was something, there were stories behind them and for me I decided that I was girl with a story as well”.*

Furthermore, Alala adds that she wanted to write a ‘Book of Ethics’ so that she could refer to it for strength during those times when people pressurise her to ‘be something she is not’.

> *“I was going to write a book of life, the book of life, not like the Bible ((laughing)), like a guidance, I'm so crazy years ago I was like to Busisiwe ‘listen I'm tired, I'm tired of people trying to change me, I'm going to write a book so that every time like something like that happens, I can go and refer to it’ and I was like a book of ethics that is what I was going to call it”.*

Furthermore, Alala explains how music has been very important to her, it has "saved [her] life so many times" and it has become part of her soul. For instance, it kept her going whenever she felt sleepy.

> "*[O]h music-music is, is very important (.) wow music saved my life so many times ((laughing)) (.hhh) (.hhh) all the time, all the times throughout high school, throughout varsity, whenever I was falling asleep (.) It was the music that kept me going … there was a quote, I don't don't remember it, something about if you let music into your soul (.) and then after a while it becomes part of your soul, or something like that but anyway"*.

Through the practices of journalling and creative writing or poetry, the self is able to distance itself from itself and potentially recreate other selves. Alala is able to reflect of new information from the past ("having a shiny star on my forehead") or imagined scenarios from the projected future ("but without [recognition and awards] would I be?") and choose to alter aspects of her selfhood ("But if I don't have a gold star … I still have something to offer"). In discussing how journalling improves reflective practice (particularly in nursing), Blake (2005) identified the following advantages of journalling in the literature: "Discovering meaning, making connections between experiences and the classroom, instilling values of the profession, gaining perspectives of others, reflecting on professional roles, improving writing skills through student-teacher interactions, developing critical thinking and problem-solving skills, developing affective skills and [c]aring for self" (p. 2). Related to journalling, writing poetry has been a source of inspiration for Alala because it gives her the space to 'be in her head'.

> "*Ja, so (2) so I've wrote, I've always written, I've always enjoyed writing, creative writing-English-languages (.) in high school also, I also write poetry, ^on the side^ [whisper] ^that all it ever ends up being, written and read by a couple of friends^ [laughs] ah ja, I've always enjoyed writing-being in my head*".

Alala explains that oftentimes she feels "*confused and … a little bit trapped*" as a result she continually questions "*like 'what do you want?' like what can you do, and what is*

your biggest talent?" Alala believes that she is able to easily interpret images with language and textual ideas with images.

> "*for me, imagery is very important, and it's-it's the senses and somehow I do know that important to me, how I can translate an imagery into words, and (.) words into imagery (.) and for me, that is that is what I can do, if I can find someplace where I can do that and be happy about that, and draw and read and write and research (5) that is that is the career I'll choose, so I'm, I'm not sure, ja".*

Furthermore, she hopes to find a career that not only will be a source of inspiration for her, but one that will also generate an income for her family. In thinking about her future, she also aspires to find joy and to not allow circumstances to make her 'grumpy and unhappy'.

> "*I don't want to (.hhh) (.hhh) people are so grumpy at work ((laughing)) people are so grumpy, ((laughing)) I don't want to be-I mean, I don't really believe in happiness any more, I don't think, I don't think, I think it's a non-idea ((laughs)), it such a useless word, but there is joy and there is there is some (4) positive-ness about the world, but happiness, that's crazy".*

She refers back to the 'average Joe', an embodiment of people who are unhappy and bitter. "*I don't want to be like that … I don't want to be stuck, I have to do explore stuff, I have to learn more and more and more-I have to grow I cannot sit in an office, every day and just sit there (3) I, I have to explore stuff, and learn*". In using an evaluative tone (Wengraf, 2011) and a reflective tone, Alala has 'emplotted' herself within carefully selected incidents with the intention to convey that all her challenges she has faced have not detracted from who she is and what she wants for her future; a self-sustained and fulfilled life. *"[I]t goes back to (3) what I said-the early me, who hasn't changed much, I mean, I still want to learn (.) just learn (.) find understanding (4) a fulfilled life (3) that's all I want (.) a self-sustained fulfilled life (3) ja".*

According to McAdams (2001a), at the heart of narrative lies human intentionality. It is in the evaluative element of narrative that provides insight into intentionality or how and

why Alala understands the significance and meaning of the events that constitute her narrative (Linde; 1993; Polanyi, 1985). She has thus participated in an agentic process of commanding the flow of events in her told story and keeping the past and what's possible together "in an endless dialectic 'how [her] life has always been and should remain' and 'how things might have been or might still be' " (Bruner, 2002 p. 14). In ending her told story, Alala jumps back to the beginning or "the early me, who hasn't changed much". This sentiment is in accordance with a culture of authenticity in which "[t]here is a certain way of being human that is *my* way. I am called upon to live my life in this way, and not in imitation of anyone else's life … If I am not [true to myself], I miss the point of my life; I miss what being human is for me" (Taylor, 1994, p. 30, [original emphasis]). Having juxtaposed her 'concordant' childhood (a space where artwork was soul work for her) to her young 'discordant' adulthood (where artwork was no longer enjoyable), Alala continues to create concordance as at the end of her told story she connects her future back her past childhood. For Alala, being 'true to herself' or living "a self-sustained and fulfilled life" means to be "self sufficient, to explore, to learn … to find understanding".

8.5. Conclusion

In this chapter, I have discussed the structure of Alala's narrative as temporally told in the interview, which follows the primary structural and thematic foci of chapters, five, six and seven. I have established that Alala began to (co)construct herself as an artist (and 'a clever learner'), through her teacher's informal recognition of her artistic ability and her mother's expectation of academic achievement. Her competence and performance as 'clever creative learner' was formally confirmed by winning an art competition and achieving a five-year scholarship to attend a former Model C high school. I have discussed how Alala's 'science' identities has been (de)constructed or constrained within her location in the "matrix of oppression" (Collins, 2002). Within the context of her past secondary schooling, Alala argues that she chose to study architecture (as opposed to fine art) because of her family's financial situation. During her past university life, she felt that her values were in conflict with the dominant ideologies of whiteness and masculinity within the architectural department at Wits and the "Eurocentric" curriculum

lacks important insights through excluding black women. Alala also alluded to the creation of assessment tools that reward dominant culture-related competences (Bourdieu and Passeron, 1977) instead of these young women's competences that have been informed by their own culture and background. Being perceived as "crazy" by her lecturers and tutors could be viewed as a mechanism for 'silencing' young black women and reproducing the status quo in architecture (Carlone & Johnson, 2007). Based on her past experience of entering the job market, it seems that these institutions, which are racialised, patriarchal and meritocratic, systematically reproduce sameness within disciplinary and institutional culture. Lastly, Alala reconstructs other selves in everyday homespaces which include friendships, significant places, activities (e.g. journalling, poetry, public speaking etc.) and her future aspirations.

CHAPTER 9:
CONCLUSION

9.1. Introduction

In South Africa, the continuing racialised and gendered gap in STEM fields raises critical concerns surrounding the country's socio-democratic transformation efforts and the advancement of science and technology. While men and white women are afforded more economic ownership, prestige and power in the labour force; black women's access to these kinds of capital are limited, thus they will not be able to achieve equity in society if they are continually marginalised from society's power structures. Accordingly, given the imperatives of transformation and the current equity debates across the South African Higher Education landscape, this study has offered insights into the unique experiences of black women scientists whose individual life histories tell the story of a society in transition and the reconstruction of dynamic social identities. By focusing on black women's experiences as science students and graduates within Higher Education institutions and professionals within the business sector in South Africa and the ways in which they navigate institutional and disciplinary spaces that have historically been dominated by whiteness and masculinity; this study has contributed to understanding personal and social change, particularly for marginalised groups who come to occupy positions of power in both the production of knowledge and the functioning of society. A narrative life history approach was adopted in this study as it contributes to greater inclusivity, especially for black South African women whose narratives have remained at the margins in the representation of reality and transformation of society.

The research questions are central to overall purpose and design of this thesis. Thus, in this chapter, I present a summary of findings that addresses each research question. The findings in this study offers new insights into the narrative constitution of identity and particular patterns of storytelling that are either simplified or complicated to varying degrees. Further, a visual representation of a lived life in relation to a told story is proposed as a heuristic device to analyse narrative accounts. This study presents a model

for how black women scientists (co)construct, (de)construct and (re)construct their-selves as scientists through a dialectical tension between recognition and misrecognition. The findings also provide a detailed analysis for how the intersections of 'race', class and gender locations coalesce into a "matrix of oppression" (Collins, 2002), positioning young black women in science at a disadvantage compared to men and white women. The findings also indicate that these women resist systems of oppression through everyday homespaces in which they reconstruct new meanings and subjectivities through the art of narrative that link them to others and locate new trajectories of possibility.

9.2. Summary of research findings

In the sections below, I will present a summary of research findings that addresses each research question.

How do black South African women scientists (re)construct their-selves through narrative? How do temporal and spatial shifts complicate their narrative identities?

In this study, I have explained how black South African women scientists construct their narrative identities through the establishment of developmental goals and storylines, emplotment of 'evaluative endpoints' and chronotopic turning points, the logical connections of topical events and the model of "discordant concordance" or "concordant discordance" (Ricoeur 1984; Gergen & Gergen, 1986). I have argued that the visual representation of their lived life in relation to their told story has been a useful device to analyse the ways in which multiple, fragmented and contradictory selves are constructed through narrative and provide four reasons in support of these diagrammatic representations. First, the "reminiscence bump[s]" (McAdams, 2001a) reside within the span of time that anchor the story of their life. Second, the topics and the tone (Wengraf, 2011) in which these topics are narrated have been plotted onto the graph, providing an overview of the skeleton structure that forms a gestalt story. Third, the intersections and entanglements of various storylines that comprise a narrative identity are viewed as "personal and symbolic mark(s)" that are continually reworked and retold, retrospectively

(Boenisch-Brednich, 2002, p. 75 cited in Phoenix, 2008; Freeman, 2009). Fourth, the process of tracing chronotopic turning points, which are associated with the stages of a told story, provide insights into understanding the dynamics of personal and social change.

With the aid of these Life-story Diagrams, I have identified and presented four cases that portray particular patterns of storytelling; namely a 'labyrinth story', a 'simply-connected storymaze', a 'multiply-connected storymaze' and a 'weave storymaze'. As demonstrated by these storymazes, I claim that there are particular features that complicate a person's narrative identity. As the uniqueness of their "narratable self" (Cavarero, 2014) exists in a constitutive relation with their perceived audience (especially me, the researcher), I have explored how the context of the interview (and my relation to these women) have influenced why they may have presented a simplified or nuanced sense of their-selves. Further, I claim that failure is an important aspect that differentiates the more complicated narratives from the simpler ones because their encounter with failure in space ruptures and convolutes people's sense of their-selves through time.

Whereas the developmental goal within a simplified narrative accounts for 'what I am', a more complicated narrative provides a detailed account of how and why a person has come to be 'who I am'. In other words, a person who provides a complicated narrative constructs their-selves through multiple 'emplotments' (Ricoeur, 1984, 1985, 1988) as well as organises and interpreted unrelated experiential events within intersecting and/or entangled storylines, each of which has its own beginnings, middles and ends. For those women who had experienced failure, they juxtapose two points in their told stories; who and what they were before and after their encounter with failure. Thus, their told stories are recounted in a non-linear fashion, but the more simplified life story mirror the linearity of their life events. We can deduce that a complicated narrative account of their told stories, reconstructs present meanings of particular past events. For example, these women (re)construct them-selves through their meaning-making of failure. Furthermore, simple narratives provide a series of events that are disconnected occurrences of 'steps' and 'zig-zags', whereas the events presented in a complicated narrative are tied together

by a combination of progressive and steep ‘step’ and ‘zig-zag’ patterns that develop over time. The intersections and entanglement of numerous storylines also complicate one’s narrative account of their told stories because it demonstrates how plotlines become meaningful by virtue of their entanglement; as opposed to separate or intersecting storylines, as in a more simplified narrative. Following Aristotle, I have also argued that simplified narratives that provide a series of stable events that are concordant with the ‘valued endpoint’, sacrifice complexity in order to preserve progression and stability. Whereas nuanced narratives are complicated by disruptions to this sense of stability, which leave the audience uncertain about an unpredictable ‘valued endpoint’ that dislocates and relocates itself throughout the telling of their told story.

How do black South African women scientists (co)construct, (de)construct and (re)construct their-selves as scientists?

In this thesis, I claim that black South African women (co)construct, (de)construct and (re)construct their-selves as scientists through a dialectical tension between recognition (alongside expectation) and misrecognition. I will now focus the discussion on the construction of the self through recognition. These young women have constructed their-selves as scientists through the “ever evolving cycle of awareness - response - self-awareness” (Fay, 1996, p. 46) or recognition, performance and competence (Carlone and Johnson, 2007). At a young age, the women’s *awareness* of their perceived worth as a ‘clever learner’ emerges through their teacher’s *informal recognition* of their intelligence or aptitude for science (i.e. physical science, life science, or formal science). Furthermore, their schools and various institutions confirmed their sense of themselves as being ‘clever learners’ when they were *formally recognised* with awards and university bursaries. In other words, they became conscious of ‘being clever’ through becoming aware of their other’s perceptions of their intelligence or aptitude for science. As a result, these women self-identified with science or *performed* their identity as a ‘science person’ which might have led them to develop a love for science and an ‘internal’ motivation to excel in science.

This finding is significant because several research studies about women in science have revealed that an eagerness to learn and a passion for SET is critical in their academic progression (Brickhouse, Lowery & Schultz, 2000; Carlone & Johnson, 2007; Davis, 1999; Fadigan & Hammrich, 2004; Gornick, 1983; Hazari, Potvin, Tai & Almarode, 2010; Johnson, 2006; Kubanek & Waller, 1995; Patterson, 1989). As their competence in science was recognised as credible when they were consistently in the top 5% of academic performers in their grade and communities, they were able to position them-selves and were positioned by others as 'scientists in the making'. It is clear that these young women could only be a 'clever learner' or enact a science identity through performing their competence in science as recognised by members within a community of practice. In accordance to Rotter's (1975) internal and external control of reinforcement, their 'internal' love for science and high levels of motivation is contingent on the external reward of formal and/or informal recognition.

However, for the reward of recognition to be reinforcing, it is essential that not everyone is recognised as 'a clever learner'. In other words, obtaining scores that are the top 5% of their grades implies that their academic performance is superior compared to 95% of their classmates. In a merit-based culture, these women were only able to construct their-selves as scientists by outperforming their peers and rising to the top of a 'hierarchy of honour'. Simply put, "in a system of hierarchical honor, we are in competition; one person's glory must be another's shame, or at least obscurity" (Taylor, 1994, p. 54). Furthermore, these women's high levels of motivation were not only contingent on the external reward of recognition at school but also on their parents' (particularly their mothers) high expectations of academic achievement. As a result, it could be argued that these women developed an external locus of control (Rotter, 1966). It is noteworthy that many of these parents were teachers and/or school principals.

I will now discuss how self-destruction occurs through the misrecognition (and nonrecognition) of one-self by an-other. From an early age, the education and family system have socialised these young women into an ideology of individualism and meritocracy; thus they have internalised the standards of excellence within a merit-based

culture. As a result, these women have grown up to believe that their advancement in science is solely dependent on their talent and hard work. This belief is problematic because their race, class and gender locations coalesce into a "matrix of oppression" (Collins, 2000) positioning young black women at a disadvantage compared to men and white women. It is thus understandable that their first experience of failure at university involved intense feelings of shame. Failure becomes destructive to their sense of themselves because they can no longer rely on the raw material or content that they had previously used to describe them-selves as scientists (Fay, 1996). These women feel misrecognised by the new material that failure presented to them because this content is in contrast to who they believe them-selves to be. In their stories, they talk about their depression and how the emotional impact of failure became inscribed onto their bodies leaving a scar that remains unresolved (Haraway, 1991).

How do collective stories in relation with 'others' in and through time with space translate into new "imagined communities"?

These young women attempt to reconstruct other selves, 'other spaces' and new "imagined communities" (Anderson, 1991) by resisting systems of oppression through homespaces which is located at the point of intersection between recognition (self-construction) and misrecognition (self-deconstruction). It could be argued that these everyday homespaces allow these women to "retreat, think about themselves, articulate their thoughts and conduct, find a way to voice their desires, ultimately put together fragments and pieces of their identity" (Tamboukou 2003, p. 74). Feeling and meaning provide the common thread between these homespaces, which include self-reflection, friendships, significant places, particular activities and future aspirations. For instance, when these women encountered failure for the first time in their lives, their-self was able to distance itself from itself, assess and reflect on new information brought about by their experience of failure and thus choose how they were to alter or change aspects of their selfhood (Fay, 1996). They began to develop an internal locus of control by choosing to (re)define their-selves with new content that was independent of external reinforcement. For instance, they learnt that in becoming a scientist, failing is part of succeeding at Wits.

The friendships that developed between the women in the Oya programme created a "homeplace" (Hooks, 1990), which provided them with a site of resistance from hegemonic discourses, a safe empowered space where they could reconstruct their sense of them-selves. These women also narrated how particular places (e.g. library, art studio, university) were critical in opening up new modes of being and the possibility of self-reconstruction (Soudien, 2008). They were also able to create 'other selves' or new versions of themselves through particular activities (e.g. journalling, poetry, public speaking etc.) and their hopes for the future. This suggests that through art, these women are re-appropriating science and creating new possibilities for doing science.

What discourses do black South African women draw on in their talk about women's participation in STEM and in the construction of their intersectional identities? What barriers do black South African women face in their pursuit of a STEM degree and how do they traverse these barriers?

I will now provide a brief summary of the ways in which these young women have been or imagine themselves to be constrained within the intersecting locations of race, class, gender, language, and religion in relation to their past secondary schooling, present university or working life and projected futures. I have argued that the contrasting narratives from the women who had attended rural and township schools versus former Model C schools, demonstrate how class and racialised structures continue to create inequalities within the schooling system as the women from former Model C schools seem to be better prepared for university studies in STEM fields. Alternately, students from rural and township schools are faced with overcoming the "articulation gap" (Department of Education, 1997, p. 22) between their secondary schooling and their preparedness for the academic demands at university. In other words, social class determines the kinds of schools that accept young black students (who reside in township and rural areas), thus families with limited economic resources have little choice in determining which schools to send their children due to the distant location of these schools, excessive school fees as well as exclusionary language policies (Ndimande, 2006). Although the scholarship programme provided comprehensive support, 14 (70% of) students failed a year of study. It is noteworthy that of the six students who were

academically excluded or dropped out of university, four had attended high schools in township or rural areas. Thus, the support provided by their scholarship was made insufficient to overcome the barriers of institutional structures and practices (see, for example Liccardo, Botsis, and Dominguez-Whitehead, 2015).

The scholarship programme was viewed by these women as a vehicle for upward social mobility because it provided them with an opportunity to break away from their backgrounds of economic disadvantage. This opportunity was particularly important for these women because being the first in their family to attend university, they were expected to be the financial provider upon completion of their degrees and shift their families' class positions. Drawing the discourses of virginity and 'being a good girl', a number of women talk about the cultural significance of turning 21 years old and how their parents had 'rewarded' for being a good (virgin) girl with a 21st party. In the process of developing their gendered and youth identities, these women may embody an ideologically gendered view of the world that involves the notions of virginity, maturity, guilt and "slut shaming" (Bazelon, 2013). There were also instances in which a few of the women situated themselves as gendered subjects in the discourse of emotionality by implying that pursuing a degree in STEM fields is particularly challenging for women who are 'generally emotional kinds of people'. These ideological and essentialist views reproduce the ways in which gender is reconstructed through cultural hegemony (Benwell & Stokoe, 2006).

As many of these women attended schools where the majority of their peers were black learners and/or all-girls schools, these women spoke about the difficultly they experienced in transitioning into a white and male-dominated space at university. Furthermore, as the majority of lecturers in their faculty were white men, most of these women did not have the opportunity to converse with and learn from role models in science with whom they could identify. Odirile, however, managed to find a mentor in her faculty with whom she could identify, but she explains how her mentor resigned from her academic post due to the 'political environment' or racial and gendered discrimination she had fought against in the faculty. As a result, Odirile becomes hesitant

and uncertain about how she should assert herself, as a young black woman, in a political environment.

The findings demonstrate that black women's trajectory toward obtaining a STEM degree is more burdensome compared to their male, and white women, counterparts because their bids for "love" or recognition from their lecturers is obstructed by race (Carlone & Johnson, 2007). These women not only talk about how they received 'less assistance' with their academic work (compared to their white counterparts), but also how they believed the relationship between lecturers and white students was more "intimate" than the relationship between lecturers and black students. However, these women used this adversity as an impetus to become more independent and self-reliant. They provide several examples that support their belief that white students receive preferential treatment from their lecturers and they explain how their experience of misrecognition or withholding recognition by lecturers is a 'form of oppression' against black students (Taylor, 1994). This was particularly difficult for these women as they were accustomed to receiving recognition for their excellent academic achievement throughout their schooling career. The effects of misrecognition has meant that these women feel alienated in their field of study and 'inferior or unworthy' of becoming a scientist, an architect or an engineer. This racialised, gendered and class habitus in STEM fields at HWUs could be viewed as a form of 'symbolic violence' (Bourdieu, 2004) in that it not only coerces young black women into a system that rewards those who possess elite forms of cultural capital (i.e. predominantly white men) but it also creates ancillary feelings of inferiority for them.

It seems that these women embodied values that were in conflict with the dominant ideologies of whiteness and masculinity with which STEM fields aligns itself, as they felt that there is neither room for their ideas nor space for people from different backgrounds in their field of study. Furthermore, they explained that the Eurocentric curriculum in their fields of study lacks important insights through excluding black women. As a result, these women felt alienated by the dominance of a white, masculine, Eurocentric disciplinary and institutional culture, which contributed to the denigration of their cultural

and personal identities. In other words, their raced and gendered identities were further complicated by their academic identities as their experiences within their disciplines suggests that the institution continues to adhere to the ideologies of a racialised patriarchy, implicating the very nature of knowledge production itself.

The silencing of young black women occurred when they were restrained by their fear to voice their concerns and by not having an appropriate platform to confront what they believed to be racism and sexism in the institution. In addition, these women felt that their lecturers and tutors perceived them to be 'crazy' for attempting to re-think or re-imagine their discipline, which could be viewed as a mechanism for reproducing the status quo in STEM fields (Carlone & Johnson, 2007). Following Shay (2008a), I have argued that as the meaning of 'criterion' changes in different contexts across time, and as criterion-referenced assessment is concerned with people's habitual acts of judgment making; this may lead to the creation of assessment tools that reward dominant culture-related competences (Bourdieu & Passeron, 1977) instead of these young women's competences that have been informed by their own culture and background.

Being the only (or one of the only) black woman in their postgraduate classes, they narrate incidences in which they felt publicly humiliated by their lecturers and peers. In other words, these women have been subjected to misrecognition as evident by particular incidents that suggest their lecturers and peers do not view them as competent engineering, architecture or science students but rather as black women 'incapable' of learning science. The recognition of their gendered and raced identities overshadowed their science identities, thus they are ascribed an academically 'deficient' identity by their lecturers' sexist and racist practices.

It is worrisome that these women were exposed to critical race and feminism only in their postgraduate curriculum. Their access to these radical ideas enabled them to perceive their personal experiences of 'disadvantage' or marginality as social issues (rather than personal inadequacies) as well as re-interpret what it means to be a black South African woman in STEM fields, today (Middleton, 1987). This process of cultural production

facilitated the development of a redefined science identity, which may have helped these young women persist in their field of study. This kind of critical education became a vehicle through which they are able to recognise the possibility of changing their location within the “matrix of oppression” (Collins, 2002). Although, if they were exposed to these radical ideas in their undergraduate curriculum, perhaps the combination of their retaliatory acts over a long period of time would have punctured the racialised patriarchy within STEM fields and the institutional culture.

Based on these women’s accounts of entering the job market, it seems that the power dynamics of existing knowledge systems, particularly in STEM fields, means that institutions in which these women work are often in the business of what Essed and Goldberg (2002) call "cultural cloning”. Put differently, these institutions, which are racialised, patriarchal and meritocratic, systematically reproduce sameness within disciplinary and institutional culture. For instance, these women provide several examples that illustrate how the ’star scientist, engineer or architect’ is a gendered (white) male because their directors mentor them and they have monopolised the ‘noble professional tasks’ through their “cultural capital” (Bourdieu, 1998; 2001; Heynen, 2012). I have argued that particular women in this study have implicitly linked political power with the ‘coloniality of knowledge’ (Quijano, 2007) and their retaliatory (speech) acts are intended to create “epistemic de linking” (Mignolo, 2007, p. 453). Many of these women could not find employment subsequent to the completion of their postgraduate degrees. This finding supports Kahn’s (2008) claim that the system of innovation in science and technology cannot progress due to the dearth of engineers and scientists to conduct research and development.

Following Carlone and Johnson (2007), a few of these women would fall in the “altruistic scientist” trajectory because of their desire to give ‘back to the community’ and be of service to humanity through their career goals. Further, they aspire to create a career that not only will be a source of inspiration for them, but one that will also generate an income for their families. Although, other women position themselves within the discourse of traditional gender roles where men are the financial providers in the family

and women the caregivers of children. Thus, these young women imagine that there would be little time for them to work and have a family in the future.

9.3. Limitations and recommendations for future research

As there seems to be little research that focuses on the lives of black South African women scientists in post-apartheid South Africa, I needed to develop an innovation research typology that would offer insights into how these women (re)constructed their-selves as scientists and what barriers they faced and conquered (or not) in their pursuit of a STEM degree. I thus conceptualised a methodology with several innovative component parts. Accordingly, one of the limits of this research pertains to the large corpus of data that was generated from these multiple methodological approaches. I had conducted 14 narrative interviews that were divided into three subsessions, totalling 45 hours and 13 mintues of transcribed interview recording. However, in my thesis, I have only used 11 hours and 36 minutes of data from subsession one (which involved a non-interrupted narrative of the story of their life). In other words, the visual narrative data (from subsession two) and the particular incident narrative data (from subsession three) do not feature in this thesis, with the exception of Alala's portrait (chapter eight). As a result, this study is not exhaustive and only offers partial and incomplete insights to research questions.

9.4. Conclusion and implications of the findings

The findings in this study offer new and innovative insights into the narrative constitution of identity through educational failure and the lines of identification and recognition as "clever". Little is known about the ways in which failure complicates narrative identities, especially of young black women in science. Furthermore, this study contributes to understanding the relationship between recognition versus misrecognition and how these phenomena are entangled in an endless process of (co)constructing the self through recognition (and expectation), (de)constructing the self through misrecognition and (re)constructing other spaces and other selves at the point of intersection.

In addition to the theoretical contributions of this study, there are also several policy implications in relation to the transformation of South African Higher Education landscape. This study presents a temporal flow of discursive themes that account for how the intersections of race, class and gender locations coalesce into a "matrix of oppression" (Collins, 2002), positioning young black women as pawns in institutional and disciplinary spaces. The women who had attended rural and township schools were faced with overcoming the "articulation gap" (Department of Education, 1997, p. 22) between their secondary schooling and their preparedness for the academic demands at university. This research study disentangles the mutually reinforcing relations between "epistemological access" (Morrow, 2007) and the dominant ideologies of whiteness and masculinity within STEM fields at HWUs, which are in conflict with these womens' backgrounds, thus contributing to their experiences of (c)overt discrimination at university, either through public humiliation, silencing of black women and/or the preferential treatment of white students from lecturers. Further, many of these women could not find employment subsequent to completing their postgraduate degrees. Thus, based on their accounts of entering the job market, it seems that the power dynamics of existing knowledge systems, particularly in STEM fields, means that institutions in which these women work are racialised, patriarchal and meritocratic, and systematically reproduce sameness within disciplinary and institutional culture.

The findings also indicate that these women resist systems of oppression by creating new versions of themselves through narratives of homespaces that link them to others and locate new trajectories of possibility. Put differently, through the cultural production of science, these young women are able to begin making new "imagined communities" (Anderson, 1991) by redefining what it means to be a black woman in contemporary South Africa. Consequently, the categories of scientist, engineer or architect are also shifted, reinterpreted and transformed. The significance of this research thus lies in its contribution to understanding personal and social change, particularly for marginalised groups who come to occupy positions of power in both the production of knowledge and the functioning of society.

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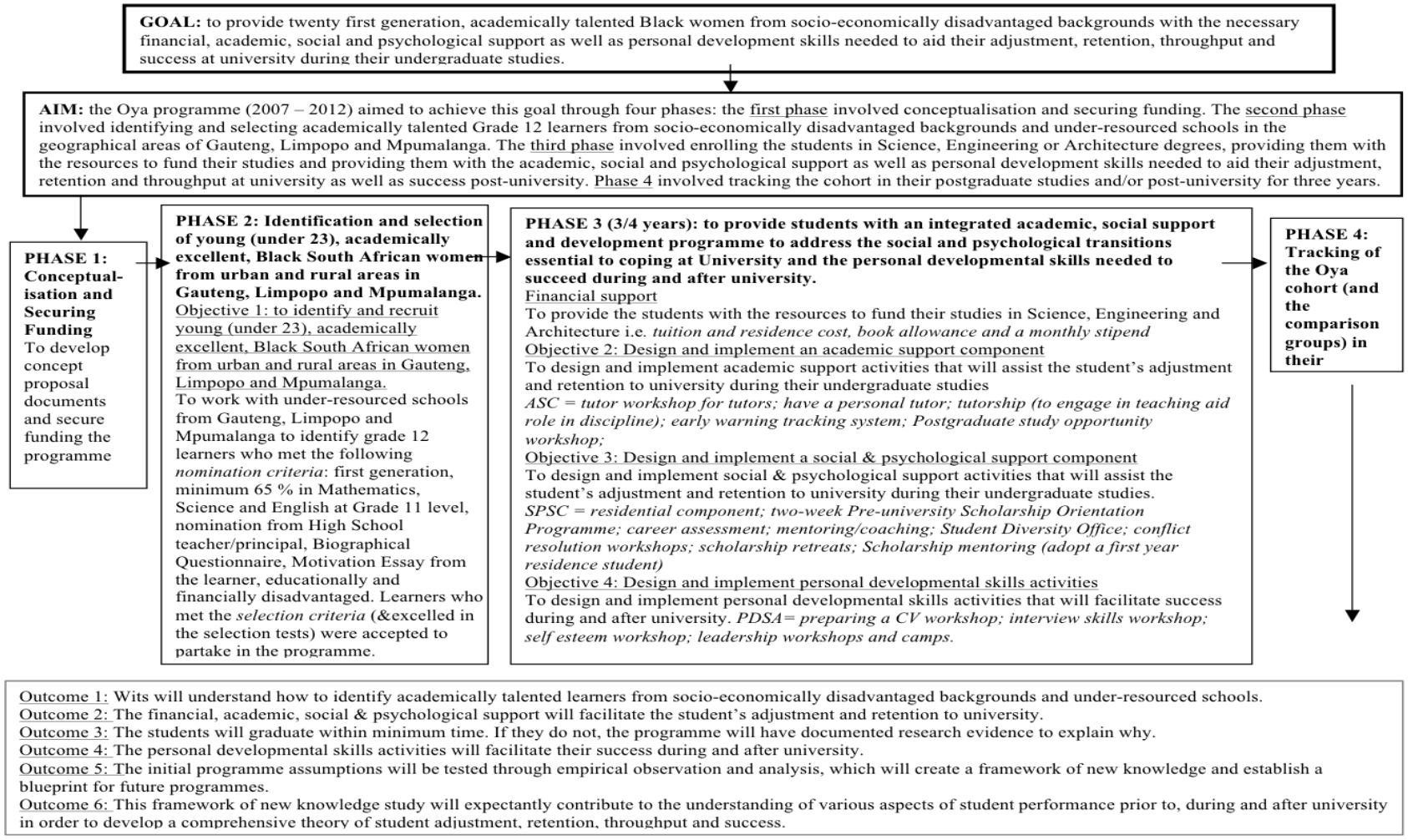
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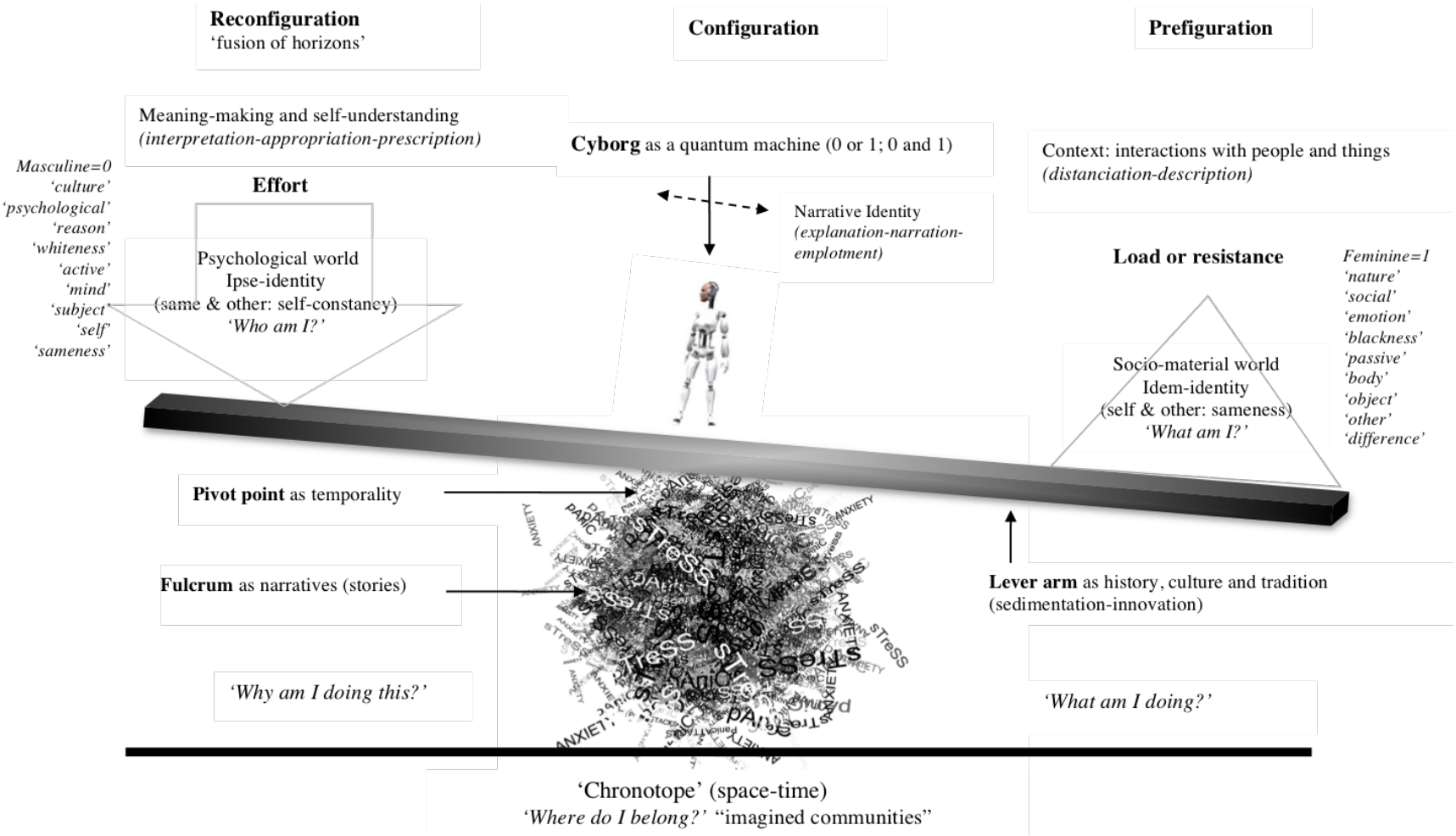
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APPENDICES

Appendix 1: Flowchart of the Oya Scholarship Programme



Appendix 2: A metaphorical lever and a cyborg as conceptual tools for narrative identity



Appendix 3: Participant information letter and Consent form for a Biographic Narrative Mobile Interview

Participant information letter

Project Title; Narratives of Science Graduates' Relational Selves: How black South African Women Reconfigure Boundaries of Space and Time

Affiliation: University of the Witwatersrand, Johannesburg

Ethics committee: 0111 717 1108

Researcher: Sabrina Liccardo

Phone: 011 435 8943

Cell: 073 144 7500

E-mail: sabrina.liccardo@gmail.com

Prof. Jill Bradbury (supervisor): jill.bradbury@wits.ac.za

I am a student at the University of the Witwatersrand, Johannesburg and I am interested in the lives of science students and graduates in South Africa. My research project aims to investigate how the processes of being a student and becoming a scientist articulate in the identities of black South African women scientists.

Therefore I would like to invite you to participate in my research project. Participation would involve taking part in a 'biographic narrative mobile interview' conducted by myself. Please understand that your participation is voluntary. The choice of whether to participate is yours alone, although I would be grateful if you would share your experiences with me. However if you choose not to take part in this research there will be no negative consequences for you. If you do agree to participate, you have the choice of withdrawing from this research at any time again with no negative consequences for you.

I would do an audio recording of the interview. This recording will be saved on my personal computer and then deleted from the recorder. My computer has a login password therefore only I (and my supervisor) will have access to the recoding and transcript. The

recording will be used to transcribe the interview discussion and *all information or quotes* that could identify you will be removed and replaced with pseudonyms (false names). However it is important to note that because I will invite all the scholarship recipients from the Oya scholarship to participate in my research project, I cannot guarantee that the other scholarship recipients will not be able to identify you. However, in order to prevent or minimise any identifying information, I will give you a copy of the interview transcript to read through (if you choose) and you could flag the information that could identify you. I will replace this factual information with pseudonyms (e.g. false names of people, places etc). I will discuss the process of making these adjustments to the transcript with you because my first priority is ensure that I understand any concerns that you may have with this research as well as to represent your experiences and life story to the best of my ability.

As mentioned, participation would involve taking part in a 'biographic narrative mobile interview'. A biographic narrative is a story about a person's life and lived experience. Before the interview, I ask you to please bring something that is important to you that represents your past, something that represents your life as a university student (and your workplace if applicable), and something that represents where you see yourself in the future. It could be an image, photograph or picture. It could be an object of some kind that you have made, found, seen or has been given to you. It could be something more symbolic, like a song, poem, piece of writing or music, painting or picture. Just choose three things that feel right in terms of conveying something important about each of your past, your present (life as a university student or your workplace) and your future". **Please bring these three objects with you to the interview**.

The interview will have **two subsessions**. I will also ask that you to choose your favourite place at Wits so that we can conduct the interview (subsession one and part of subsession two) at your favourite place. It is intended that this will make you feel more comfortable and also give you some control over the interview process. **S*ubsession one*** will be a non-interrupted narrative where I will ask you to tell me about "the story of their life, all the events and experiences that have been important to them personally, up until now".

During ***subsession two*** we will talk about any particular incidents that arise from events and experiences. We will use your three 'objects' in order to 'jog' your memory.

1. **First,** I will ask you to tell me more about the object that represents or reminds you of your past.
2. **Secondly,** I will ask you to tell me more about the object that represents or reminds you of your life as a university student (and your workplace if applicable). While you tell me about this object, I will make a list of particular places at the university that you mention. From this list, we will then choose a few places that are in close proximity with each other and then we will continue the interview while talking and walking through these places. We will generally explore your memories of each place.
3. Once we have visited each place I will **lastly** ask you to tell me more about the object that represents where you see yourself or hope to be in the future.

The interview will take between two to three hours and I would request that the interview take place during May, June, July or August 2012 (whichever month is most convenient for you). Please note that all transport expenses will be covered. If you want, we could divide subsession one and two over two days. If we have a conversation about a topic that is upsetting to you, we could stop talking about it and if needs be I could put you in contact with a counsellor, who will be willing and able to talk with and/or assist you. If you have any questions about this research you may contact me or my supervisor, Professor Jill Bradbury, at the University of the Witwatersrand. If you have a complaint about any aspect of this research you may also contact the ethics committee of the University of the Witwatersrand. Please feel free to contact me at anytime to discuss this research.

I look forward to working with you on this project.

Thank you,

Sabrina Liccardo

Phone: 011 435 8943. Cell: 073 144 7500

E-mail: sabrina.liccardo@gmail.com

(Adapted from Brown, 2009)

Consent form for participating in and the audio recording of a *Biographic Narrative Mobile Interview*

If you agree to participant in this research, please complete the following consent form granting me (the researcher) permission to interview you and to audio record this interview and therefore your responses. Please sign at the bottom of the page.

I understand that:

- My participation in this interview is voluntary;
- I may refuse to answer any questions I would prefer not to and I may withdraw from the interview at any time.
- The biographic narrative mobile interviews will take between two to three hours.
- I should feel free to speak candidly about my experiences. There is no right or wrong answers and I will not be judged for the opinions I hold.
- The recording will be saved on the researcher's personal computer and then deleted from the recorder.
- The recording will be used to transcribe the interview discussion and all information or quotes that could identify me will be removed and replaced with a pseudonym (false name).
- The researcher will give me a copy of my interview transcript so that I may flag information that could identify me.
- The researcher's computer has a login password therefore only the researcher and the supervisor can have access to the recoding and transcript.

I _____ (name and surname) consent to being interviewed by Sabrina Liccardo (the researcher) and approve the use of the audiotape recorder during the interview discussion. I also consent to the use of my responses in an anonymous manner in this research study.

Signature: _____

Date: _____

Appendix 4: Adapted Jeffersonian Transcription Notation

Symbol	Name	Use
(#)	Number of seconds paused	A number in parentheses indicates the time, in seconds, of a pause in speech.
(.)	Micropause	A brief pause, usually less than 0.2 seconds.
-	Hyphen	Indicates an abrupt halt or interruption in utterance.
Underline	Underlined text	Indicates the speaker is emphasising or stressing the speech.
(hhh)		Audible exhalation.
(.hhh)		Audible inhalation.
((Text))	Double parentheses	Annotation of non-verbal activity.
(Text)	Parentheses	Speech with is unclear or in doubt in the transcript.
…	Ellipsis	Omission of speech text without altering its original meaning.
[Text]	Square brackets	The researchers words added for clarification purposes.
hmm	Interjection	Expression of hesitation, doubt or disagreement

Appendix 5: Text Structure Sequentialisation for one participant, Alala Celukwazi

Selected quotations from transcript	**Text-sort**	**Selves**	**Actants**	**Themes**	**Discursive themes**
	SQUIN				
DON'T KNOW WHERE TO START					
-I don't know where to start - Yesterday trying to create little timeline for myself, so that I would be prepared	**ARG, DES**			Where to begin?	Resis BNIM
(1) Artistically talented but academically mediocre? My mother's valuation of academics over artistic ability became my driving force (PIN, EVAL)					
I'll start with what started (.) to inspire me, **where my drive came from**	**EVAL**			Driving force	Ambition
I remember in Grade 3 I hadn't got any prizes at the formal prize-giving event	**PIN**	Non-academic		No recognition	
- Art teacher **did little did little certificates for us and** one she did for me was *was* for the best practical work or art or something	**PIN**	Art	Art teacher	Recognition	
that is where my my sense of … believing in *myself in terms of creativity started*	**EVAL**	creativity		Creativity	
my mom looked at that certificate, and she was like, but why didn't you get the formal one?	**PIN**	Non-academic	Mom	Parents expectations	Meritocracy
I was devastated and thought why didn't I get a formal award	**PIN, ARG**		Self	Disappointment	
- at the beginning, that is what drove me - have always worked to do, the best, so that my mother can be proud of me	**EVAL**		Mother	Desire	"make mother proud"

(2) My drive to create and learn: Wining an art competition made me feel like I've got it, I can do it (PIN, GIN, EVAL)					
- I've alwaysssa thought about things, worked with things, **created things**	**GIN**	Creative		Creativity	
- creativity and art, it grew it grew and developed	**EVAL**	Art			
-in Grades 7, there was this, **this competition** where we had to create something	**PIN**	Artistically talented		Competition	
It came out on top,	**PIN**	Artistically talented		Recognition	
-those are the moments that had had made my life, made me feel like, okay I've got it, I can do it.	**EVAL**	Artistically talented			Talent "I've got it"
I liked learning - I had that drive to learn. -I like talking to people and seeing what is behind, the face value	**ARG** **GIN**	learner	Talk to people	Driving force	Ambition
	EVAL				
(3) Places of belonging: The library and art studio were spaces I could zone out and reflect (ARG)					
- I became a b i g fan of the library - **I started working at the library**	**REP** **ARG**	Place. Academic		Job as (librarian)	
- the library was like my, my little sanctuary	**EVAL**	Place. Academic	Library	Significant places	
I didn't quite like home that much, so so I spent much of my days at school,	**REP**	Place. Academic			
I listened in class and I just remembered because I actually enjoyed learning	**ARG**	learner		Learning vs. studying	
- biology and art and I enjoy maths	**ARG**	learner			
- **art was something else, it was was spiritual, for me**	**EVAL**	Place. Art		Art spiritual	"zoned out" – lose track time

- **Art (studio) and the library** those are my favourite places at school,	**DES**	Place. Art	P: Art (studio) and the library	Reflection	
Mrs. Cohen thought she was she was crazy …. But I understood her somehow	**ARG**	Relation	Mrs. Cohen (librarian)		"I'm crazy"
I like reading, I like books and working with people	**ARG**				
(4) I was quiet and shy growing up but I 'found her voice' in public speaking (EVAL)					
- as I grew up, I was always a very quiet and shy	**DES, arg**	Personality		Personality traits	
- I decided to do **public speaking** that's when I found my voice and yeah I wasn't so shy any more	**EVAL**	Public speaking		Public speaking	"I found my voice"
(5) Recognition: Awards kept me going then but not they are no longer important (ARG)					
- I had gotten a lot of awards, They made at that time they were important	**DES ARG**	Achievement / Talented		Driving force (Recognition, awards, achievements)	Meritocracy
(6) I've always a bit of a dreamer: I would sit outside, draw flowers and dream about finding something better (REF)					
- I was very passionate person - I was always a **bit of a dreamer**	**EVAL TIN**	Personality		Dreamer	
Schooling, for me school played a a big role in my life, ja… cos … *I like learning*					
Sabrina: I love listening, especially to you					

(7) Significant others: I secured a high school scholarship because a primary school teacher believed in me (REP, ARG)					
- **people have always been important,** I've always had, support, **people that have believed in me, kept me going, kept me encouraged**	**EVAL**	Relation	Support from people	Driving force (support from people)	Social capital
- **my father had just passed away,** I was nine and my mom couldn't afford to pay school fees	**REP**	class	Father died Mom	Death in family Financial trouble	No economic capital
- this teacher, that's I do know-she believed in me - mom had just lost her job in 1998 -- teacher organised a payment plan	**REP**	Relation	Teacher	Support (teacher)	Social capital
- end primary school teacher put her in contact with **the education committee,** - they, paid for everything in high school they paid for uniform, tuition everything and and it's also a support system - I was very fortunate-in that I had time to focus on school	**REP**	Talented academic. Class. Black woman. Place	**education committee,**	Scholarship/ funding	Social capital Opportunity
- my mother didn't have to worry - I was very fortunate-in that I had time to focus on school	**EVAL**				I was very fortunate
8) Significant others: a high school teacher became like a second parent to me because of her support and encouragement (GIN)					
- this amazing old lady **Mrs Rozio** had something inspirational to say - every end of the year after when she got reports, she was **sends letters, very personal letters**	**GIN**	Relation	Teacher	Support (teacher)	Social capital
- every time I had something when I wasn't feeling okay I'd go to her and	**GIN**	Relation	Teacher	Others	

she always said to me **you worry too much, you're too anxious**				perception of self	
- she kept me going through high school-and sort of like **a second parent**,	**EVAL**	Relation		like **a second parent**,	
(9) A killer education: I lost touch with my creativity because I spent so much time molding my craft and my-self into architecture at Wits (EVAL)					
I really did like art I still do, it was it's, I do know it's soul work for me-	**EVAL**	Art		Art as soul work	
- when I came when I came in did architecture, you have to draw, a certain way	**REP ARG**	Art. Uni student.			Conformity kills creativity
-so I'm sad that I have I lost (.) **I do know-I didn't I didn't lose it-but it's hard, to get back to, that point**	**EVAL**	Art. Uni student.		Conformity/ architecture consumed me	
(10) First generation: I chose architecture instead of fine arts because I am the 'retirement plan' in my family (ARG)					
I chose architecture [15.55] I was very passionate about	**EVAL**				
my art teacher also thought I was crazy	**GIN**	Relation	art teacher		" I was crazy,"
- it was like art and I really enjoyed maths, -and I did enjoy biology maybe not enough to study it,	**ARG**	Art, maths, bio		Fav subjects maths and art	
- most passionate about maths and art - applied, to Wits, I applied for fine arts and architecture and I got accepted into both	**ARG REP**	Maths & art		Applied (accepted) for architecture and art	

- I keep reflecting **I remember asking my mother which which I should do art, fine arts or architecture** and she was saying to me 'whatever you want'	**PIN**	Maths & art	Mom	Advice	
- maybe I should've gone into the arts	**EVAL**			Regret? (chosen art?)	
- BUT looking at your background when you choose your degree, you choose that according can it help me to support to support to support people	**ARG**	Class	Family	Chose degree (can support family?)	Family expectations/ responsibilities
- Ellen Degeneres show .. son is running the shop .. he is his **fathers retirement plan,** so it sort of feels that way for us, for me as well	**EVAL, ARG**	Class	Family	I am my family's retirement plan	
I don't like to say disadvantaged, cos we're not disadvantaged - you have your school, passion, dreams and family to worry about	**EVAL, ARG**	Class		Counter narrative (disadvantage)	Challenge "disadvantaged"
(11) Unemployment: My mother's dream of sowing but reaping no carrots (EVAL)					
- my mother had a dream the other day, she's she so worried	**REP**		Mom		
- she was getting carrots out of the soil, and then when she looks at them, there is no carrots, and she was so devastated by that dream	**REP**	Unemployed, relation mom		Disappointment	
- interpretation sometimes we put in so much, the putting in the effort and it's **it's a faith thing**	**EVAL**	Unemployed, relation mom			Faith
- it doesn't always come out, **the way you want it to be**	**EVAL**	Unemployed, relation mom		Outcome not what planned or wanted	
- **parents invest in their children** they put them through school, with the	**EVAL**	Unemployed,		Parents	

expectation that one day my child will come out and look after me,		relation mom		expectation	
it was devastating for my mo my mother - she is a bit worried about me right now, And me doing nothing at the moment	**EVAL**	Unemployed, relation mom			
(13) Being a black woman in Architecture at Wits: There is neither room for my ideas nor space for people from different backgrounds (EVAL, ARG)					
- I came into architecture - I had that passion that is **I had done maths.. I had done art**, I loved them the perfect thing to do is architecture	**ARG**	Maths & art		Chose degree (love maths and art)	
- first year was really difficult - you come from a place where you've where you worked hard and you got the results so it was simple - now you come in and you work hard it **comes back with these results that you like, but why**		Academic talent?		No recognition (but work as hard) – contradiction	Academic results
- if I go back I will still believe and I will still fail because I believe in this, it's it's a human thing, it is so important in our lives, it's a social art,	**EVAL ARG**	Idea. Architecture	Humanity	Architecture is a social art	Architecture department rigid
- **the way you shape the spaces shapes society** - we go through spaces but they affect us, they do-they have to, **it's sort of our third skin**	**EVAL ARG**	Idea. Architecture	Space	Space and society Space as out third skin	Social space
- as a social art, and I think it's about human, for me about the human and about humanity - the way architecture is going it's just about monuments, about your ego	**EVAL ARG**	Idea. Architecture	Humanity	Personal values	Humanity
- that's why I struggled and that's why if I go back I will struggle, because you have a certain set of ideas … coming from a different background architecture was set-well the curriculum (different to background)	**EVAL ARG**	Idea. Architecture	architecture department	BOUNDARY: Set ideas/backgr	Eurocentric architecture curriculum

				ound misaligned/ opposed with architecture curriculum	
- you've got your ideas-you're from a different background … you present these ideas that are real to you that it's **it's about culture**	**EVAL ARG**			Set ideas/backgr ound	Culture and society
(14) University ought to be a space where we are free to explore, discover and express ourselves instead of being told who to be (ARG)					
- **university should be, a place where you explore** - we could've discovered many things if people weren't shaped into be our our lecturers	**ARG**	Idea. Uni. Place	Lecturer	Exploring and discovering	Idea of a university
- we should be allowed to be ourselves .. but within reason, of course you can't you can't be creating, [24.19] I do know, things fall down	**ARG**	Idea. Uni. Place		technical part	"True to ourselves"
(15) Alienation: My belief that real architecture is created by humans for humanity was not shared (EVAL,ARG)					
- essence of it, is that it's social art .. It is about humanity and	**ARG**	Idea. Architecture	humanity	Creative/hum an part	Art and humanity
and I understand the technical part of it (.	**ARG**			technical part	
- it's about people-it's the essence of it	**ARG**		humanity	Creative/hum an part	
-even when you when **you draw a line, you put your self into that**, and you, put your soul into that, you put your essence into tha - if you cannot think like a human being	**EVAL**		human	Put self into work	
- I used to say this a lot, they think I'm crazy, but I'm actually not it's been done, there is evidence of it, all around us there's evidence of real architecture	**ARG**			evidence of real architecture	" they think I'm crazy"

- I mean it's beautiful when things are are just … Shiny and glamorous .. But for me, that was a struggle that I went through	**ARG**			Struggle Values	Beauty
(16) Being a black woman in Architecture at Wits: The lecturers try and shape us into what they want us to be (ARG)					
- and it's not to blame the lecturers … I struggled a lot because I **couldn't find a way to express myself properly …** [or] find a different way to convey my ideas	**EVAL**		Lecturers	different way to convey my ideas	Self expression Takes responsibility
- problem is (.) **they try and shape us into (.) what (.) they (.) want (.) us (.) to be**	**EVAL**	Black. Woman	Lecturers?	Boundary Conformity	Eurocentric
- we can't … that's why we struggle-and also as a black **woman** you're coming from a different background	**ARG**	Black. Woman		Black women	
- there was a discussion in 'schooltalk' … about the whole **Eurocentric teaching** - In English houses or whatever you have when you enter you have (.) uhm *an entrance hall*, but with us with black **people**, you have to go around the house	**ARG**	Black.	Blackness	'black people diff background	Eurocentric teaching
- for me that just about cos those are the differences .. I mean you grew up going around the house and for you, when you go in design that is imprinted in your mind - if people wont hear you, and would here where you come … obviously they won't understand	**ARG**	Black.		Internalization of background (who I am)	Eurocentric teaching
(17) The university space should not privilege a select few (ARG)					
- and I don't think I think I think if you went to university ..ade it through first-year, and second year (1) that **you're not stupid**	**EVAL**	Idea. Uni		Not stupid, All need to	

				be heard	
- there are some people that .. will create their glamorous stuff, there are some people that will create other stuff - **there is a place for everyone … it mustn't be a select few**,	**EVAL ARG**	Idea. Uni		Boundary: only space for select few	Space for ideas from select few
- that's where I struggled .. **I struggled so much to convince them**	**ARG**			Struggle (to convince them)	
- I made mistakes as well - I find numbers and civils and counting I mean I catch onto that stuff very easily and I can do it-but I didn't have the time - so you focus, almost always on one thing, because it's the major it's the main subject …*'so you can't fail this*	**REP**			Struggle (to juggle subjects)	
(18) Friendships provided me with a platform where I could be heard (ARG)					
- its **shaped or changed my values** - I've always, been a person to believe but people are people, we are all talented in our own way - ***but now I understand it more,*** **it's real-it's not just an idea it's real** ^^I've been through it all	**EVAL**	Trans.talent		Values (experience gave substance)	
- I **made a lot of friends**	**ARG**	Relation	Friends	Support network (Friendships)	Social capital
- having their support of of **Oya**	**ARG**	Relation	Oya	Support network (Oya)	Social capital
- it was actually the opposite of high school (never had so many friends, it was always school-school-school)	**GIN**	Relation			
- at uni I enjoyed being with my friends	**GIN**	Relation			

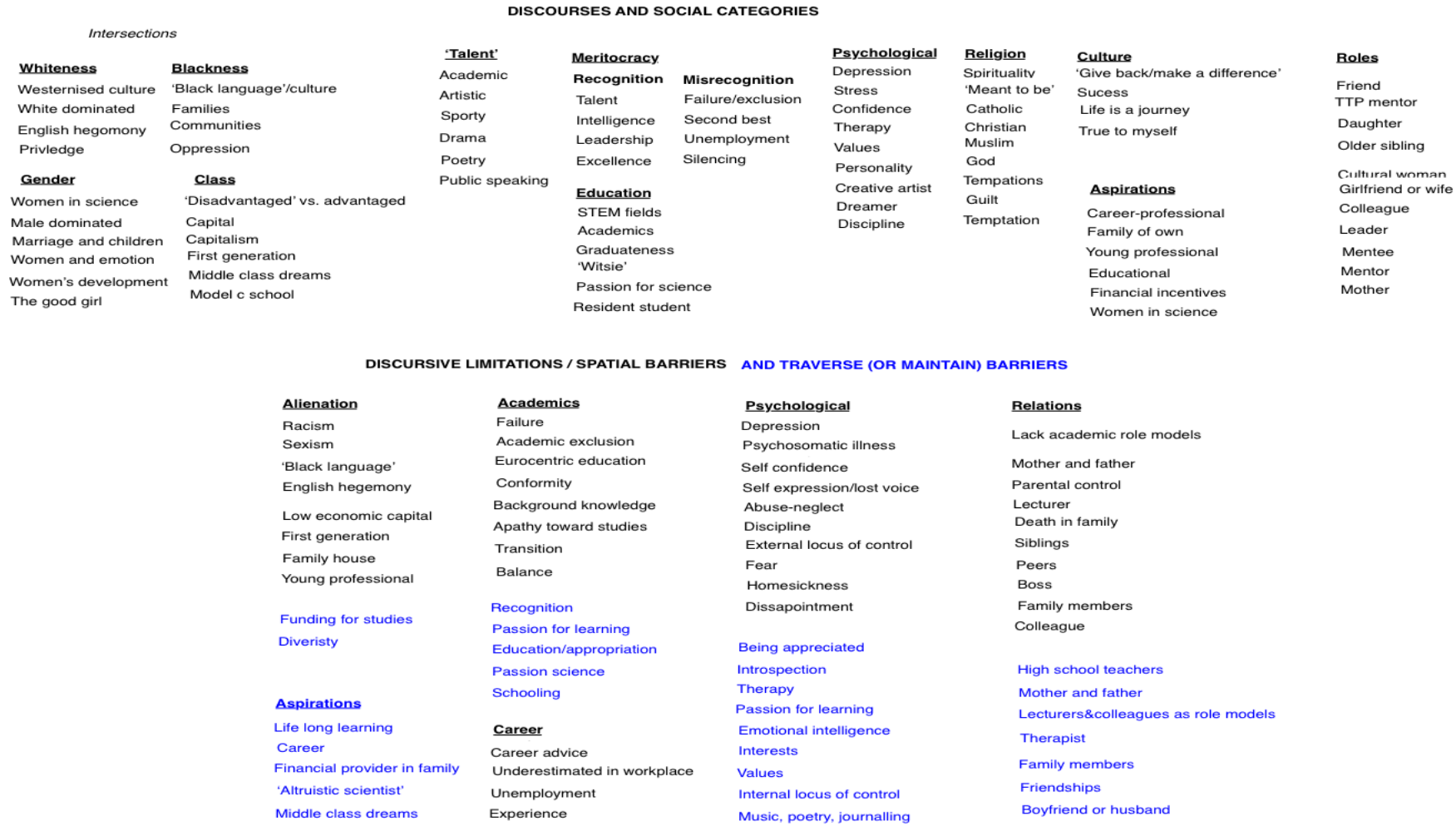
	PIN				
- it was a platform where you were heard,	**EVAL**	Relation		NB Support network (friends, platform heard)	Social capital Self expression
(19) **Music saved my life so many times and I've always enjoyed writing poetry, being in my head (ARG)**					
- having to **poetry sessions** - music ^saved my life so many times	**EVAL**	Music. poetry		Motivator (music and poetry)	Self expression
- e always enjoyed writing, creative writing-English-languages - **I also write poetry**,	**ARG**	Music. poetry		Motivator (poetry)	Self expression
(20) I'm looking for a career where I would be able to do what I do best, translate imagery into words (EVAL)					
- asking myself uhm **like 'what do you want?' Like what can you do, and what is your biggest talent**, - **how I can translate an imagery into words**, and (.) words into imagery (.) and for me, that is that is what I can do	**EVAL**	talent		Personal talent	Talent
(21) Supportive people have always lite my fire and kept me going (REF)					
- I've always had people who believed in me-and for me that that is kept me going- - people support you-that's what it is, it's them lighting your fire	**EVAL**	relation	Friends, Oya	Support networks	Social capital "believed in me"
- **I fought so hard for my ideas**	**ARG**	Activist?		Fought for my ideas	- agency
- I worked myself into almost death state, because I was fighting	**PIN**			Fought for	- agency

				my ideas	(conseq)
- maybe I was going by it the wrong way-it doesn't matter how much force you use, maybe the method was wrong - mean it's sad, it hurts (.) that, you know, I didn't make it through the entire degree ’m not (1) going to jump off a bridge because of it-I mean it sad	**EVAL**			Disappointment	Academic exclusion
(23). An underestimated intern: Companies are too scared to p**ut some faith in the upcoming professionals** (EVAL, ARG)					
GOT A JOB AS TRAINEE ARCHITECT - I went (3) and then I went into ah ah the **workplace … as** trainee architects - they took me-regardless of the fact that I had uhm, failed my third year, so they must see something, ^**they must believe in something** - you learn so much within a week you learn so much technical stuff	**REP**	Professional /career. Youth		Work	“believed in me”
- BUT there's the whole passion getting into work, getting into proper work, **getting real work**, - after the whole **exclusion failed thing**, maybe I sort of lost my voice	**EVAL**	Professional /career. Youth		Settled for less (Boundary)	Real/proper/ inspiring work “lost my voice”
- **I was stuck doing .. window scales** it wasn't work … you're given so minimal responsibilities	**REP**	Professional /career. Youth		Under-estimated	
- I understand you’re a first year, but you know (3) take the risk ..-**like leap of faith …** p**ut some faith in the upcoming professionals and and then you might be shocked at what we might produce** - **I feel like we are so young and so excited about things, life has gotten us down yet**	**EVAL**	Professional /career. Youth		Youth aspirations Confidence	Companies, don’t take a risk/leap of faith
- but it's not like that, everyone is scared it's it's to (4) and it’ s **frustrating** - didn't like the workplace because I don’t know (3) I was stuck doing, useless stuff, like it's not useless (1) it's not inspiring … give me a chance to,	**EVAL**	Professional /career. Youth		Youth aspirations “ **I want you**	Companies, don’t take a risk/leap of

[41.17] show you that I want to be here-I want to be present-**I want to, you know hear me, I want you to see me** **- but it's but it's not like that**				**to hear/see me"**	faith
- I've learnt a lot of whatever, the stuff that you put on paper, degrees the technical stuff - but people always played an important role, in meeting people getting to know their stories, getting to know them, learning about them (2) and they've always just kept me going	**ARG** **EVAL**	Professional /career. Youth		Root of passion	Inspiration
(24) Being unemployed it's not nice but if I were to go back to Wits, it would kill any passion I have left for architecture (EVAL					
been at home, since [laugh] ah, soo it's a little difficult at times, you know-there are times, ? so being unemployed it's not nice	**REP** **ARG**	Unemployed			Unemployed
- like you said, it gives you time to think and to figure out your direction	**ARG**		Sabrina	Re-assess/find direction in life	"your direction"
- been working on contracts with my aunt, but not on architecture	**REP**			Un-related work	
-even though **architecture was not my first choice**, it became a passion of mine, and and I really I really want to be like 'yes, this is architecture YAY', I wanted to be the cheerleader for archi-and and you know (3) I'd rather not do anything than, than to be forced to be, sort of like, **constantly kill my passion** **- maybe one day I'll still go back to it (1) but right now,** I'm sort of not	**EVAL**			Passion died	Institutions killed her passion
- Alala is like ^sitting at home doing nothing - I've worked I've worked on contracts on Johannesburg water and (1) it's just drawing work, it's no it's hardly any thinking work	**REP**	Career		Un-related work	
- I'm just hoping to figure out a .. in terms of **me** and what I need my passions, and something that can generate an income	**EVAL**			Re-assess/find	Work and Passion

				direction in life	
(25) In my life and work, I want to feel glimpses of joy in being free, exploring, learning, understanding, and growing (EVAL, REF)					
- I don't want to …people are so grumpy at ^work	**ARG**				
- I mean, **I don't really believe in happiness any more ..** such a useless word, but there is joy and there is there is some (1) positive-ness about the world	**EVAL**			Counter-narrative	"happiness"
- but people are are just **unhappy** and bitter …**I don't want to be stuck, I have to do explore stuff, I have to learn more and more and more-I have to grow** I cannot sit in an office, every day and just sit there (2) I I have to explore stuff, and learn	**EVAL**	Youth	**Joe**	Aspiration	Travel, learn and grow
- it goes back to (2) what I said-the early me, who hasn't changed much^ [talk/laugh] I mean, I still want to learn (.) just learn (.) find understanding (4) a fulfilled life, that's all I want-a self-sustained fulfilled life (3) ja (5	**EVAL**			Aspiration	"self-sustained fulfilled life"

Appendix 6: Coding categories and discursive themes



Appendix 7: Narrative analysis matrix for one participant, Alala Celukwazi

Setting & time/age	Topics	Themes	Topic textsort	Plot (i.e. diagram)	Multiple selves that develop into storylines	Characters	Boundaries (and traverse)	Origin (Randall , 2014)	PINs
Grace Primary School (1999; 2001 i.e. 10 and 12 year old selves)	Stage 1. Artistically talented but academically inferior? My mother's valuation of formal recognition over personal acknowledgement became my driving force	- relational ambition, - meritocracy versus - mediocrity, - forms of recognition, - valuation of academics over - creativity, parental - expectations and personal - disappointment.	EVAL and PINS	1. C: No awards at prize-giving but her art teacher gave her a merit certificate. E: Her mother: "why she didn't get the formal award?" which ignited a driving force to excel (PIN, EVAL) 2. C: Wining an art competition. E: She felt like 'I've got it, I can do it'. (PIN, GIN, EVAL)	1. Artistic ability but academically average 2. Transition: average to talented	Ms. Katz prevents Alala from feeling inadequate (valuing the academic self over a creative one) Her mother is the cause for this conflictual feelings and thus she is responsible for motivating Alala to move the plot forward General: Classmates,	Being excluded from the 'scholarly group' = boundary to developing an intellectual identity Traverse: Hard work (pursuit of meritocracy or fear of mediocrity)	Inter-personal and ideologic al	1. Prize-giving evening
Grace Primary School and Oakland	Stage 2. At the beginning (point A); I was a curious, creative,	- Meritocracy or formal recognition no longer a	ARG, EVAL and PINS	3. C: At library and art studio. E: She could zone out and reflect	3. Place identity. 4. Transition: from shy to	School librarian (Ms. Johnson) General:	Traverse: Sense of belonging to places,	Intra-personal;	1. Place identities 2. Public speaking

Girls High School (2001 - 2003; 2012; 2007 i.e. 12, 13, 14 and 18 year old selves as well as her 'current' self)	contemplative and artistically talented individual who had a passion for deep learning	driving force; - Place belonging, - Passion for learning and art; - Self development; - Personality; - Hobbies.		(ARG) 4. C: She was shy growing up but after taking public speaking. E: 'I found my voice' (ARG) 5. C: Awards kept her going. E: With time, they were no longer important (ARG) 6. I would sit outside and dream about saving the world (REF)	having a voice. 5. Transition: Valuation to no valuation of awards 6. Personality (dreamer)	Schoolmates,	passion for learning and art		saga 3. Journaling about awards 4. Creating a bee radio
Grace Primary School and Oakland Girls High School (2001; 2006 i.e. 12 and 17 year old selves)	Stage 3. The support and encouragement of others has always 'lit my fire' and kept me going	- Social capital (as opportunities and motivator), - Economic capital, - Death and fortune	REP	7. C: Her primary school teacher believed in her. E: She secured a high school scholarship (REP) 8. C: Her high school teacher encouraged her E: And became like a second parent (REP, GIN)	7. Relation:Primary school teacher 8. Relation: high school teacher	Ms. Mbele 'believed in Alala' and organised a payment plan for primary school and helped her find a high school scholarship Ms. Adams was	Death of her father Mother lost her job Traverse: Educators 'fuelled her fire' , kept her going and helped her secure scholarships	interpersonal;	

						like a second parent to Alala who provided her with moral support Alala: “I’m stuck” Sabrina: “I love listening to you”.			
Wits university (2012 i.e. Current self)	Stage 4. In the end (point B), I lost touch with my creativity because I spent so much time moulding my craft and my-self into architecture at Wits	Conformity versus creativity Idea of the university.	EVAL	9. C: Wits. E: Lost touch with her creativity (EVAL)	9. Transition: creative to "architecture student"	Staff members and classmates at the School of Architecture	Conformity educated creativity out of her	institutional, ideological	
Home and Wits university (1999; 2007; 2012; 2007 i.e. 10 and 18 year old selves as well as her	Stage 5: At the beginning, I chose architecture instead of fine arts because I was my family’s ‘retirement plan’ but in the end, I am unemployed	- Career guidance, - First generation, - Class, - Economic capital, - Unemployment,	ARG, EVAL and PINS	10. C: As she is her family’s ‘retirement plan’. 11. E: She chose to study architecture instead of fine arts (ARG) 12. Her mother’s	10. First generation 12. Relational: mother 13. Transition: Talented to academically	Staff members and classmates at the School of Architecture	First generation. Family’s financial position	Impersonal,	1. Dream about her late older sister

'current' self)		- Provider versus dependence - Dreams.		dream (EVAL) 13. C: Worked extremely hard at university. E: But below average results? (ARG)	average				
Wits university (2010-2012 i.e. 21 and 22 year old selves as well as her 'current' self)	Stage 6. In the middle, the struggle happened in-between point A and point B	- Academic criteria, - Mediocrity, - Eurocentrism, - The role of architecture, - Discrimination, - The university space, - Conformity, - Belonging and alienation, - Social capital, - Self expression, - Career aspirations, - 'Talent' and - Failure.	ARG, EVAL and PINS	14. 'There is neither room for my ideas nor space for people from different backgrounds in Architecture at Wits' (EVAL, ARG) 15. C: Her belief not shared, 'architecture is created by humans for humanity'. E: Felt alienated (EVAL, ARG). C: Eurocentric teaching in Architecture. E: 'lecturers try shape me into what they want me to be'	14. Intersection: Young black student in architecture at Wits 15. Intersection: Young black student in architecture at Wits 16. Intersection: Young black student in architecture at Wits 17. Relation: university friends 18. Interests	Staff members (white men) and Eurocentric teaching tried to 'shape us into who they wanted us to be'. Two supportive lecturers: Jewel and Peter. Friendships provided her with a platform where she could be heard Busisiwe (classmate and friend)	She couldn't understand why hard word led to failure. Racism and sexism. Takes full responsibility for academic exclusion which is detrimental to her self confidence Traverse: Music 'saved her life so many times' and she's always enjoyed	Intra-personal, interpersonal; impersonal, institutional, ideological	1. Favouritism as racism and sexism 2. The experience of failure 3. Two lecturers: Jewel and Peter.

				(ARG) 16. C: Her ideas were not heard at university. E: 'University space should not privilege a select few' (EVAL). C: Fighting to be heard shaped or changed her values: E: Her idea that we are all talented in our own way is real (EVAL) 17. Friendships: a platform to be heard (ARG) 18. The importance of listening to music and writing poetry (ARG) 19. Need career in translating imagery into words (EVAL) 20. C: People who	(music&poetry) 19.Career aspirations 20.Relation: supportive people 21.Transition: Young black scholarship student in architecture to being academically excluded		writing poetry (being in her head)		

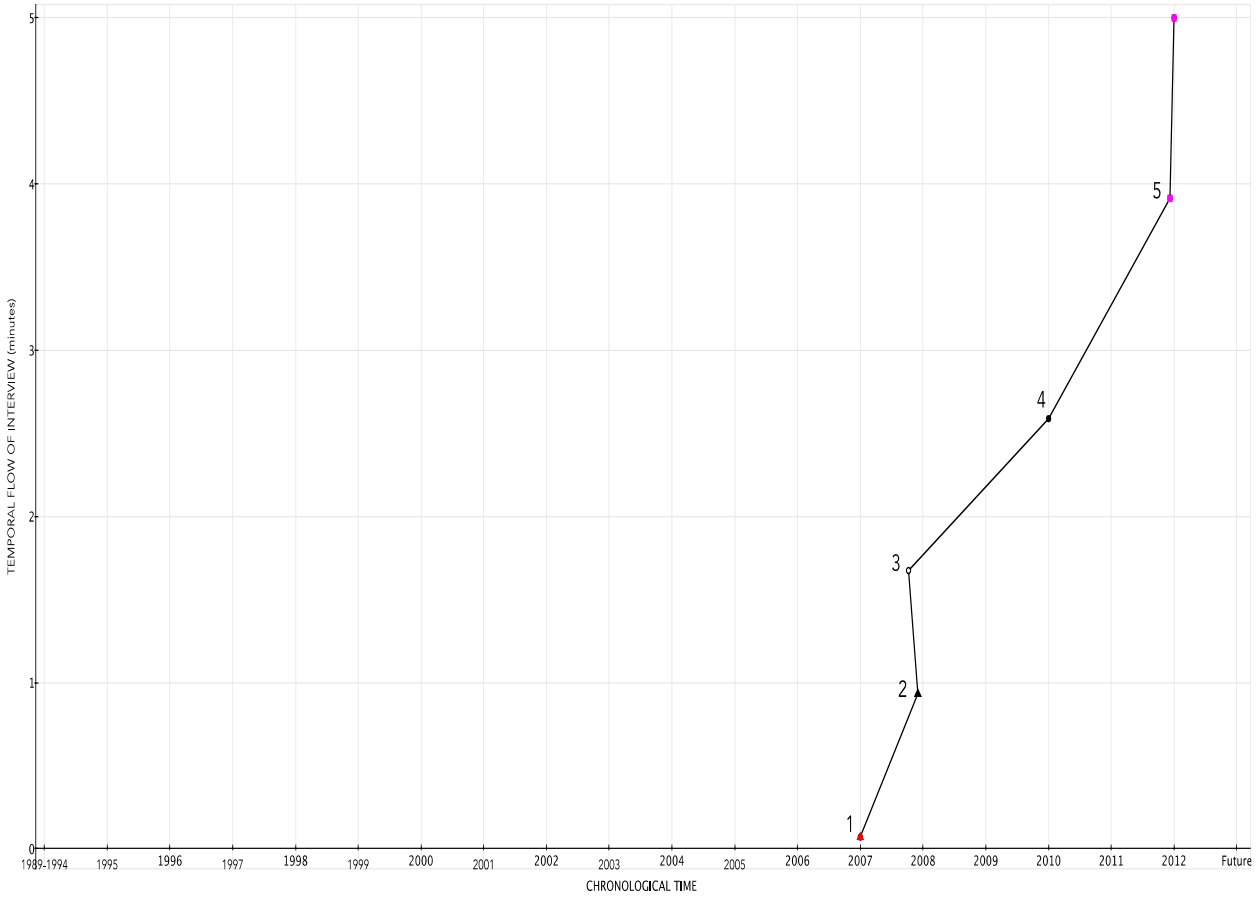
				have supported her. E: Have 'lit my fire and kept me going' (REF) 21. C: 'I worked myself into almost death state' E: 'It's sad I didn't make it' (EVAL)					
Career (2011)	Stage 7. As a result of what happened in the middle, I lost my voice and settled for being an underestimated intern	- Underestimated intern, - Racism and sexism, - The average Joe, - Vocation, - Self-belief and - Youthful aspirations.	ARG, EVAL and PINS	22. C: As an intern, she wasn't given any responsibilities. E: 'Companies are too scared to put some faith in the upcoming professionals' (EVAL, ARG)	22.Academically excluded young intern	Donald (former classmate and colleague) Busisiwe (former classmate , colleague and friend) Audrie (architectural technologist and Alala's supervisor.	The effects of academic exclusion Instead of trusting young upcoming professionals, institutions as incubators of the average Joe Traverse: youthful aspirations.	Intra-personal, interpersonal; impersonal, institutional, ideological	1. The preferential treatment that Donald received 2. life is war, keep fighting.
Unemployment (2012)	Stage 8. Now, I'm unemployed but it's better that going back to Wits, where my	- Unemployment, - passion versus conformity, - finding one's	ARG, EVAL and PINS	23. C: If she were to go back to Wits. E: 'it would kill any passion I have left for	23.Unemployed		Remaining a dependent	Intra-personal, institutional, and ideologic	1. Going back to architecture?

	residual love for architecture would slowly die out	own place in world.		architecture' (EVAL)					
Projected future	Stage 9: In the future, I hope to get back to the beginning, where artwork was soul work, so that in the end I would have lived a self-sustained and self-fulfilled life	- Passion and vocation, - independence, - self-fulfilment and - youth aspirations.	ARG and EVAL	24. Desire to be free, explore, learn, understand, and grow (EVAL, REF)	24. Youthful aspirations for life and work		Traverse: Youthful aspirations for life and work		

Appendix 8: Storymazes and Life-story Diagrams

8.1. Labyrinth storymazes: Kgnaya Semenya, Ethwasa Mthembu and Itumeleng Nyako

Life-story Diagram 5: Lived life and told story of Kgnaya Semenya



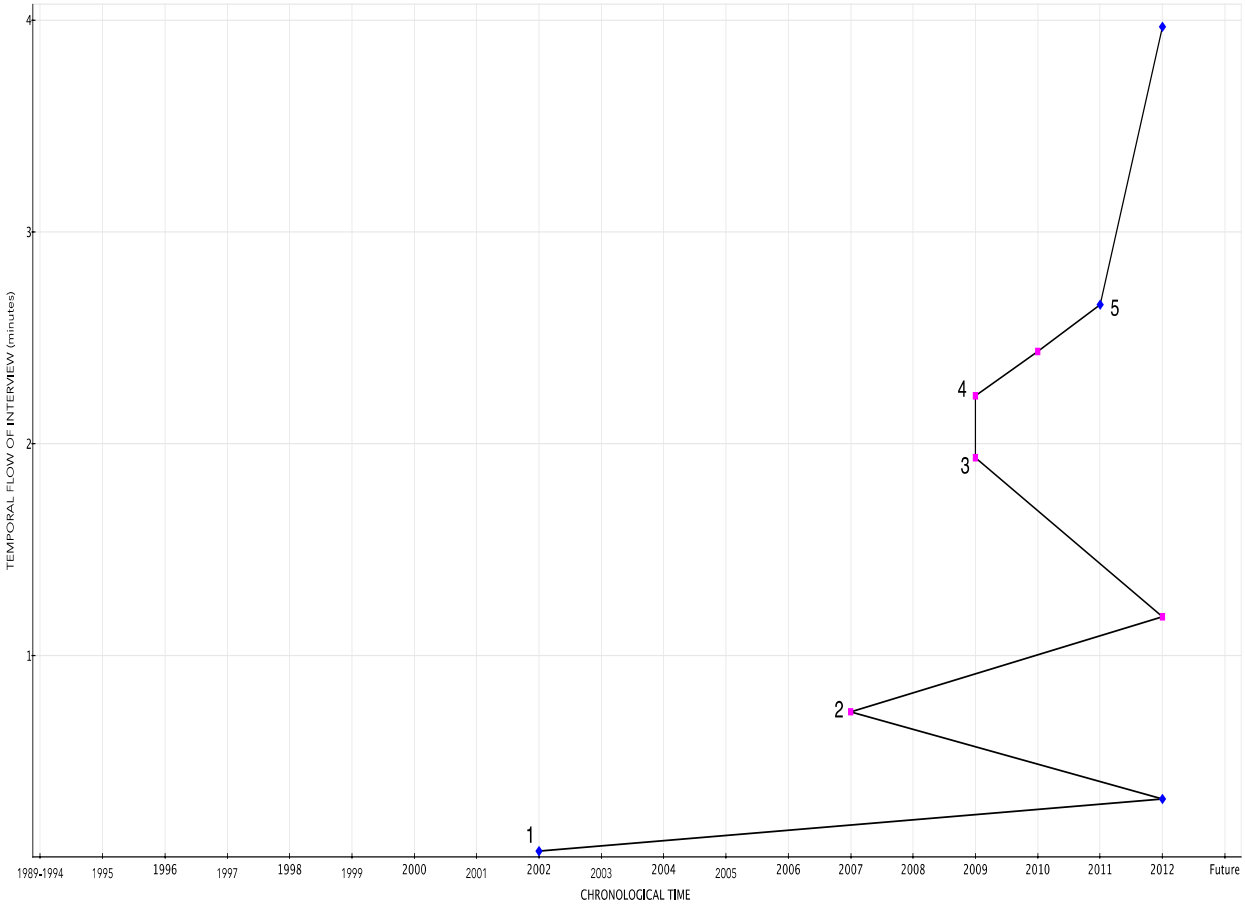
Storylines

- Recognition
- Linguistic identity
- Personality characteristics
- Failure and/or academic exclusion
- Career and science identity

Topics

1. Multiple leadership positions (ARG)
2. First experience of Johannesburg (REP)
3. Being introverted doesn't bother me (ARG)
4. Since failing, I'm never sure of anything anymore (EVAL)
5. Honours has been my toughest year (REP)

Life-story Diagram 6: Lived life and told story of Ethwasa Mthembu



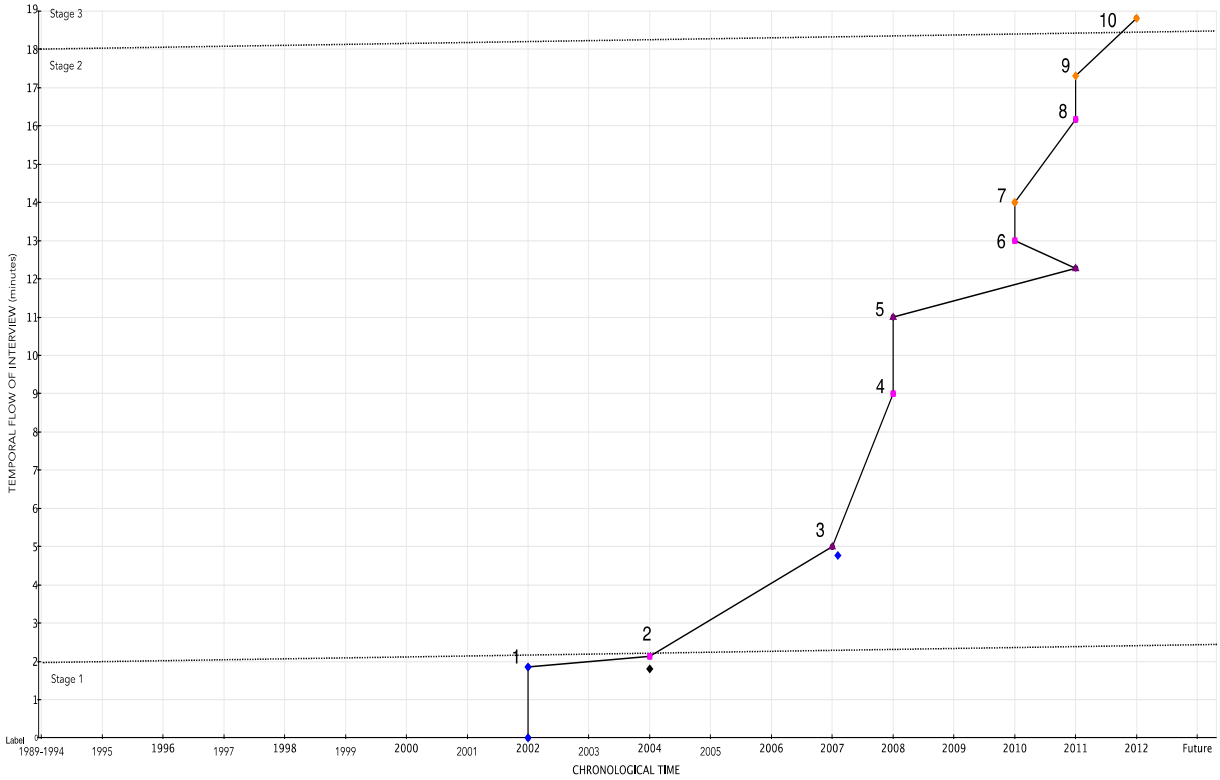
Storylines

- Significant others
- Career and science identity

Topics

1. Long lasting friendship with Khanyisile (ARG)
2. Reinvent myself at university (ARG, PIN)
3. Position of leadership (EVAL)
4. My graduations were family celebrations (PIN)
5. When my father died, I lost all motivation (EVAL)

Life-story Diagram 7: Lived life and told story of Itumeleng Nyako



Storylines

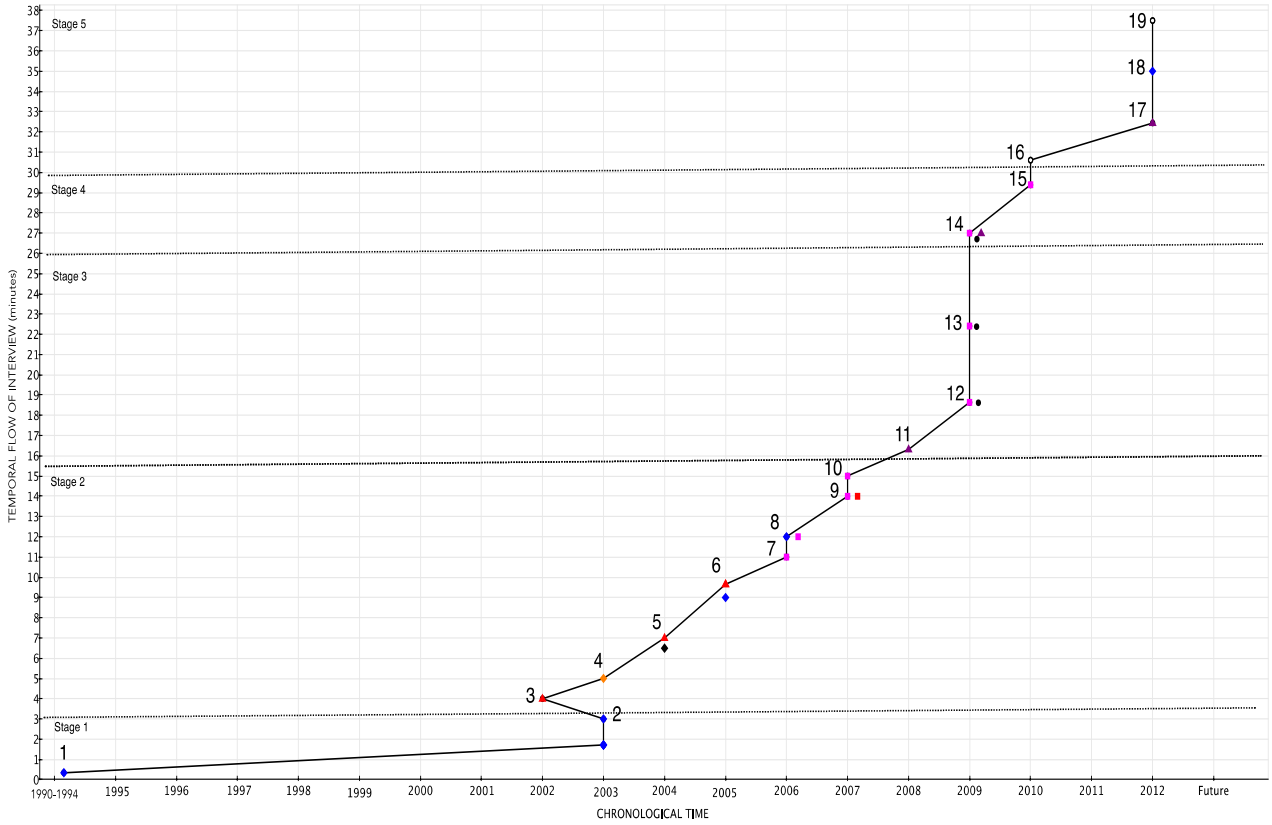
- Significant others
- Scholarship recipient
- Career and science identity
- Challenges facing Black women in science

Topics

1. Death of my father (REP)
2. Friendships and feeling smart (ARG)
3. Oya scholarship (PIN)
4. Living at university residence (ARG)
5. Academic support Oya students (REP)
6. Chose Biological Sciences (ARG)
7. Department white dominated (ARG)
8. Getting into the Honours (REP)
9. Racial issues in department (ARG)
10. Struggle finding employment (ARG)

8.2. Simply-connected storymazes: Ambani Rambau, Naila Masri and Nosakhele Khumalo

Life-story Diagram 8: Lived life and told story of Ambani Rambau,



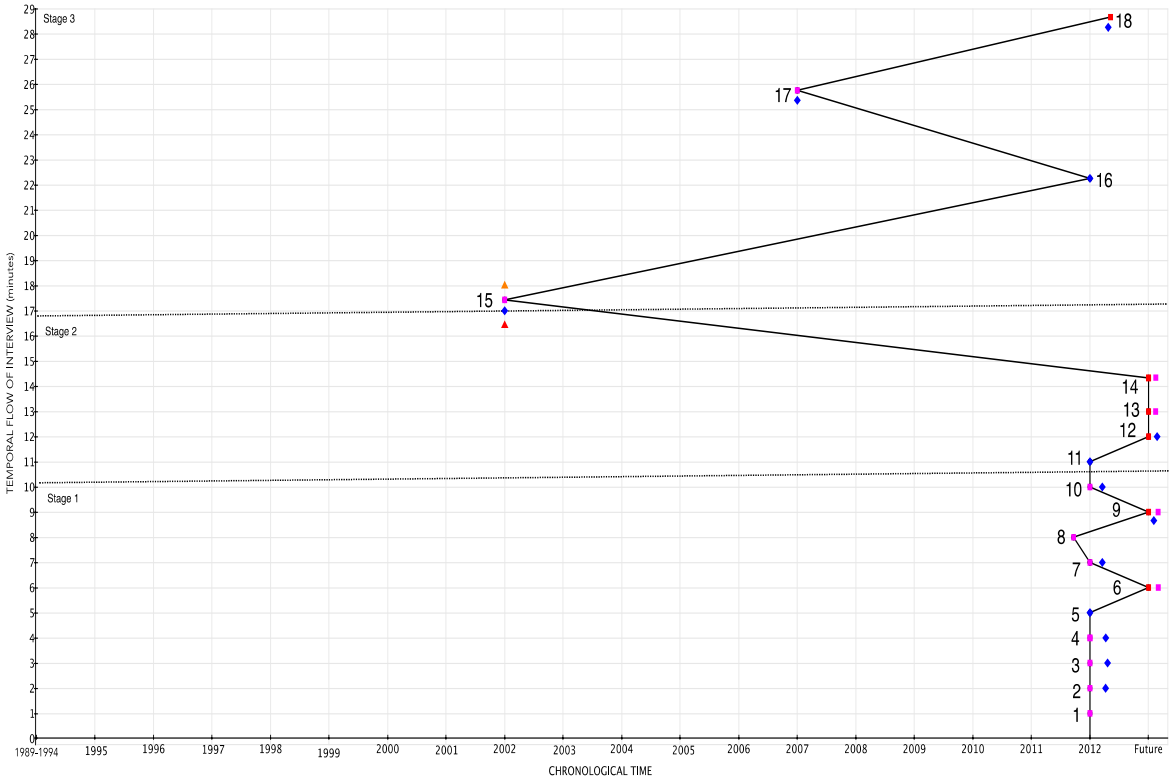
<u>Storylines</u>

- Career and science identity
- Significant others
- Scholarship recipient
- Recognition
- Linguistic identity
- Personality characteristics

<u>Topics</u>

1. Life at my village (REP)
2. No need to learn English (REP)
3. Recognized for my academic performance (EVAL, ARG)
4. Poor infrastructure at first high school (ARG, EVAL)
5. Attending a science and maths camp for women (EVAL, ARG)
6. Second high school, top three academic achiever (ARG)
7. Career guidance trip (REP)
8. Cheating boyfriend and father's intervention (ARG)
9. Focused on bursaries at third high school (EVAL, ARG, PIN)
10. Choosing a career (REP)
11. Getting the Oya scholarship (ARG. PIN)
12. Hated Electrical Engineering at Wits (REP)
13. I applied for agricultural economics at UP (ARG)
14. Being 'true to myself', dropping out (PIN,EVAL)
15. First year at UP, two-year bursary (PIN, ARG)
16. Passion and discipline (REF)
17. Wits still feels like home (REF)
18. Siblings have learnt from my mistakes (REP)
19. Self-development and Wits (EVAL)

Life-story Diagram 9: Lived life and told story of Naila Masri



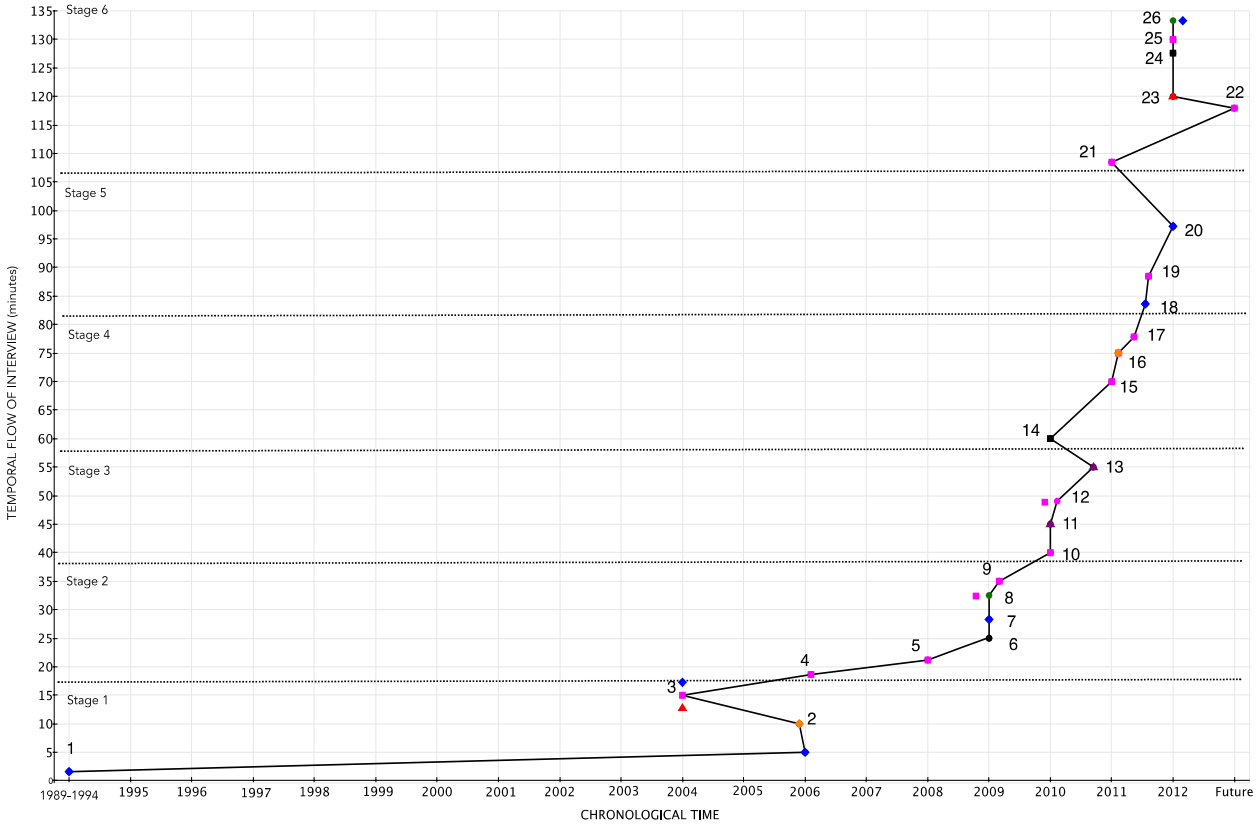
<u>Storylines</u>

- Career and science identity
- Significant others
- Aspirations and expectations
- Scholarship recipient
- Recognition

<u>Topics</u>

1. Adapting to my job (ARG)
2. Mentored by the CEO (ARG)
3. Due to inexperience, assistance from colleagues (ARG)
4. My boss and emotional intelligence (PIN, EVAL)
5. I miss my varsity friends (REP)
6. Software development (ARG, EVAL)
7. Mentorship by women (ARG, EVAL)
8. Job applications (REP)
9. Professional engineer and Masters degree (REP)
10. Supervision (REP)
11. Family life (REP)
12. Career driven and have a family (EVAL, ARG)
13. Entrepreneurship (REP)
14. Engineering without borders (ARG, EVAL)
15. Attending a former Model C school (REP, ARG)
16. My dad is the driving force (EVAL)
17. The university space, diversity and friendships (EVAL, ARG)
18. Advice from my grandmother (TIN)

Life-story Diagram 10: Lived life and told story of Nosakhele Khumalo



Storylines

- Significant others
- Challenges facing Black women in science
- Career and science identity
- Recognition
- Scholarship recipient
- Failure and/or academic exclusion
- Religion
- Gender identity
- Sports

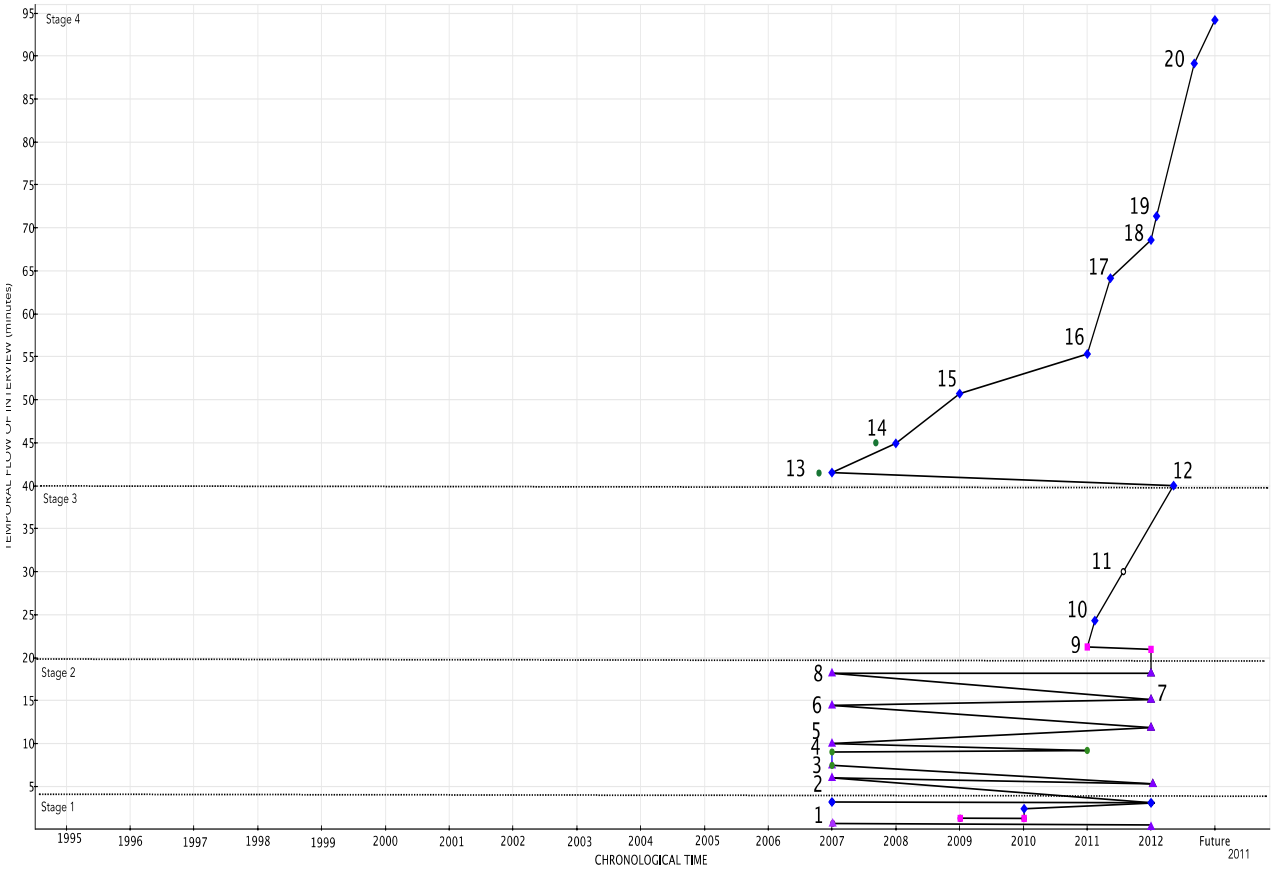
Topics

1. My family house of 20 people (DES)
2. Parents couldn't afford university fees (ARG, PIN)
3. Passion for genetics due to teacher (PIN, ARG, EVAL)
4. Declined two bursaries to study BCom (ARG, EVAL)
5. Diversified my degree for job opportunities (REP)
12. My 21st birthday and graduation celebration (ARG)
13. The benefits of life coaching (REP)
14. Hired as an aerobics instructor on campus (ARG)
15. Being and becoming a scientist (ARG, EVAL)
16. Sourced funding for my Masters degree (REP, ARG)
17. Bursaries and jobs during Masters degree (REP)
18. Saved for bond to buy my family a house; rejected (REP)
19. Part time jobs and bond approved (REP)
20. My family and I moved into our new house (ARG, EVAL)
21. A breakthrough discovery in my research (ARG)
22. Working on a proposed PhD project with my supervisor (ARG)
23. I was nominated for a 'science' award in Gauteng (ARG)

6. Started dating and almost failed (REP, EVAL) 7. Death of an aunt (REP, PIN) 8. Lost contact with God (REP) 9. Temptations at university (EVAL) 10. Accepted into Honours (REP) 11. Awarded the Oya scholarship (REP)	24. I'm trying to register my exercise programme as a company (REP) 25. Tutoring and giving back to the community (ARG) 26. House party; cake house, our dog and pastors (REP, EVAL)

8.3. Multiply-connected storymaze: Amirah Hashemi

Life-story Diagram 11: Lived life and told story of Amirah Hashemi



Storylines

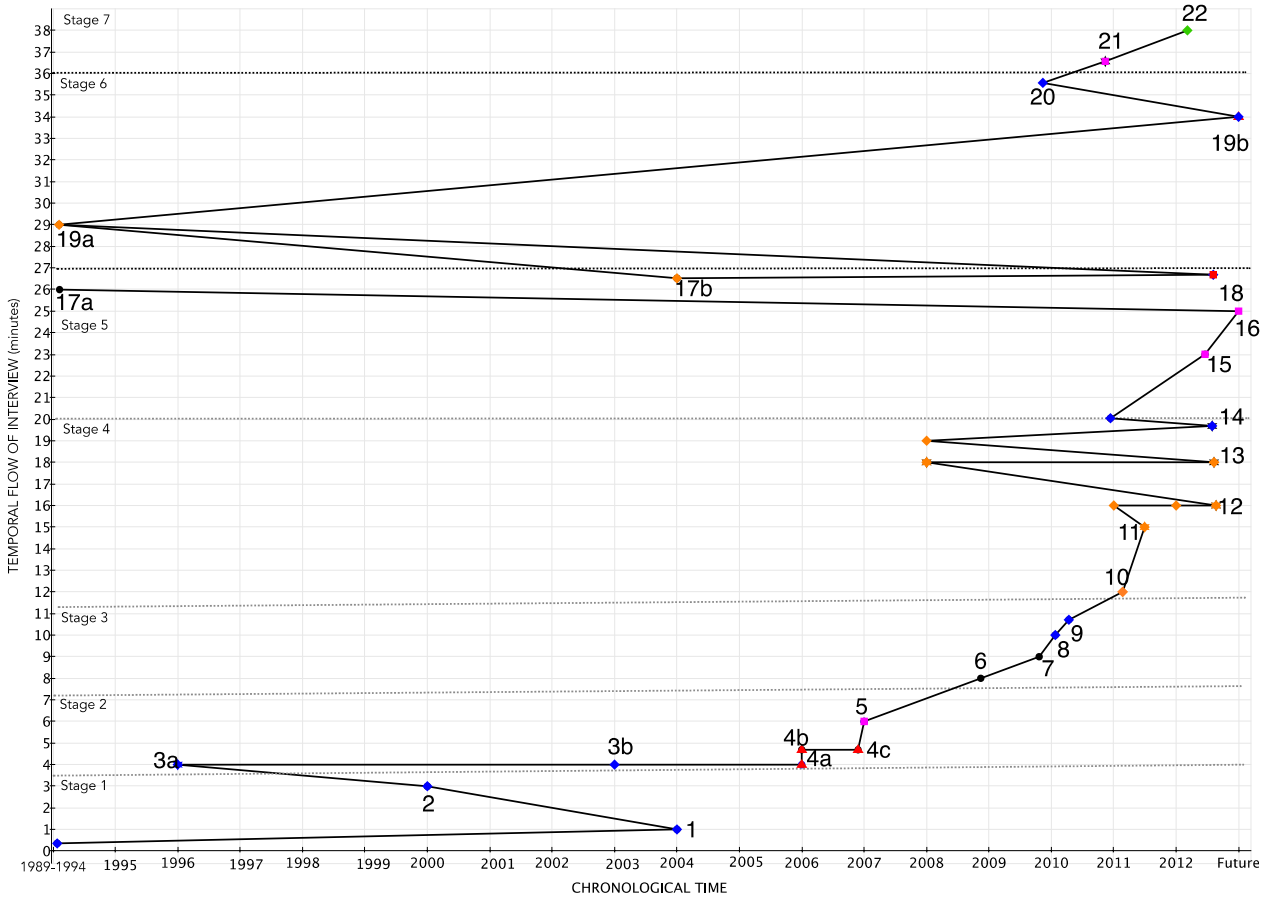
- Significant others
- Scholarship recipient
- Career and science identity
- Religion
- Psychosomatic symptoms

Topics

1. Four significant life events (EVAL)
2. Oya sisters defined my life at Wits (EVAL, ARG)
3. Questioning religious rituals (ARG)
4. Financial support opened up unfamiliar world (ARG)
5. Giving back to the community (ARG, REP)
6. Ending of the Oya programme (EVAL)
7. Learning to be financially independent (REP)
8. Life lessons from the Oya programme (ARG)
9. Honours degree broke and healed me (ARG)
10. The death of my father (PIN)
11. Symptoms of arthritis (PIN)
12. Rudo and what my father taught me (EVAL)
13. Rudo asked for my number (PIN, ARG).
14. Remain just friends because I'm Muslim and he's not (PIN, ARG)
15. Rudo and I didn't talk much for two years (PIN, ARG)
16. We started talking again (REP)
17. Our first two dates (PIN, TIN).
18. Three-month relationship trial run (PIN)
19. 'Crazy Stupid Love' (PINs)
20. Marriage was in our future (PIN)

8.4. Weave storymazes: Welile Ndebele, Mamoratwa Mannya and Odirile Kefentse

Life-story Diagram 12: Lived life and told story of Welile Ndebele



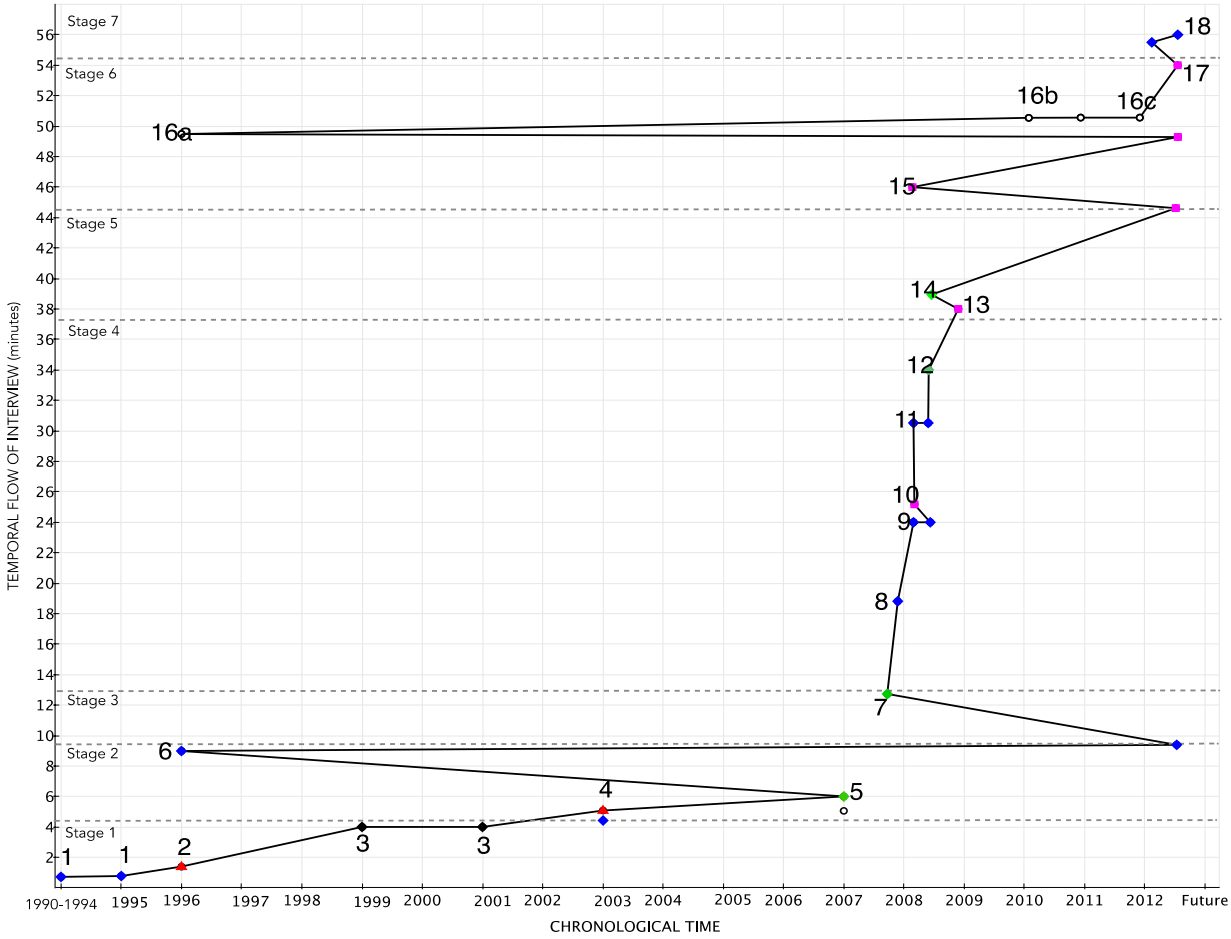
<u>Storylines</u>

- Challenges facing Black women in science
- Pregnancy and motherhood
- Career and science identity
- Failure and/or academic exclusion
- Significant others
- Aspirations and expectations
- Recognition

<u>Topics</u>

1. Meeting absent father (PIN, EVAL)
2. Deaths in family (REP)
3. Mother; attended unaffordable schools (REP)
4. Three opportunities (PIN)
5. Chose science instead of law (REP)
6. Failure, disbelief and depression (PIN)
7. From academic exclusion to re-admission (PIN, EVAL)
8. Belief in potential by HOD (ARG)
9. Set an example for mentees (ARG)
10. Racism in the form of favoritism (ARG, EVAL)
11. Physical exhaustion (PIN)
12. Women's multiple roles (ARG)
13. Self-motivation (EVAL, ARG)
14. University acculturation (EVAL)
15. Inexperience and unemployment (REP)
16. TV presenter for two months (REP)
17. Inexperience and volunteer work (REP)
18. Personal and financial aspirations (PIN, EVAL)
19. My mom is my rock (EVAL)
20. The value of friendship: (EVAL)
21. What is means to be a woman graduate (ARG)
22. Painful birth (EVAL)

Life-story Diagram 13: Lived life and told story of Mamoratwa Mannya



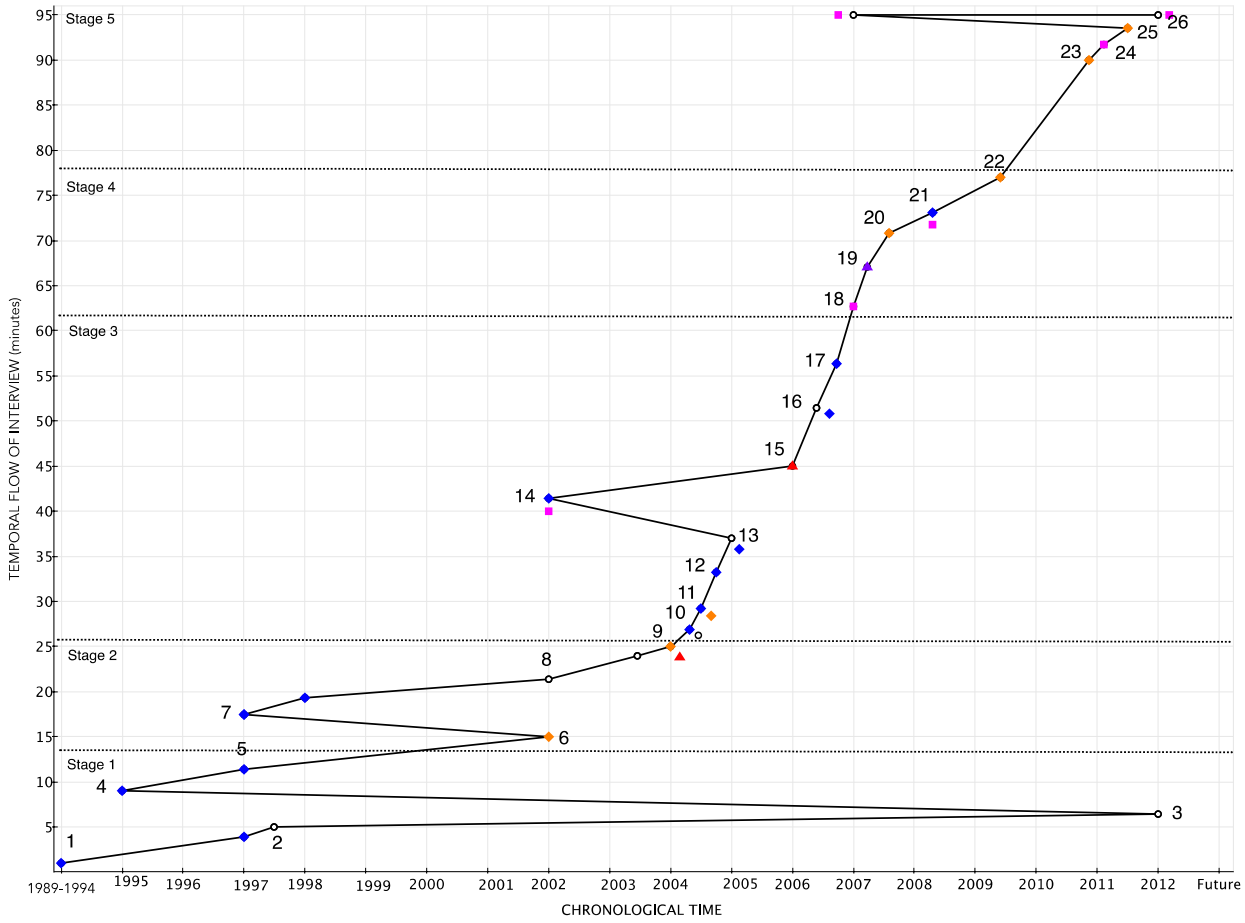
Storylines

- Pregnancy and motherhood
- Career and science identity
- Linguistic identity
- Significant others
- Recognition
- Personality characteristics

Topics

1. Raised by a group of men (REP, DES)
2. Too intelligent to stay in pre-school (REP)
3. Private boarding school to learn English (REP)
4. Second position disappointed father (ARG, PIN)
5. Being the 'good, smart girl' at home (ARG)
6. 'Middle child syndrome' (EVAL, ARG)
7. Pregnant at 16 years old (ARG, PIN).
8. Parental support (PIN, ARG)
9. Institutional scholarship support (ARG, PIN)
10. Chose CAM instead of actuarial science (ARG, PIN)
11. Support from friends (ARG, GIN).
12. Giving birth to my daughter (PIN)
13. Lost hope in actuarial science (REP)
14. Being faithful to my baby (EVAL)
15. Developed a passion for CAM (EVAL, ARG)
16. External locus of control (REF)
17. I love my job (ARG)
18. Death of my older sister and family provider (ARG)

Life-story Diagram 14: Lived life and told story of Odirile Kefentse



Storylines Significant others Personality & illness Challenges in life (and Black women in science) Recognition Career and science identity Scholarship recipient Topics 1. Moving house three times (REP) 2. I was hospitalised with meningitis (PIN) 3. I was a 'nerdy girl' who loved school (REF) 4. The birth of my brother (REP) 5. Family holidays to Mpumalanga, Durban and CT (REP) 6. School fees and former Model C school (REP) 7. The death of my aunt and younger brother (EVAL) 8. Difficulty grasping spatial analysis of high school (REP, ARG)	13. I went to the clinic for an injury (ARG) 14. Motivated by maths teacher (ARG) 15. Chosen to be a prefect (ARG, EVAL) 5 16. Hospital for a hockey injury (ARG, EVAL) 17. I moved in with my mother (REP, ARG) 18. Accepted into architecture at UP (REP, ARG) 19. Awarded the Oya scholarship (PIN, ARG, EVAL) 20. Difficulty obtaining materials for projects (PIN) 21. Lecturer helped improve my marks (ARG, PIN) 22. Discrimination in department (PIN, ARG, EVAL) 23. Discrimination in the workplace (REP, ARG, PIN)

9. School fees were never paid on time (REP) 10. Mom hospitalised for depression (ARG, EVAL) 11. Parents separated, my dad had gambling problem (ARG, EVAL) 12. Mom moved out, I stayed with my dad to attend same school (REP, ARG)	24. Critical thinking in postgraduate studies (EVAL) 25. Discrimination, my mentor left the department (REP, ARG, EVAL) 26. My love-hate relationship with architecture (EVAL, REF)