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Publication Date

2014

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Gendered Perspectives in Higher Education: Women in Science and Engineering in Cameroon

By

Patience Fielding

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Education

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Claire Kramsch, Chair

Professor Glynda Hull

Professor Tabitha Kanogo

Spring, 2014

Gendered Perspectives in Higher Education: Women in Science and Engineering in Cameroon

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Abstract

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Doctor of Philosophy in Education

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While women's participation in the national economic growth is seen as critical to sustainable development, women's underrepresentation in Cameroon's higher institutions, such as *École Nationale Supérieure Polytechnique* (ENSP), tasked with training human capacity contradicts such development discourses. Despite calls to provide equal educational opportunities for women to enable their acquisition of the skills needed to compete in the global labor market, females in Cameroon too often lack access to girl-friendly, safe, and supportive spaces in formal schools largely due to patriarchal traditions which restrict women's roles in the society. Most recently, females in Cameroon have sought entrance into ENSP, which has historically prepared male technocrats to serve in the government and private industry. While the institution has opened limited spaces for women, it continues to discursively constitute them as "outsiders within" as women venture into traditional environments and participate in activities from which they have been expressly or tacitly excluded.

My dissertation thus uses ENSP as a space to examine how the discourses of gendered education come to be defined and practiced. Through analysis of institutional discourses, archival documents, and interviews with staff and students at ENSP, it investigates the conflicting narratives in gendered constructions. Paying attention to institutional texts and individual utterances, the dissertation illustrates the complexities of intimate relationships and highlights the processes of contestation that are so crucial in shaping contemporary, gendered identities. While I underscore the importance of an approach that permits the exploration of the ambiguities of gendered identities, I also present identifications and relationships as imagined and performed in discursive practices. To track the complexity of the process, my analysis includes the ways in which education discourses shape and constrain our understanding and engagement in the world and how gendered beings come to understand themselves and their given situation. While global, national, and local interests shape and structure student efforts at ENSP, the process of becoming an engineer is full of contradictions, tensions, and struggles, thereby leaving open the possibility that female students might take on new roles and behaviors that are deemed contrary to their identities. The dissertation thus situates the current interest in women in Math, Science, and Technology in relation to contemporary and historical definitions and underscores the shifts in education thinking. It lays out the different perspectives held by different social actors to advance a more nuanced understanding of the education practices through which gender is being framed, constructed, contested, and negotiated. It also presents the approaches of ethnography

and critical discourse analysis used and employs critical discourse analysis to tease the different subjectivities and power relations at this site. In examining the status quo and patriarchal dominance in the exercise of power against female subservience and determination, I also underscore how female voices challenge the social constructs that define them as 'others' and 'outsiders' and how they strategically negotiate their identities using the discourses of schooling. This study thus illuminates the ways in which institutional and individual discourses confirm existing social relationships and behaviors while at the same time introducing new meanings and patterns of being and conflicting enactments of gender within the production of linguistic forms.

Dedication

In loving memory of my parents

My Father, Emmanuel Dinga Fielding,
who dared me to dream big

And my Mother, Esther Ngendab Fohtung
who placed the foundational blocks to make this dream happen

May your legacies live on.

Acknowledgements

Arriving at this phase of my academic journey was not accomplished alone. Though I carry the mantle of a successful completion, there are numerous people who played significant roles behind the scenes. To them, I owe my greatest thanks. My dissertation Chair and advisor, Professor Claire Kramsch, I thank you for helping shape how I have come to think about discourses in gendered representations. Your fierce dedication to excellence was the driving force behind this work and I am deeply indebted to you as my mentor and writing coach. With much pride, I look forward to our continued collaboration and presentation (a by-product of this dissertation) at the AILA Conference in Brisbane, Australia, in the summer of 2014. To my other dissertation committee members, Professor Glynda Hull, your guidance and gentle prodding enabled me to reach deep within to find my voice and writing style. Professor Tabitha Kanogo, you gave me the most unvarnished critique and challenged me to be inclusive of those voices that have been absent in written texts.

Dr. Uphie Melo Chinje, an accomplished female scientist and industry leader, mentor and guide, you facilitated my entrance into ENSP and helped secure the necessary clearances and institutional permissions required to conduct research at ENSP. Professor Guy Tsala, Vice Rector of Yaounde University 1, you provided me with unlimited access to the University's data, resources, and personnel and was kind enough to lend your time and voice as a participant in this study.

Aurelie Omgba, the President of the Association of Female Students at ENSP, you not only showed me the ropes but helped facilitate my engagements with the female students at ENSP. I am in awe of your individual and group successes and so proud and honored to foreground hard-working and high-achieving women scientists like you who are conspicuously absent from institutional discourses in Cameroon and Africa. While gender equity still remains a challenge, the growing female presence in ENSP and your determination to succeed at this male-dominated institution gives me hope that the glass ceiling will someday be shattered.

Dr. Therese Tchombe, an erudite scholar and pioneer in the field of gender and human rights, your constant supply of resources not only helped filled the gaps but served as a reminder that I had a responsibility towards the women folk and future generations in our society.

Dr. Asheri Kilo Fofung and Mrs. Alice Tarkang, you not only provided shelter during my stay in Yaounde but nourished my body and soul. At the end of each day, I looked forward to finger-licking Cameroon dishes and our rich conversations that served as great accompaniments and brain stimulants. Dr. Asheri, through your leadership and professional achievements, you continue to interrogate the discourses on what a Cameroon woman should be. You are indeed an inspiration.

Le Bâtonnier, Maître Akere Muna, the pre-celebrations of the dissertation-completion in Yaounde was enough of an incentive to bring this baby home. Your Excellency, Churchill Monono, I can't thank you enough, for all your help in procuring the needed resources and even shipping some of the materials to my Kenya residence. Charles Fonderson and Paul Ngatchou your support and help whilst I was at my field site is deeply appreciated.

Mrs. Egbe Mbiwan Monjimbo, you knew I needed hand-holding when you connected me with Saker Baptist College's pioneer teachers and staff so I could mine authentic data from the primary sources....a researcher's dream.. In addition to sending manuscripts, you availed of your website Saker Pride, with chronicles of the rich history of girls' education in Cameroon.

Karen Sullivan, out in the field and cut off from the university, you enabled my reconnection with the UC Berkeley Library and facilitated my access to the rich tomes of literature that I so badly needed. I really cannot thank you enough for all the resources and financial awards that enabled this dissertation to come to fruition.

Ilka Williams, you were my go-to person for all things dissertation writing and navigating through the system. Your gentle guidance and encouragement made a heck of a difference.

Patience Ateh, when I retreated to the foothills of Buea mountain to regain control of my thoughts, make sense of my data, and find my writing muse, you provided nourishment for my soul. From your signature meat pies to my native dish, 'fufu' and "njama njama" you made sure I had the energy to render into submission the very stubborn chapters that were giving me much grief.

To my colleagues and friends, who took time out of their very hectic writing and work schedules to review my dissertation chapters, provide feedback, complicate my thinking, and challenge me: Krystal Strong, Dr. Katherine Frankel, Dr. Pascal Buma, and Dr. Victor Gomia, I am so grateful for your candor, critical perspectives, and for pushing me beyond my comfort zones.

To my funders, American Association of University Women (AAUW), Soroptimist International, and the University of California at Berkeley, your generous endowments made travel to Cameroon possible to complete the work that my heart had set out to do.

My sister and brother -in law Mrs. Joan Fielding Ngwa and Mr. William Ngwa, you have been my rock and anchor in Cameroon. You not only provided me with adequate space (the guest suite) but had no qualms when inflated your electricity bills as I cranked up the air conditioning 24/7 to cool off my thoughts in the hot, humid Douala temperatures. From caring for my children who accompanied me on my research trips, providing resources to enable visits to research sites, and putting your household staff at my disposal, your care and deep concern for my wellbeing made my research trips very productive.

To my cheerleading squad and wonderful siblings, Edith, Alfred, Joan, Pam, Boh, and Stella...you are indeed a unique bunch. Your encouragement and pride in me served me well during those moments when my energy waned...and there were plenty of such moments. From our shared values instilled in us by wonderful parents to our unique personalities, you all have bolstered me and helped me steer the course during tough times...and yes there have been plenty of those too. You go overboard in celebration of me and I love you to pieces. Our parents would be so proud of each and every one of you for your individual and collective contributions towards the realization of this dream.

Ma Rose Fah, my surrogate mother. Rooted from your native Bali in Cameroon and challenged by your new environs, you stayed on for six years to care for me and the children. You missed your homeland so dearly, yet you could not find it in your heart to leave before I could complete my studies. Each day we returned home to warm meals, a clean house and fresh, hand-washed laundry..for those machines only serve to wear clothes out. You asked for nothing in return but simply reminded me that you were only doing what Ma Esther, my late mom, would have done. I salute you for your selflessness, love, and devotion to us. We miss you dearly and can't wait to come visit you in Bali.

Last but not least, to my family, Leopold, Tanya and Nubea...Leopold you are everything any woman would seek in a partner. Not only have you given me the space and time to pursue this dream but you have supported all my endeavors in the best way possible. You not only assisted me with research but availed of your linguistic skills to help churn large portions of French data into readable English and vice versa. I thank you for being an ally and wonderful father to Tanya and Nubea during the many months when I took up residence at the UC Berkeley library or any space away from home that would support my quirky writing habits.

Our very talented daughter, Tanya and wonderful son, Nubea, you are every parents' dream. My sources inspiration and motivation, you have been my companions from day one of this arduous journey. As scholars-in-training :), you were always at your most respectful and best behavior when accompanying me on research trips and library visits. In spite of your limited years on earth, you understood that I needed the space and time to think and write. This journey would not be the same without you and I have enjoyed our research travels and adventures together. From London to Paris, Cameroon to Kenya, we have had some great experiences...As I settle back full time into my number one role as mom to support your endeavors...I dare you both to have surreal dreams of your own....for they do come to pass....

Table of Contents

Chapter 1: Introduction to the Research	- 1 -
1.1. History of Formal Education in Cameroon.....	- 3 -
1.2. Vocational Training For Girls.....	- 9 -
1.3. Higher Education in Cameroon.....	- 10 -
1.4. The French and Global influences on Engineering Education.....	- 11 -
1.5. Ecole Nationale Supérieure Polytechnique, (ENSP) Yaounde	- 12 -
1.6. Connecting My Inquiry to the Broader Context	- 18 -
1.7. Connecting Female Issues at ENSP to the National and Global Context	- 20 -
1.8 Organization of the Dissertation	- 24 -
Chapter 2: Education and Schooling in Cameroon: Historical Perspectives	- 25 -
2.1. Definitions of Education	- 25 -
2.2. Historical Perspective	- 28 -
2.3. The Beginnings of Higher Education in Cameroon (1961 – 1977)	- 38 -
2.4. Girls and Formal Institutions of Learning.....	- 40 -
2.5. Conclusion	- 46 -
Chapter 3: Theoretical Framework and Methodology	- 49 -
3.1. Discourse Theory and the Making of Subject Positions	- 49 -
3.2. Discourse and Power/Knowledge	- 51 -
3.3. Methodology	- 53 -
3.4. Preliminary Research and Timeframe.....	- 54 -
3.5. Methods for collecting data.....	- 58 -
3.6. Types of Data Collected.....	- 61 -
3.7. Data Analysis	- 67 -
Chapter 4: Representations and Understandings of Gender	- 73 -
4.1. Subject Positions	- 74 -
4.2. The Gendered Dichotomy	- 96 -
Chapter 5. Gendered Ways of Being an Engineering Student	- 101 -
5.1. How the discourses Confirm Existing Social Relationships.....	- 101 -
5.2. Identity Constructions in the Discourses of Female Engineering Students	- 107 -
5.3. In and Out of School Conflicts in the Identity Construction Processes.	- 111 -
5.4. Patterns of Behavior in Cooperative Classroom Tasks.....	- 114 -
5.5. New Meanings and Patterns of Being: Association of Female Students	- 121 -

5.6. Gender Challenge and Change.....	- 124 -
Chapter 6: Returning to the Research Problematic and Questions	- 126 -
6.1.The French and Anglo-Saxon Discourses on Education.....	- 128 -
6.3. Confirming existing Relationships, Introducing New Meanings and Patterns of Behavior	- 132 -
6.4.Limitations of the Study.....	- 135 -
Bibliography	- 137 -
Appendices.....	- 150 -

Chapter 1: Introduction to the Research

Science and technology have gained increased prominence on the international political agenda due to its impact on sustainable development and democracy (UNESCO, 2007). At the 2005 World Summit the United Nations Millenium Development goals were confirmed and goal three reiterates the promotion of gender equality and empowerment of women across the globe by 2015 (UN Millenium Development Goals 2005). Meanwhile, the theme for International Women's Day celebrated on March 8th 2011 was Equal access to education, training and science and technology: Pathway to decent work for women. While the attraction, education, and retention of women in science, engineering and technology are deemed paramount to the socio-economic development of all countries, many women and girls in Sub Saharan countries such as Cameroon are excluded from participation in science and technology activities by poverty and lack of education or by aspects of their legal, institutional, political and cultural environments. Yet the pace of technological advances continues to accelerate with greater potential to improve the lives and livelihoods of people in developing countries despite the exclusion of women and girls from participation (Hillet al, 1996). Carnoy (1999) argues that the current age of globalization, also known as the information age has profound effects on education at many different levels as nations, regions, and localities fully comprehend the fundamental role of educational institutions in transmitting not only the skills needed in the global economy but in integrating individuals into new economies built around information and knowledge.

This chapter situates females within the current local and broader Math and Science educational context. Against the backdrop of global discourses relating to science and development, I give a brief history of formal education in Cameroon, provide an overview of colonial education, and discuss the different kinds of female educational practices and institutions. Subsequently, I discuss Cameroon's independence and educational policies aimed at human capacity training for national development. In presenting Cameroon's higher education developments and systems, I focus on Ecole Nationale Superieure (ENSP), to underscore the institution's role in training cadres to serve as Cameroon's civil servants, engineers, and scientists tasked with economic and social development. While discussing the relevance of ENSP as a field site, I highlight how women's underrepresentation in such institutions contradicts the discourses of national governments and funding institutions, which frame gender equity in formal institutions of learning as necessary for economic and social development. Subsequent discussions highlight the gendered identity construction processes and contestations in higher education and development and situates my inquiry within the local and broader educational context, This allows for the unpacking of institutional and individual discourses at ENSP and enables a better understanding of the tensions and conflicts that occur as women gain entrance into learning spaces that have been traditionally reserved for men.

Education and Development

Sub Saharan African nations are yet to catch up with the advances in Math, Science and Technology education. One third of countries on the continent are among the poorest countries that continue to show a significant level of gender disparity in basic education (UNESCO, 2007/2008; World Bank, 2002; Population Reference Bureau, 2006). Cameroon, is one of such countries plagued with issues in disparity in education and lack of educational opportunities for

girls and women who make up about 51 percent of the Cameroon population (Population Reference Bureau, 2006). According to the World Bank's 2012 World Development Report, gender equality is an integral tool for development. Framing technology progress as an even greater instrument for equality and development, the Bank calls for mainstreaming women in development projects and programs using appropriate technologies. Referring to gender equality as smart economics, the report also frames reduction in gender gaps as a sure means of enhancing economic efficiency and improving other development outcomes. Similarly, it constructs education as an engine of growth that fuels national economies and develops skill sets of the citizenry to enable its participation in the global work force. Furthermore, it stresses the need to provide equitable education and economic access and opportunities as well as representative, inclusive, policy choices to enable men and women participate in economic and national development initiatives. In contrast, education as conceived and practiced in Cameroon is grossly unsuitable for stemming gender inequality. Schooling opportunities for women continue to lag behind those of their male counterparts while the content and subject matter does little to reflect the social and economic realities of women who tend to cluster in job sectors and occupations with low rates of return such as petty trading and subsistence farming. Yet the Cameroon government, which works in collaboration with funding institutions such as the World Bank, has been slow to institute schooling initiatives for women beyond policy.

The neglect of the female segment of the population in schooling and education has resulted in gender gaps in educational access and achievement, produced unskilled labor, and given rise to an environment of poverty and marginalized segments of the population (World Bank, 2002). Consequently the gaps in knowledge have failed to contain the tide of poverty or empower individuals to tackle some ills plaguing the sub-continent (Buchmann & Hannum, 2001). Some may argue that modern schooling and education in Sub-Saharan Africa are products of the confluence of a narrow colonial ideology and African patriarchal ideology. Mule (2006) for example maintains that colonial education sought to keep Africans in servitude to colonial masters, while patriarchal ideology has helped to entrench beliefs about the subordinate role of the woman in a traditionally male African society. I take a different stance to argue that colonial schooling opportunities for women in Cameroon affected the social fabric of the communities in complex and contradictory ways. While many colonial policies sought to spread Western notions of domesticity, constricting the space available for women to participate in public life, it also opened up new opportunities for women's education, salaried employment, travel abroad, and participation in the local government. In this chapter, I use the case of French and British colonial education to demonstrate that colonial governments did not seek solely to domesticate Cameroon women. Although certain colonial projects did aim to create "good" Christian wives and mothers for educated men, others sought to promote women's participation in public life. My examples support and extend nuanced understandings of colonial encounters between Europeans and the indigenous populations of Cameroon. They also complicate notions of gendered schooling practices during colonial and contemporary times and demonstrate that Cameroon women are frequently active agents in formal schooling environments, subverting restrictive schooling habits, and transforming education practices in subtle ways.

1.1.History of Formal Education in Cameroon

Formal education was first introduced in Cameroon by the Baptist Missionary Society of London in 1884 who combined their educational efforts with evangelizing and converting natives to Christianity (Forgwei, 1975). When the Germans annexed Cameroon, the British Baptist missionaries handed over the schools to the Basel Mission (A German speaking missionary organization that was headquartered in Basel, Switzerland). During the German administration, education was left entirely in the hands of the missionaries. While the German colonial government had limited involvement in the running of primary and secondary schools, they did have a clearly defined education policy for Cameroon which focused on need for natives to study the German language and history and the development of technical and vocational schools to train locals for jobs in the colonial administration. To this effect, workshops for training artisans for German plantations and the government were set up in the town of Buea while trade schools in Victoria and Douala offered continuation classes for practical training for employment in the government and commercial firms as clerks (LeVine 1964). The defeat of the German forces in 1916 and the subsequent end of the World War 1 resulted in the partition of the Cameroon region between the victorious Anglo-French allies. The British had one-fifth of the region that they administered with their neighboring Nigerian colony, while the French got four-fifths of the region, which they administered with their neighboring colonies of equatorial Africa (Gabon). This period marked a change in policy and administration as both Britain and France instituted schooling in their various regions based on their respective ideologies and colonial goals. (LeVine, 1964)

1.1.1 British Colonial Education Policy Developments in Cameroon

After Britain officially assumed full political economic, social, and educational responsibility over the Cameroon province in 1922, the colonial education policies replicated in all her territories were introduced in Cameroon. The education ordinance for the Nigerian British protectorate thus became applicable to Cameroon whose colonial education policy was outlined as follows:

“The first end in view is the formation of character; the second the acquirement of the English language. Rather than create a small number of scholars, it is desired to influence as large a number of children as possible, equally distributed all over the province” (Great Britain, Report on the Cameroons for 1923, p. 42).

In 1924, the British colonial government issued educational regulations that introduced a uniform educational program for the vernacular, mission, government administration, and native administration schools in the Cameroon territory as a subset of Nigeria. The educational programs, or schemes of work included textbooks, educational manuals, and timetables that were similar to those in Nigerian schools (Great Britain, Report on the Cameroons for 1924, p. 37; 1925, p. 69). Schools in southern Cameroon were classified in four categories as follows: (1) vernacular formal schools, (2) mission assisted and unassisted formal schools, (3) government administration formal schools, and (4) native administration formal schools. After World War II, Britain decided to provide a vocational technical program in addition to academics. In 1948, the

advisory committee responsible for education for citizenship for Africa, led by W.E.F Ward, concluded its report as follows:

“It is not enough to train patient and skillful and reliable farmers, artisans, clerks and minor-grade employees; it is not enough to train professional men, technicians, and men capable of assuming responsibility in management and administrative positions. We have to go further and train men and women as responsible citizens of a free country” (Brown, 1964, pp. 365-377).

In 1952, the Ombe Trade Center, the first and only government-sponsored technical school for apprentice-type training in British Southern Cameroon was opened. Staffed by British contract personnel, this institution offered training programs in carpentry, bricklaying, welding, metal works, cabinet making, electricity, auto mechanics, painting, decoration, wood work, and machine fitting. The program which lasted between two to five years was designed for primary school graduates. In order to promote vocational education in the schools, handicrafts centers were established and affiliated with the major primary schools. Efforts were also made by the British to provide education opportunities for females. To this effect, Domestic Science programs headed by female education officers were instituted for girls in the primary, secondary and teacher training schools. Mumford (1935) would maintain that such separate schools and vocational training opened up spaces for girls as they were enabled to take up occupations outside of the home. Adams (2006) on the contrary, would argue that the gendered schooling practices served as avenues for colonial forms of control for domestic science education served as an ideological tool through which European ideals and norms of hygiene and domesticity would be transferred to indigenous populations. The quote below from the 1950 British report would corroborate her claim:

In Bamenda province the domestic science organization, which is in charge of a woman education officer, made good progress. During the year, at the request of the wives of the African junior staff, a woman's institute was started in Bamenda. The institute is managed by a committee of which the president is the only European, and is conducted on much the same lines as a women's institute in the United Kingdom. At its meetings, which take place once a week, the women learn sewing and knitting, play games and do useful work for the community such as mending hospital linen. (Great Britain 1951, 107)

Taking a different view, (Callaway, 1987) would support Mumford's (1935) stance that education was a form of social emancipation. She argues that while British educational policies in Cameroon sought to instill Western gender norms in women and to mold "suitable" wives for educated, Christian men, they also sought to incorporate women more fully into public life, by providing certain women with opportunities for education and salaried employment. Additionally if we examine the gradual increase in the number of women attending school throughout the territory (Great Britain 1955, 80), one might be tempted to say that the formal schools did open up new spaces for women even though it came at a price. To attain their goal of keeping girls in school, the colonial administration sought to eradicate practices like polygyny and bride wealth through education. For example, the 1950 British report notes, "the development of education, notably of girls, will have as one of its results, the spreading of a higher conception of the role of women in society which will lead them to resist the requirements

and usages of old and harmful customs” (Great Britain 1951, 115). While legal approaches to eradicating these “harmful” cultural practices were largely ineffective and difficult, if not entirely impossible to enforce, the colonial government viewed education as the best avenue toward social change. From this perspective, exposure to Western norms and values disseminated through schools and centers would lead Cameroonians to choose European over African practices. Western women, as colonial administrators, missionaries, or wives, were to serve as role models, offering African women alternatives to their traditional gender roles (Adams, 2006).

The idea of assimilation was therefore important aspect to colonial education. Gauri Viswanathan (1988) points out that cultural assimilation is the most effective form of political action because cultural domination works by consent and often precedes conquest by force. Kelly and Altbach (1984) would also argue that colonial schools sought to extend foreign domination because colonial education was not directed at separately developing the colonized in their own society and culture, but at absorbing indigenous populations into the metropole. The British colonial education thus had goals of stripping the locals away from their traditional structures and drawing them towards the structures of the colonial government. One could also argue that through education, public and leadership avenues opened up for women to take up spaces. For example the 1949 commission established by the governor of Nigeria, who also controlled the Cameroons, examined how to train locals to take on senior service posts and placed special attention on women by noting:

It has already been recommended that women should be given equal consideration with men for any departmental scholarship and training schemes for which they may possess the necessary educational qualifications but the Commission considers that in addition a special allocation of thirty scholarships in all should be made during the three year period to enable women to obtain qualifications overseas for posts, such as nursing, secretarial and librarian and certain other specialists appointments.(Great Britain 1950, 107.)

Reports throughout the 1950s state that there were a growing number of women working as nurses, teachers, and clerks. By 1958, there were 222 teachers, five nursing sisters, and 55 nurses and midwives, and “a number of women [held] clerical positions in the public service and in commercial concerns.” (Great Britain 1959, 166.) In this context, education during British colonial times allowed women to create new identities, acquire formal job skills, and take on new roles outside the home.

1.1.2. French Colonial Education Policy Developments in Cameroon

The French colonial policy of assimilation also greatly influenced the educational policies in Cameroon, fostering the promotion and adoption of the French language, culture, and outlook within the French dominions or colonies. Just like the British, the French colonial policy aimed to link all the colonies to the metropole and expose them to the French culture and language. Since education was the means to achieving such assimilation, a French education and language policy was necessary, if not imperative, to replicate “the same content, format, and methodologies in the periphery as existed in the metropole” (Orosz, 2008, p. 190). At the turn of the century, the policy of assimilation gave way to the policy of association, whereby

cooperation between the French and their colonized people was highlighted. Cooperation in this sense would entail the use of French as the lingua franca, while the French pledged to respect native cultures and institutions of the colonies. (Osrosz, 2008 ,p.190). In their assimilation efforts, African elites were given the same education as that in France, while the masses would obtain basic instruction in spoken French, reading, writing, arithmetic, and vocational skills. The French administration thus instituted a three-tiered formal school program as follows:

- Village schools with emphasis on mass primary education with basic French language, manual trades, and agricultural skills.
- Elementary and regional schools that would produce native auxiliaries for French administrators.
- Professional schools that would produce specific skilled professionals. (Orosz, 2008, P. 222).

1.1.3.The Establishment of Advanced Primary Schools and Programs

On July 25, 1921, the Advanced or Third Level Primary Education School was founded in Yaoundé. Pupils from regional and mission schools with excellent First School Leaving Certificate results could sit for an entrance exam for admission into this institution. During the first year, courses on cultural studies were offered, while the last two years had specialized programs that trained writers and interpreters, postal workers and clerks, nurses, and teachers. Health workers were offered internship at the Yaoundé hospital while administrative and/or clerical fields interned at government offices in Yaoundé. (*France, Rapport Annuel sur le Cameroun pour 1924*, p. 24).

Other Advanced Primary Schools were created in Douala and Fommban to provide training programs in agriculture, public works, road construction and maintenance (*Commissaire de la République Française au Cameroun, Arrêté Créant à Douala une école professionnelle, Yaoundé, le 2 juin 1937*). Admission was based on a competitive exam and upon completion, students were awarded the Professional School Diploma Credential (or *Diplome de l'Ecole Professionnel*). In addition to the professional schools of Public Works in Douala and two regional schools in Dschang and Ebolowa, there was a pottery school in Yaoundé, a binding school, a cookery school, and six agricultural apprenticeship schools (or *écoles d'apprentissage agricole*) (*France, Rapport Annuel sur le Cameroun pour 1932*, p. 26). In 1932, a two-year nursing school was opened at Ayo. Admission was open to pupils with First School Leaving Certificates who had a minimum of one year experience in a hospital or health clinic (*France, Rapport Annuel sur le Cameroun pour 1935*, p. 130). This school later graduated 118 nurses between 1932 and 1938.

1.1.4. French Colonial Policy for Girls

The French colonial authorities, just like the British, recognized the need to provide formal schooling opportunities to women. In 1937, the governor-general of French West Africa, Jules de Coppet, issued a circular to his lieutenant governors entitled "The Instruction of Native Girls." In it, he emphasized the inculcation of European ideas on health and childcare, the training of suitable wives for the French-trained male elite, and also the socialization of future

generations in French mores and culture. According to him, 'the education of the native woman permits the evolution of the family and does not limit to the individual level the action of education received. It will consolidate, finally, in successive generations, the new habits acquired by education and will permanently install our action within the indigenous society.'¹

The typical girls' school proposed was an *ecole de maison indigene* (school for the native household) in which educational interest centered on teaching European notions of hygiene and childcare to future mothers. By logical extension, it was recognized that the girls could also be trained as auxiliaries in the areas of health care and teaching. By the end of 1935, a plan was drawn up with two levels of education: development of the first level of primary schools in regional centers with a heavy emphasis on household arts, hygiene, and child care; and on the second level, selection and training of indigenous women as midwives, nurses, and teachers. Girls and women's education was to be above all practical, "tied tightly to the double role that the native woman functionary will have to fill later-a social role and a domestic role."²

Jules de Coppet further proposed that secondary education be reserved for the daughters of chiefs and power authorities in the colonies. Girls with such family backgrounds, he argued, would make the best wives for the male elite that was being drawn from the same high social stratum. Along with the further development of their household skills, these chosen few would also gain greater knowledge of the French language, basic arithmetic operations, drawing and singing, and all the practical and decorative arts they would need in filling their roles as "the future spouses of chiefs, notables, and functionaries."³

The year 1938 saw the formation of the *College Modernes de Jeunes Filles* in Douala. The school was open to girls aged thirteen to twenty. Besides passing an examination in French composition, mathematics, drawing, and needlework, prospective students were required to submit birth and health certificates, previous school records, and a promise to teach in the primary schools for at least ten years after completion of their studies. Morning classes consisted of academic subjects such as French, writing, arithmetic, and the basic sciences, while afternoons were usually devoted to the study of hygiene, childcare, sewing, cooking, and drawing.

1.1.5. Female Spaces in Formal Schools and Leadership Spheres

Discourses on French and English colonial education contradict gendered representations in formal schooling environments where women are portrayed as passive and subservient. While dominant narratives portray women as trained solely to assume roles as homemakers and housewives, some women on the contrary, used institutional spaces to cross boundaries and seek opportunities out of their prescribed gendered traditional roles. Some students who completed secondary schooling education at *College de Jeunes Filles*, (School for Young Girls) not only continued to higher education, but acquired the skills and competencies that allowed them seek and occupy leadership positions within the government. Such is the case of Delphine Tsanga, who continued her studies in France and later held key administrative positions on both the national and international scene, notably as President of the Cameroon National Women's

¹ Governor General Jules de Coppet, "The Instruction of Native Girls," 1937, in Series G moderne, Archives nationales, Dakar

² *ibid.*

³ *ibid*

Council (1964), Vice-Minister of Public Health (1970-1972) and Minister of Social Affairs from (1975-1984). Yet another example is Esther Ngendab Fohitung who attended higher institutions in Nigeria and Britain on government scholarships and later served as Regional Director at the Ministry of Social and Women's Affairs. One can therefore argue that girls' education, though restrictive in nature allowed females to find occupations outside of their traditional gendered roles. Colonial girls' education provided some women with an economic livelihood as enterprising students used sewing and baking skills learned in Domestic Science programs to earn an income or even open small businesses (Adams, 2006). It would be a mistake, therefore, to believe that the Cameroon women who participated in formal schools unquestioningly accepted the gendered discourses on their subservience. For some women, education opened new opportunities for travel abroad and professional employment. Particularly during the last years of colonialism, the British and French administration sought to incorporate more women into the civil service. To do so, it needed to promote women's education at the secondary and university levels. While educational opportunities consisted entirely of primary school and domestic science courses, a few had opportunities to pursue education beyond secondary school. Even within the restricted framework of domestic science education, women used the skills learned in these trainings to enter the public sphere as entrepreneurs, teachers, and leaders of women's groups. Such actions thus contradict positionings of women as subservient subjects who were granted access to formal schooling institution to serve the colonial interests and the Cameroon patriarchal system. The schools in this case, served more than just "instructional sites". Rather they produced knowledge and provided students a place for identity construction. In so doing they offered the women selected representations, skills and values that allowed them to cross boundaries and adopt new ways of being in the world. While the hidden curriculum sought to create a gendered work force with women occupying entry level positions, some women were thus able to subvert the patriarchal practices and create new identities through formal schooling. These examples point to some positive developments that resulted from colonial educational policies that led to an increase in women's participation in the public arena.

1.1.6. French Cameroon Statehood Educational Policies

When Cameroon gained independence, there was the growing awareness about the importance of quality education not only for individual development but for the development and progress of the national economy. Reform endeavors in Cameroon assumed different strategies. The essence of these various reforms was to restructure primary, secondary, and tertiary education, in a bid to redefine educational policies so as to meet the challenges of the independent nation. (Tchombe, 1997) Cameroon maintained the two systems of education instituted by the French and English colonialists. The Anglophone system of education fashioned after the English had seven years of primary school, five years of first cycle secondary school, and two years of high school while the Francophone system had six years of primary school, four years of first cycle secondary and three years of second cycle secondary school. Students who pursue the Anglophone system of education would obtain a First School Leaving Certificate at the end of primary school, General Certificate of Education, Ordinary Level at the end of secondary school, and General Certificate of Education Advanced Level at the end of high school. Meanwhile students who pursue the Francophone system would receive the equivalent of *Certificat Etude Primaires Elementaires* (CEPE) at the end of elementary, *Brevet d' Etudes*

Premier Cycle (BEPC) at the end of first secondary first cycle, and Baccalaureate (BAC) at the end of secondary second cycle.(Ministry of National Education, Cameroon, 1995)

1.2. Vocational Training For Girls

1.2.1. Women's Centers

Just like the British and French colonial governments, Cameroon continued to offer vocational training to women after the country gained its independence. The government's main objective was to use these centers to integrate women in national development initiatives and respond to the need to mobilize available human resources for national construction (Tchombe, 1994). Short training courses, seminars, and workshops were offered and chosen topics were based on identified needs. Subjects taught include family life, hygiene, first aid and specific skills such as knitting, weaving, embroidery, arts and craft. (Ministry of Social and Women's Affairs) The twenty-four Women's centers located in all ten regions of Cameroon received financial support from local councils, the Ministry of Social, and Women's Affairs and international donors, such as UNICEF. The strategic location in all ten provinces of the country targeted women living in rural communities and urban centers to provide them with basic vocational skills that would allow their participation in the economic, political, and social development of their communities. Some institutions offered boarding opportunities for girls and provided them with options to continue their schooling beyond primary education. Others offered technical vocational training for those who had goals of seeking entry-level positions in the labor market as secretaries and receptionists.

1.2.2. Home Economics and Social Centers

Unlike the Women's Centers which targeted girls to provide them with basic skills, the main objectives of the Home Economic and Social centers were to prepare girls for marriage. These centers were supported by government subventions, with funding based on the enrolment figures and the kinds of programs offered. Subjects included basic literacy, short training courses in mother and child care, food and nutrition, needle work, health education, woodcraft, horticulture, arts and craft, typing, and technology. The enrolment rates varied and ranged from 50 to 200 young girls while the duration of the course lasted from four months to four years. Boarding facilities were offered in a number of these institutions. Tuition also varied and depended on the location of the institution as well as the type of training courses offered. While such efforts of the government were laudable, they did little to provide women with training opportunities that would enable them move up the social and economic ladder. Female graduates from these Home Economic and training centers would later become housewives or seek low-level paying jobs. While the current Cameroon government has phased out such training instituted at home economic centers, it still has not provided alternative schooling environments, training skills, and leadership opportunities for girls. Evidence shows that, 35 percent of women in Cameroon participate in the labor force (Ministry of Labor, Cameroon) with the 50 percent of the female work force serving in entry-level positions. In addition young women make up only 15-35 percent of students in formal training programs⁴. Female

⁴ Ministry of Labor, Cameroon

populations in Cameroon thus continue to face uphill battles as the education system neither provides them with education nor skills needed to compete in the job market. At the same time, the Cameroon government has not instituted initiatives aimed at increasing women's access and participation in higher institutions of learning to enable their contribution to the social and economic development of themselves and their communities.

1.3. Higher Education in Cameroon

While Cameroon under the French administration had one of the highest rates of school attendance in Africa, there were no institutions of higher learning under the French and British colonial administrations (Forgwei, 1974). Upon independence, the Cameroon government set up a higher educational establishment that combined the two distinct educational systems inherited from the French and English. The first step was the 1958 creation of the University Preparatory class and Law School. In 1960, The National School of Administration and Magistracy was added on to train administrative staff for public service. Meanwhile in 1962, the Cameroon government and the Republic of France signed an agreement that gave France the responsibility of creating a Federal University, overseeing personnel management, and supervising financial operations of the institution (Europe-France Outre Mer, 1964, p 35). In addition, all higher educational establishments and initiatives were consolidated under the Federal University of Cameroon which later constituted the following schools and colleges:

- Faculty of Law and Sciences:
- Faculty of Arts and Social Sciences
- Faculty of Sciences
- Advanced Teacher Training College
- National Advanced School of Agronomy
- University Center for Health Sciences
- The Yaounde International School of Journalism
- Cameroon Institution of International Relations
- National Advanced Polytechnique School: (*École Nationale Supérieure Polytechnique*)

While such policies were instituted to train professionals to occupy leadership positions within the new government, there were no efforts aimed at mainstreaming women. ENSP, which was created specifically to train cadres for civil service and engineers for the development of the new Cameroon, did not take any specific steps to attract and retain women. Like its French counterpart, the focus on ENSP was rigorous science and competitive entrance examinations. While present-day ENSP has aligned its degree structure with The Bologna Process, the European reform process aimed at establishing a uniform European Higher Education with a system of easily readable and comparable degrees⁵, no policies have been instituted to increase the number of females at this institution. Instead ENSP has focused on structural changes by adopting the Anglo Saxon Bachelors-Masters-Ph.D. (BMP) model from which the French *License-Master-Doctorat* (LMD) is derived, in a bid to align its systems with the global educational practices. On the national scene, the Cameroon government voices support for female education and calls for the mainstreaming women in all aspects of leadership. At the

⁵ Council of Europe: http://www.coe.int/t/dg4/highereducation/ehea2010/bolognapedestrians_en.asp

same time, such rhetoric has not been backed by action as institutions such as ENSP tasked with training human capacity for social and economic development has yet to open up more spaces for females. One could thus safely say that the continued marginalization and underrepresentation of women at ENSP speaks to resistance of officials in this patriarchal environment who struggle against welcoming women as equals. Women in Cameroon are usually defined by the subservient and subjugated roles ascribed to them by the traditional patriarchal society. Their crossing over to public spheres as industry professionals and leaders would hence be highly contested in this traditional environment. ENSP thus becomes a confluence of cultures-Cameroon, French and Anglo-Saxon- contributing to the gendered social and educational framing and naming of male and female students. Conflicts thus ensue as women at this institution resist and contest the restrictive identities accorded them.

1.4. The French and Global influences on Engineering Education

The confluence of the French and the Anglo Saxon traditions has also allowed for possibilities at ENSP. Although the institution has deep traces of French traditions (France was heavily involved in the founding and administration of ENSP), the institution which serves students from both Francophone and Anglophone Cameroon has also had some Anglo Saxon influences. As mentioned earlier, present day reforms have introduced the BMP (Bachelors, Masters and Ph.D.) system in a bid to align the Cameroon's historically French systems of Education to the Anglo Saxon model. Before the advent of the BMP, university study was split into two levels. Cycle 1 consisted of two sub cycles, at the end of which two certificates were awarded: an associate degree, *Diplôme d'études universitaires générales* (DEUG) and at the end of the second cycle, the *Licence* at the end of third year (Tatangang, 2011). The Bologna process introduced a uniform degree structure based on a two-cycle model and on an agreed comparable three-cycle degree system for undergraduates (Bachelor degrees) and graduates (Master and PhD degrees).⁶ This process also influenced the higher education reform in Cameroon in 2010 and a consequent adoption of the BMP model by *École Nationale Supérieure Polytechnique*. According to the Director of ENSP, such a change was necessary because ENSP intended to "link their teaching to the demands of private sector job creators to facilitate the employment of graduates and stay relevant as an institution"⁷. ENSP's goal of providing its graduates with global job market skills for the 21st century workplace demands resonates with The World Bank's Africa Action Plan for 2006-2008 which highlights higher education's role of building human capacity for national growth and economic competitiveness. Recommendations of this policy paper include providing students with relevant skills to reflect the labor market, building capacity to enable understanding and use of global knowledge in science and technology, and giving individuals the capability to assess existing information and generate new understanding through research (Bloom et al 2006). The revised degree programs thus becomes ENSP's means of articulating its vision of being a part of the global environment and staying relevant to the needs of the knowledge-based society. With the BMP model, students graduate with a Bachelors in Engineering after three years of successful study. Furthermore, the new four-year degree allows students to graduate with a Master's while an additional three years of research earns

⁶ The official Bologna Process website July 2007 - June 2010

⁷ Personal Interview with Director

them a doctorate. The Assistant Director at ENSP who is also in charge of curriculum and research explained the BMP system as follows:

“The major difference between the existing and the proposed engineering curricula is the replacement of a unified system with two consecutive parts. The first part of the curricula, ending with a Bachelors degree is sufficient for the graduate to commence their professional career. However, under the BMP system, a graduate can strengthen their knowledge by opting for the research and postgraduate program.”

ENSP thus connects with the global development discourses through its alignment of the institution’s mission, vision, and practices to international, global standards. The confluence of the French and English systems therefore introduces a learning environment that caters to both Francophone and Anglophone learners allowing for the training of professionals capable of competing in the global job market. This opens up possibilities for Cameroon professionals trained at ENSP because it allows them use their skills and training beyond the confines of the Cameroon society. At the same time, the conspicuous absence of initiatives aimed at including historically marginalized segments of the population such as women conflicts with the self-same development discourses to which ENSP aligns itself. The following overview of the history and programs offered at ENSP highlights the institution’s growth from its initial French roots to current efforts at inserting itself into the global discourses on Math, Science, Technology, and development. It also underscores the organization’s attempt to portray itself as a major regional player in the Sub Saharan African Region through its teaching and learning practices which are still deeply rooted in traditional patriarchy, creating possibilities for some and questioning the belonging of others.

1.5. Ecole Nationale Supérieure Polytechnique, (ENSP) Yaounde

Ecole Nationale Supérieure Polytechnique, (ENSP) primarily trains scientists and engineers to participate in sustainable development of Cameroon and Africa. The institution was established June 4, 1971 to train technical staff for national, technological, and scientific development. At its inception, ENSP was financially supported by the French government and run by French staff and faculty. It was not until 1980 that ENSP had its first Cameroonian Director. ENSP currently receives funding primarily from the Cameroon government, which also plays a significant role in the governance of ENSP. The Director and Assistant Director are appointed by Presidential decree while the Minister of Higher Education assigns professorial positions. When ENSP was founded, two kinds of training programs were offered; a three –year program with a diploma of civil engineering and a five-year program that culminated with a diploma of design engineering. This institution of higher learning has grown over the years and currently trains engineers of disciplines in the following departments:

- Mathematics and Physics
- Civil and Urban Engineering
- Electrical and Telecommunications Engineering
- Computer Engineering
- Mechanical and Industrial Engineering
- Coordination and Promotion of Research

The institution's strategic vision states:

“Created in 1971, ENSP of Yaounde is an elite school tasked with training engineers in various fields to respond to the social, cultural, and economic needs of the country.”

Steeped in high values and boasting scientific and technological excellence, ENSP hopes to become a model for the African continent by progressively developing its curriculum and training standards to become competitive on the international level while focusing on the regional training and needs.

Just like the *Grandes Ecoles* in France, ENSP seeks to support the development of Cameroon through the training of highly qualified engineers, promotion of scientific and technical research, and provision of qualified expertise to administrations, enterprises, and international organizations. According to its strategic vision, ENSP prides itself in excellence and positions itself as the premier training institute in Cameroon as it strives to become a model institution on the African continent. In efforts to become more visible on the regional and international levels, the institution has created strategic partnerships with such institutions as The *Institut National des Sciences Appliquées de Lyon* or *INSA Lyon*, a French Engineering university that was founded in 1957 to train highly qualified engineers, support continuing education, and conduct research and testing. The institution's five-year program which seeks to train students in the primary areas of science and engineering program can be summarized as follows:

The first cycle, which is highly selective in the recruitment of students, aims at giving the basis for future engineering studies. The second cycle has choice of 12 specialties from which students can choose with a possibility of pursuing a Ph.D⁸.

ENSP Cameroon closely follows INSA Lyon's model in the recruitment of students, course selection, and program of study. Entrance into ENSP is a highly selective process with admission based on very competitive examinations administered to high school students in all ten regions of the country. Admission into the first cycle of ENSP is dependent on passing the entrance scientific examination based on *BAC C*. The *baccalauréat* often known in French colloquially as *le bac*, is an academic qualification which students take at the end of the *lycée* (secondary education). It is the main diploma required to pursue university studies. *Bac C* comprises such hardcore Science subjects as Mathematics, Physics, and Chemistry. It has typically been seen as more prestigious to choose the "*Bac C*", as it is said to open more doors to a greater range of post-graduate opportunities and access to '*Grandes Écoles*', such as *Polytechnique*. Students who thus sit for the entrance into the ENSP usually hold a "*Bac C*" a prerequisite for higher education in scientific fields such as engineering. Entrance into ENSP is also open to Anglophone students who hold General Certificate of Education, Advanced Level (GCE A' Level), the secondary education terminal diploma. Such students are required to have obtained the GCE in such hard core science subjects as Mathematics, Further Mathematics, Physics, and Chemistry. ENSP touts itself as an institution that attracts the best and the brightest because of the rigorous and competitive nature of the entrance examination with students tested primarily in Mathematics and Physics. The ENSP brochure outlines the steps towards gaining admission into this institution, as follows:

⁸ INSA Lyon Website

“To sit for the entrance examinations, candidates should be holders of *baccalauréat C* or GCE Advanced Level in such subjects as Mathematics and Physics or an equivalent diploma. The examinations will be conducted in two parts; a four-hour long examination in Physics and a four-hour long examination in Mathematics. Candidates will be required to sit for both sessions.”

Successful candidates who gain acceptance into ENSP go through a five year training program. The first two years of the program offer courses in Mathematics, Physical Sciences, Computer Science, and Engineering. During the last three years, also known as the specialization cycle, students have the option of focusing in any of the following engineering fields: civil, mechanical, industrial, computer, electrical, and telecommunications. The institution also admits students who are holders of Bachelors in Mathematics or Physics. Entrance exams targeting such candidates allow successful candidates to bypass the first two years of student and gain admission into year three with the option of specializing in any of the engineering fields. Upon completion of five years of study, students have the option of pursuing a Ph.D. with a focus on research.

1.5.1. Student Life at ENSP

While the ENSP brochure would describe student life on campus as rich with student activities, there are neither a variety of extracurricular activities for students' engagement nor infrastructure to cater to students' social needs. Sitting on 8 hectares of land, ENSP boasts a total of eight buildings which house classrooms, laboratories, and administrative offices. During my field studies, the campus was undergoing a renovation process with the construction of sidewalks, new buildings, and repainting of old buildings. ENSP also has a library which neither has computers nor Internet connection. While students cannot borrow books to take home, all resources can be consulted on site. For Internet research, students have to pay to use one of the many Internet cafes around the campus. During library hours students are allowed to use this space to study quietly or consult resources such as books and magazines. Group work is not possible since talking is not allowed.

There are no student housing facilities at ENSP. The University of Yaounde 1, to which ENSP is affiliated, offers campus housing. Because of high demand and limited spaces, ENSP students seldom get assigned housing on campus as university faculty students get priority. Students therefore rent from private landlords or live with parents or relatives. Because of the absence of a public transportation system (buses and trains) in Yaounde, students have to take taxis (cars or motorcycles) to school. The high cost of transportation and slow traffic, with frequent traffic jams, dissuade students from going home for breaks and lunch. Students would stay on campus all day and return home when school is out in the evenings. Most students prefer to reside around ENSP, where the landlords charge higher rent, in order to walk to school and avoid the transportation hassles. ENSP does not have any cafes or canteens where students can purchase lunch or snacks. Students would usually buy lunch at one of the many make-shift restaurants around the school campus. Those who cannot afford lunch would go without food all day and return home for dinner. With regards to past times, a lone ping pong table sitting between two class buildings serves as the only recreational activity. A highly contested area and sporting activity, the males often times stake their claim to this space. At one point, male students overtly forbade girls from participating in ping-pong matches claiming it as a male zone. This action led some female students to file a complaint. The space was eventually opened

up to females upon intervention of a male staff. Yet at any given point at lunch or break time, more males than females would be seen around the ping pong table watching, cheering, and/or participating in the sport.

1.5.2. Classes at ENSP

Classes start at 7:30 a.m. with each class session lasting for four hours. During the first two years of study, classes are held in amphitheaters. In the specialization years- the last three years of study- classes are held in smaller classrooms. During these specialization years, each cohort has a designated classroom for class lectures and an assigned lab for experiments and lab work. Students have to be in class on time as tardiness and absences have the potential of negatively affecting grades. Students are so conscious about class attendance to the extent that, when ill, they would rather come to class in their discomfort rather than risk the consequences of being absent. During one of my observations, one Professor mentioned that students who are ill are welcome to roll in their hospital beds into the classroom to participate in lecture. Though his utterance was said in jest, it underscores the inflexibility of the system and the total disregard for individual, student wellbeing. At the beginning of class, students would all rise to acknowledge the teacher's entrance and would take their seats at the instruction of the teacher. Students can only repeat a class once during the entire program. If a student receives failing grades a second time s/he is expelled. During lunch breaks from 11:30 a.m. to 1:30 p.m., students stay around campus, meet up with friends, study or attend one of the student meetings or information sessions usually scheduled during this period. Afternoon classes usually end at 6 p.m. requiring students have to leave campus. The campus security locks down and turns off power to prevent students from lingering around campus. This poses a problem for students who would like to study or work on homework and group projects after school. Because students live in different parts of the town, group collaboration thus becomes a challenge. At the end of the school day, traffic jams delay getting back home in time to complete homework. Similarly students who live with their families are saddled with household chores in the evenings and mornings, further exacerbating the challenges of meeting the demands of schooling such as studying or completing peer group projects when school is out.

1.5.3. Student Associations at ENSP

ENSP has many student organizations and clubs which connect students with a stronger sense of community while providing opportunities for students to engage in organizational and leadership development. These organizations serve as outlets for self-expression, sharing of talents, and networking. Each department has an association with members primarily from the department. To sustain the activities of the club, students are charged a small membership fee. The association meets once a week during lunch breaks. Some of the activities include presentations on specific topics from association members and periodic lectures from guest speakers, who for the most part are professionals in the field in which students aspire to belong upon graduation. The association president, who is usually a third year student, decides on the activities in consultation with members of his office. Sometimes associations serve as homework centers where students in upper grades tutor students in lower grades. The older students also mentor junior students by providing tips and advice on how best to succeed and cope with the stresses of school. The associations also organize field trips to corporations and industries and

sometimes liaise with these organizations for internship opportunities for Association members. Not all associations are formed along departmental lines. The Association Female Students for example was created to provide additional support to female students. Open to all females at ENSP, it periodically invites guest speakers and connects with female ENSP graduates who share their insights on job search and challenges in the field as female engineers. Most of the associations also sustain activities by soliciting donations from ENSP graduates.

1.5.4. Professional Life After ENSP

While the ENSP boasts partnership with national corporations and businesses, it does not facilitate job placement of ENSP graduates or help them transition into a career upon completion of their studies. In preparation for life after ENSP students, create networks through their memberships and belongings in various Student Associations. Within these various associations, they create partnerships and network with industry professionals and engage with corporations. This has translated into collaborative activities such as Speaker Series, field trips, internships, and job talks, periodically organized by associations to acquaint students with the basics of job search, resume writing, and job interview skills. Students not only actively create such networks but seek to maintain these partnerships which they utilize upon completion of their studies at ENSP to enable their career growth and development.

1.5.6. ENSP as Site for Examining Discourses

I use “discourse” in this section in the way it is theorized by post structuralists-as a form of social/ideological practice (Fairclough, 1992). The term is also employed to delineate “forms of knowledge or powerful sets of assumptions, expectations and explanations governing mainstream social and cultural practices” (Baxter, 2003.p7). As a field site, ENSP is relevant and appropriate because it not only participates in the discourses of developmentalism through its promotion of scientific research and technology, networks with national and international organizations, but it trains high-level engineers and scientists to engage in the community and regional development. While it trains engineers and scientists for developmental purposes, some of the practices and programs do not reflect the women empowerment discourses promoted by the international organizations and local government who seek to educate women for social equity. Basing its principles on the strict French intellectual tradition of merit with entrance exams and a focus on the core sciences, ENSP does not make any additional efforts to recruit and retain female students and/or provide gender sensitive curriculum in its classroom teaching. There is thus a discrepancy between the discourse of competitive excellence as reflected in the practices of ENSP and the discourses on female education policies promoted by the local government. While ENSP attracts the best and the brightest students from all ten regions, co-existing in this environment are the discourses that seek to mainstream girls into educational training and career paths that would guarantee employment and upward mobility. These discourses are in opposition to one another because ENSP does not specifically seek to attract female candidates even though an ENSP degree is a sure pathway to employment and economic independence. Similarly other discourses serve to alienate the women who have gained entrance at this institution as students and faculty members. At the same time, ENSP is run by the self-same government that seeks to provide educational opportunities for women to enable them compete in the 21st century job market, guaranteeing their social mobility. These discourses of

power and access not only conflict and co-occur, but speak from different places in history (Blommaert, 2005). I therefore conceive of the various discourses as subject to layered simultaneity, which to Blommaert (2005) would be the up-take of discourses by different speakers according to the historical layers of meaning that are present for different discourses at the moment of interpretation.

At ENSP, there are discourses which shun women from public leadership spaces, relegating them to private arenas in the home. There are also discourses that portray the as playing primarily supporting roles as low-salaried workers. Meanwhile in the larger community, women are portrayed as the backbones of the agricultural and rural community because of their roles as farmers and petty traders. At the same time, there are discourses that support women's access to formal schooling environment to enable their economic independence and social mobility. All of these discourses highlight the perspectives, clashes, and tensions of different historical, social practices, and traditions which are still residual at ENSP. The female underrepresentation of girls at this institution can be traced to the origins of the institution which was modeled after the French polytechniques with military traditions. Just like the French polytechniques that was slow in opening its doors to women, ENSP did not open its doors to women until 1990. In addition, ENSP still operates in a subculture that is steeped in a traditional patriarchal system. So while there has been a push to mainstream women into Math and Science to guarantee their social mobility, there is still resistance of some males to welcome women into these public spaces because the woman's place is still considered the home. These discourses thus occur in a real time, synchronic event, but they are simultaneously encapsulated in several layers of historicity. This institution of higher learning is now necessarily a densely semiotised space where social actors speak and act in a place and from a place. It is a space filled with all kinds of social, cultural, epistemic and affective attributes where subjects create various identities in conjunction with, sometimes in opposition to, but always in meaningful relations with others.

My research thus pays close attention to these tensions; how gender is constructed, positioned, contested, and negotiated within the power hierarchies of an institutional space. I will be interested in how interlocutors negotiate linguistic and discursive differences; learn, reshape, and resist gendered constructions and how female subjects remake themselves using and redeploying the available technologies as well as discursive tools and practices.

I ask the following questions:

- 1) How have the discourses past and present constructed and represented gender in education in Cameroon and at ENSP in particular.
 - i) How are the formal learning spaces constructed?
 - ii) How is gender expressed and constructed discursively?
 - iii) What are some of the tensions and conflicts in the various constructions?
- 2) How do subjects in an institution of higher learning representing the different social and economic class and linguistic backgrounds take on different roles identities in response to the various gender positionings at ENSP?
- 3) How do the discourses at an institution of higher learning confirm existing social relationships and behaviors while at the same introducing new meanings and patterns of behavior?
 - i) What are the discourses on engineering education?
 - ii) How do subjects in a higher institution of learning enable the identity construction processes?

1.6. Connecting My Inquiry to the Broader Context

These questions are of interest because of the shifting focus on gendered education in Cameroon and the larger Sub Saharan African region. In recent years, several social programs—that are organized, planned and continually improved to promote women’s participation in higher education and industry—have been launched in Sub Saharan Africa, while efforts are being made to increase investment in technology education and expand access to this minority group (Huyer et al., 2005). Additionally, there have been efforts to provide more educational opportunities and eradicate some of the gender bias introduced by socialization patterns and entrenched in the Cameroon education system. Gender bias, embedded in textbooks, lessons, and teacher interactions with students, is not only part of the hidden curriculum and lessons, (Apple, 1983) but is taught implicitly to students through the every-day functioning of their classroom. While the female students at have transcended boundaries and enrolled in a school of engineering, their education pathway is not the norm in Cameroon where girls, are usually socialized into taking courses in the arts and humanities in preparation of their roles as wives and mothers. As a result a majority of women are either discouraged or do not consider themselves competent to study science at the post-secondary level (Mbilyi, 1998; Beoku-Betts, 1998). They find themselves taking courses such as home economics and vocational training. The few women who pursue secondary and tertiary education are encouraged to study literary courses in English literature or to prepare for occupations like nursing, teaching, clerical services and lower administrative services (Tchombe, 1997). In this environment, schools not only serve as sites for gender construction and reproduction but are invested consciously and unconsciously with authority to reproduce dominant ideologies, hierarchies, and gendered cultures. Classrooms also become microcosms of society, mirroring its strengths and ills alike and paralleled the socialization patterns of young children of the larger community’s perceptions of gender roles (Marshall, 1997). Teachers—key actors in the everyday life of schools—with little access to training in gender issues, consequently, tend not to foster gender equity in their classrooms (Stromquist, 2007). Not surprisingly, while the proportion of women in secondary and university education in Sub Saharan countries rose slightly (Weis, 1979) in the early 1980’s, girls were still under represented in the crucial fields of study such as the sciences, mathematics and technology, areas that are critical to their skill building and participation in the development of their societies (Beoku-Betts, 1998).

The 1999 World Conference on Science (WCS), held in Budapest, specifically addressed gender inequality in the sciences and suggested specific commitments and reforms to achieve the full participation of women and girls in all aspects of science and technology. Some of the WCS recommendations included actions to improve career prospects for women in education systems and science departments; to increase girls’ and women’s access to scientific education at all levels; and to increase the representation of women in national, regional and international policy and decision-making bodies and forums (WCS, 1999a and 1999b). And while there has been a push on the global stage to mainstream women into Math and Science Education, African countries like Cameroon are still grappling with issues of access to quality education. Current formal schooling does not provide opportunities for women to reach their full potential in education or in the society despite the push for opening up spaces for women. In 2001, four out of ten Cameroonians were living on less than a dollar a day and had a primary school completion rate of 56%, with only 60% of these making a transition to secondary school, (World Bank, 2003).

With the growing awareness on the importance of quality education for individual development and growth of the national economy, the government of Cameroon engaged in reforms to redefine educational policies aimed at restructuring primary, secondary, and tertiary education to meet the challenges of the rapidly changing world. (Tchombe, 1994) In recognition of the place of higher education as the centre of knowledge production and the basis for sustainable community development (Tanjong, 2008), the government instituted reforms to create more public and private higher education institutions in all ten regions of Cameroon. While the role of higher education in fostering development and sustainability has been addressed at length, missing from the discourse are country specific attempts at widening female access to institutions that prepare students as participants in the development of their local economies. Also missing are the individual experiences and discourses of the few women who have enrolled in higher institutions of learning and historically male-dominated schools which have trained civil servants, managers, scientists and engineers for both the public and private sectors.

My research connects with these topical issues on female education and development by focusing on the discourses on Math, Science, and Technology at a higher institution of learning in Cameroon to look at the identity construction processes. As I discussed earlier, education in Cameroon has been instituted by various social actors based on their understandings and constructions of gender. I thus use ENSP as a space to anchor individual and institutional discourses in my investigations of various gender positionings. Against the backdrop of the discourses that push for the training of women to enable them maximize technological benefits for self-empowerment, social justice, and sustainable development (Umrani & Ghadially, 2003), I investigate the various subjectivities of various social actors in this schooling environment that seeks to develop human capital, prepare multi skilled workers, and enable students' participation in the development of their communities. In addition to paying close attention to the institutional and individual discourses, I tease out the various ways in which social actors at ENSP respond, resist, reject, and/or renegotiate these constructions. Framing this institution as a "contact zone" a social space where cultures meet, clash, and grapple with each other often in contexts of highly asymmetrical relations of power (Pratt, 1991), I focus on how subjects create meaning on the margins of official meanings (Kramsch, 2009) at this higher institution of learning which is necessarily contradiction-ridden and tension-filled as subjects navigate between the "authoritative discourse" and "individual discourses" (Bakhtin, 1981) in their attempts to make sense of themselves and the worlds which they inhabit. According to Bakhtin (1981), while the authoritative, dominant discourse constructs stereotypical, femininity and binary gendered differences, there are resistant, individual discourses that deconstruct the prevailing gendered identities.

Beyond the boundaries of ENSP, the women in Cameroon are aware of their unrecognizable and invaluable traditional and local knowledge in spite of their lack of equal educational opportunities as their male counterparts. They are major producers of commodities, merchandise, food, energy and water. Due to their family roles, they are often especially aware of the social, economic and environmental needs of their communities. They thus "play vital roles in the incubation and transfer of critical local knowledge on which survival strategies are based (ITDG, 2000: Appleton et al., 1995). Yet the formal schooling in Cameroon has done little to integrate indigenous knowledge into the curriculum. Conflicts thus occur in formal schools

where the curriculum and teaching methods are in dissonance with the local ways of being. I will thus pay attention to Anglo-Saxon and French influences on technical higher education to tease out how they co-exist with the traditional ways of being and learning in this environment.

1.7. Connecting Female Issues at ENSP to the National and Global Context

My interest in investigating gendered constructions in Math, Science and Technology education at ENSP developed in the course of my search for connections between my research and the global discourses that focus on lifting women in developing countries out of poverty. My interest in the female and higher education in Cameroon, stems in large part from my own history as a learner. I grew up in Cameroon, a multilingual Sub Saharan African country with two official languages-French and English- and over two hundred regional languages. And while I completed primary and secondary education in English speaking Cameroon, I later had to migrate to French speaking Cameroon for my college education at the University of Yaounde I, where I obtained a Bachelors in French and English and trained as a teacher at the *Ecole Normale Supérieure*. My education and training truly mirrored the aspirations and goals of the community where females were groomed primarily as care takers of the family and the larger society. Teaching and education careers were viewed as suitable careers for females as it connects with their maternal side and allows them the time and space to raise and take care of families. In Cameroon, gender continues to be an element of social relationships that operates at multiple levels, affecting everyday interactions, public institutions, work, and the household. The consequences of gender distinctions are reflected in political, economic, and cultural spheres. Within the cultural sphere, gender asymmetries are expressed and reproduced through definitions of femininity and masculinity supported by such mechanisms as ideology, sexuality, language, and schooling, among many others.

In this very patriarchal society with clearly defined gender roles where females are socialized for maternal and care giving roles in preparation for their future as mothers and wives, it was common knowledge that *Ecole Normale Supérieure* not only trained teachers but was also an institution where wives were groomed. Lamb and Nsamenang (1984) maintain that the socialization in the Cameroon grassfields is not organized to train children for academic pursuits or to become individuals out of the culture. Rather it was organized to teach social competence and shared responsibility within the family system and ethnic community. These practices align with Olaç's view of socialization (1991); the process through which children learn the norms, values and beliefs valid in their communities. And so I grew up learning culturally appropriate forms of behavior and systems primarily through hands on socialization under the mentorship of older peers and siblings and of parents and other adults. And while education was highly encouraged by my parents, I was reminded by other relatives and adults in the larger community to adhere to the norms and culture of the immediate society to which I belong. It was a close knit collectivist community where "the individual gains significance from and through his relationship with others" (Ellis et al, 1978 p 8). Nsamenang (1987a p. 279) amplifies this theme by pointing out that persons who assert individual rights over those of the community "do so at the expense of their peace of mind and great risk of losing the psychological comfort of belonging". Such tensions play out in formal school settings where the values taught in school stand in contrast to community values and societal norms. Social conditioning and stereotyping that frame women as physically and intellectually inferior to men keep women from seeking top grades and displaying overtly competitive behaviors that is necessary for them to succeed.

Furthermore, the wellbeing of the family takes precedence over the individual's academic achievement. In most communities, girls are still saddled with housework and tasked with taking care of siblings. Such duties ascribed to her by virtue of her gender, are not only of paramount importance, but are prioritized over her participation in formal schooling. In poor households girls are pulled out of school to engage in a trade or work in the fields to contribute the family's finances. In such cases communal responsibilities take precedence over school work while familial wellbeing is prioritized over school attendance, completion, and success.

These conflicts between formal schooling expectations and girls' familial responsibilities in inherently collectivist traditional African societies such as Cameroon can be traced back to colonial times when formal schools were first introduced. According to Kanogo (1984) formal schooling afforded new ways of being, created new identities, and increased mobility for girls who were enabled to cross physical, cultural, economic, and social and psychological frontiers that had been closed. At the same time, the majority of elders hated the prospect of their daughters going to school. At stake was the basic question of group identity and social cohesion. There was a sense in which elders believed they were losing their children to Western education. Formal schooling threatened generational allegiance and peer solidarity, while education was represented as a pollutant, and this pollution was seen to affect a wide range of cultural practices. Formal schooling practices stood in stark contrast to the traditional African education where institutions trained women to act as central players in their communities. For example, age-grade societies, secret societies and market associations transmitted skills and values for generations and formed the basis for stable economies and social systems for hundreds of years (Leis, 1974; Richards 1975; Okonjo, 1976; D'Azevedo, 1980). The educational systems were community-based and oriented to real-life experiences of the women while the process of traditional education was intimately integrated with the social, cultural, artistic, religious, and recreational life of the ethnic group. In traditional Africa, 'schooling' and 'education', or the learning of skills, social and cultural values and norms, were not separated from other spheres of life. Marah (2006). Educational activities in traditional schools were thus extensions of daily life, where girls learned how to fish, cook, weave, spin cotton, dress hair, and make baskets, musical instruments, pots and fishing nets. They learned special songs and dances as well as how to behave within the associational structure that comprised the community. The goal of education was the preservation and transmission of cultural values. With the introduction of formal schools by the missionaries and later on colonial governments, educational goals and practices in Cameroon took a different turn. The education of girls and boys was based on missionary and colonial constructions of gender and how it would respectively serve the goals of evangelizing and the colonial government's efforts to aggrandize and maintain the empire.

It wasn't until recently that gender equality in education became not just women's issue but a development issue in Cameroon and the rest of the African continent. Inadequacies in education systems around the world and the growing recognition of the vital importance of education and social progress led the collection to the 1990 adoption of World Declaration on Education for All in Jomtien, Thailand. The declaration which framed education as a fundamental human right, pushed countries to strengthen their efforts to improve education for all population groups and pay particular attention on equity in education. In 2000, ten years later, the international community met again at the World Education Forum in Dakar, Senegal. Here they agreed to achieve gender parity by 2005, and gender equality by 2015. The pursuit of

gender equality was deemed central to the vision of sustainability where each member of society respects others and fulfils her/his potential.

In 2009, World Education for Sustainable Development held in Bonn, Germany, built on the success of Jomtien and Dakar by focusing not just on providing access, but providing quality education. Additionally gender equality, with special reference to the participation of women and girls in education was deemed critical for enabling development and sustainability. The question facing policy makers and stakeholders was how to tailor education to meet the needs of girls while at the same time train them to contribute to the sustainable development of their community. Hays & Farah (2000) frame science and technology as decisively important tools for the advancement of women. They believe that women's involvement in the applications of science and technology will not only lead to sustainable development but will be particularly useful in education, economy and health; areas that are critical for women's participation in the global work force and the development of themselves and their communities. In this same light Oluka (2006) sees the need for investing in science and technology as an urgent necessity of equipping a nation's labor force with the skills and competencies associated with numeracy as well as with the advanced research knowledge, and skills required by a global knowledge-driven economy. While such discussions have been ongoing at the global and regional level, Cameroon has been slow to up. Although the government ratified the Convention on the Elimination of All Forms of Discrimination against Women and pledged to provide girls with access to all levels of education, such has not been the case. Women are still clustered in the lowest rungs of the social ladder with low-paying jobs because of lack of education and skills training. Thus far, the widening of access to Math and Science institutions that would guarantee their economic independence has been lackluster at best.

1.7.1. Math, Science and Technology Education and Women's Identity Construction

Education has been instituted in Cameroon based on the ever changing historical and political environments and the varying constructions of gender. At ENSP, the possibilities and challenges of women in Math, Science and Technology education produce new spaces for the construction of gendered identities. My research looks at the various constructions and positionings of gender at this site where 'schooling and particular forms of literacy are used to regulate and broker access to material wealth and the means of producing that wealth' (Luke,1996). Engineering in Cameroon is seen as an elite profession, a profession to which only a select few are called. In conversations with ENSP students, they highlight how their acceptance into such a selective program was a source of pride not only for themselves, but for their entire families and communities. Their belonging to ENSP gives them a new status symbol amongst their peers and community and sets them apart from other students who pursue general education at the University of Yaounde; for they are tasked with seeking solutions for the community and are guaranteed employment because of their skills and competences. One female student reveal how her day-to-day conversations with peers have now morphed from petty talk on the local happenings and gossip to conversations on job creation, educational opportunities beyond ENSP and participation in the global developments in Science. While she plans on continuing her education beyond ENSP, this student has set her sights on the USA which she believes provides an environment for scientific and technological innovations, supports individual growth, and encourages participation in scientific community.

Institutions of higher learning are thus regarded as potent agents for social change, tasked with training the personnel that operate the key institutions of society. Women's endowments, agency, and opportunities in such institutions or lack thereof shape the environment in which these discourses occur. ENSP through its training programs equips students with skills and competences that empower them to look for opportunities beyond their immediate communities. As Gore (1992) points out, the term empowerment suggest a power as property which can be possessed and transferred between agents, from teachers to students from pedagogies to students. Luke (1996) also asserts that power exists in particular genres, texts, skills and abilities, competences, the range of educational interventions. In this regard, power can be turned into an object, deconstructed, and pedagogically reassembled and transmitted. Students at ENSP, by virtue of their training and access to science and technology are in a position to acquire new sets of skills, generate knowledge, and translate it into new applications and products for their communities. Their educational training thus becomes embodied competence, (Bourdieu, 1991) internalized in their bodily practices and inscriptions, according them symbolic power. Their interactions with the powerful technological tools and texts and the learned skills and abilities accords them symbolic power (Bourdieu, 1991) as embodied in the knowledge, opportunities, and status that comes with being engineers. In this environment students are bound to construct a multitude of identities because of the range of tools available. It is what Bakhtin (1981) would call "dialogism", the construction of various personal and cultural identities in relation to that of others. Or it could be the "ideological becoming", (Bakhtin, 1981), the ways in which students and social actors at ENSP influence the social world just as their social world influences them and how the individual self finds meaning in relation to the others in these processes.

ENSP thus becomes a cultural space carved out by words and actions of various social actors. It is an eminently heterogeneous, indeed contradictory and ambivalent space in which third perspectives can grow in the margins of dominant ways of seeing and where speaking subject while 'full of the voices of others re-inscribes earlier voices into her/his own (Bhabha, 1994). In this symbolic place that is by no means unitary, stable, permanent and homogeneous, tensions and conflicts are bound to occur. These tensions can be painful, but they can also be fruitful. While subjects make connections to dominant attitudes and worldviews, they also adapt to the demands of the environment (Kramsh, 2009). In this project, I note that the coming together of the voices of the different social actors within a learning environment is essential to a person's growth and constitutes the gender construction process where females are encouraged to take new identities, mindsets, practices, and relationships characteristic of an engineer. At the same time, I look at the discourse formations; the persistent habits of speaking and acting, characteristics of a social group through which it constructs its world views, its beliefs, opinions and values (Bakhtin, 1981) to understand the tensions that are bound to occur at this site.

While global, national, and local interests shape and structure the efforts of subjects at ENSP, the process of becoming a new kind of person is full of contradictions, tensions, and struggles, thereby leaving open the possibility that these future engineers might take on new roles and behaviors that are deemed contrary to their identities. At the same time these new identities are mediated through the practices of a local site. As Lave and Holland have argued, this identity-making process is never only a matter of local practice, local institutions, and local history. Local struggles are also always part of a larger historical, cultural, and political-economic struggles. These larger struggles, which Lave and Holland refer to as "enduring

struggles,” do not exist separate from local practice, but rather are worked out and mediated in “contentious local practice, in particular local [contentious] ways (Holland & Lave, 2009, p. 3). In my research, I therefore, look at both the local interactions and practices in relation to the contexts in which the discourses take shape and situate the social actors in this tension filled, multi-voiced, heterogeneous, space to examine the conflicts that ensue. I also pay close attention to the various identity acts and individuals struggle with these tensions as they develop their own ideologies and come to new understandings of self.

1.8 Organization of the Dissertation

In the chapters to follow I use ENSP as a space to examine how the discourses of gendered education come to be defined and practiced by paying attention to institutional texts and individual utterances. Chapter two situates current interest in women in Math, Science, and Technology in relation to contemporary and historical definitions; shifts in education thinking, with an overview of the theoretical framework. It lays out the different perspectives to advance a more nuanced understanding of the education practices through which gender is being framed, constructed, contested, and negotiated. Chapter Three positions the researcher in the study and highlights the extent to which personal motivations, previous experiences, and social relations shaped the research. It also presents the approaches of ethnography and critical discourse analysis used in the study. Chapter Four uses critical discourse analysis to tease the different subjectivities and power relations at *Ecole Nationale Supérieure*. It looks at the status quo and patriarchal dominance in the exercise of power against female subservience and determination as they contest for roles and spaces hitherto considered male. In the process, it underscores how female voices challenge the social constructs that define them as 'others' and 'outsiders'. Chapter Five offers a micro-linguistic analysis of subjects' utterances as they strategically negotiate their identities using discourses of schooling. While these discourses confirm existing social relationships and behaviors, they also introduce new meanings and patterns of being as well as resisting, conflicting constructions and enactments of gender within the production of linguistic forms. Chapter six returns to the research questions and their theoretical framework, critically evaluates the claims made and the appropriateness of the theory, highlights limitations in the study, and suggests area for future research.

Chapter 2: Education and Schooling in Cameroon: Historical Perspectives

The paucity of research perspectives on gender and higher education in Cameroon and especially women in Math, Science, and Technology has proved very challenging for researchers and policy makers alike. The few research studies that have been completed have either been done in isolation, in very broad strokes, or are too general to capture the issues plaguing education in Cameroon.

To examine the discourses on education and women in the Sciences and Technology in the light of scholarship on language, power and representation, my study will draw from radically different contradictory perspectives and from diverse academic and non-academic fields. My intention is not to take up a single perspective, but rather to lay out and learn from different perspectives which will eventually advance a more nuanced understanding of the education practices through which gender is being framed, constructed, contested, and negotiated. I have organized these different perspectives in three different sections. Together these three sections allow me to develop a theoretical framework, which attends to the local practices that highlight the various positionings of gender within the local and the global context.

The first section discusses the socio-cultural and political context of girls' education in Cameroon. I give a brief overview of formal schooling to highlight how females were educated during specific historical periods. Next I highlight recent shifts in education where calls have been made to provide more educational access to girls. In the first section, I seek to show the multiple and diverse understandings and perspectives of women in education as a context in which gender is positioned. In the second section, I present the various schooling opportunities that have been offered girls in Cameroon post independence. Because of the lack of country initiatives targeting girls, I pay particular attention to UNESCO's efforts in providing a focused Math and Science technology education for girls. In the last section, I highlight the partnerships between different stakeholders and emphasize the contradictions and unpredictability of practices, understandings, and construction of gender. But first I offer some definitions of education, as they apply to the Cameroonian context.

2.1. Definitions of Education

Education and development represent crossroads that bring together academics, politicians, planners, practitioners, and people in the pursuit of the world's biggest and perhaps most exciting challenge. Fagerlind and Saha, (1989, p.90) define education as "the varied ways, strategies, and options through which people come to know their world and act within it". Meanwhile Freire (1986) frames it as a relationship between power and knowledge that governs our understanding and constructs of self and others through our actions. From a gendered perspective, education would be "a source of empowerment and a form of intervention that helps a woman develop and expand her personal and intellectual resources and improve her potential for participation in the society, the economy, and within the family" (World Bank, 2004). While education is the broad term used in this paper, it is important to distinguish between "education" and "schooling". Schooling refers to the formal structures and procedures of going to school. "Education," on the other hand, happens at many sites and in many contexts - schools, universities, work places, homes, communities, and media (Dei, 1998; Shujaa, 1994). For the purpose of this study, formal education as in schooling will underpin the discussions. In

contemporary Cameroon, education has been assigned two major roles: human-power training and socialization. In this regard, educational systems in this Sub Saharan country reflect the values and practices of the larger society and serve as the formal institutionalized and systematized vehicle to socialize youths into the values of society. As such, education, both within and outside school operate as a form of governance by the state, colonial powers, and religious groups over those who are constructed as being in need of education.

According to Luke (1996) the history of education is about power and knowledge: power in terms of which texts and practices will “count” and which groups will have or not have access to which literacy practices. He further posits that literacy education has been tied directly with the distribution and consecration of capital and knowledge- as a way of monopolizing access to principal means of production and modes of representation. Schooling and literacy are used to regulate and broker access to material wealth and the means of producing that wealth. In this same light, Bourdieu and Foucault frame the body as the target and locus of pedagogical power where discipline and pedagogical work of institutions target and train the body. Language and literacy thus become “embodied competence” (Bourdieu, 1986), a set of bodily practices and inscriptions which are internalized by the habitus and durably represented across a range of social fields, with schools built around rituals and practices of legal and discursive knowledge and power (Foucault, 1987). On the one hand, the effects of schooling or education are often beneficial to individuals; on the other hand, education may also be inclusive and exclusive of others (Bloc and Vavrus, 1998; Dei, 1994, 1998 and 1999; Friere, 1986). This is evident in Cameroon where various social actors have instituted a variety of schooling practices based on their understandings of gendered roles in the functioning of the society.

In British colonial Cameroon, for example, missionaries sought to offer a gendered domestic education, provide minimal literacy, and groom wives for mission workers. Colonial British administrators strove to instill Western gender norms in women and to mold "suitable" wives for educated, Christian men. Throughout its years in the Southern Cameroons, Great Britain employed domestic science education to create "good" wives and mothers. In this context, British colonial policies did seek to spread European notions of domesticity to Cameroonian women. Consider the following quotation from a 1958 colonial report: “The girls come in straight from the hill pagan villages, without having previously attended any kind of school, to learn simple cookery, baby craft, health and hygiene, and local crafts. At the end of their two years they can qualify for a Housecraft Certificate or, if they can read a little a Certificate of Merit. The girls usually marry at once on returning to their villages and they make excellent wives”.(quoted in Adams, 2006)

Education is thus not a benign good at every moment of its historical path; rather, it is a set of practices that have been used differently by individuals, groups, governments, and international agencies depending on their intention, power, and conceptions of gender. While education has been framed as a tool to promote individuals', groups', national or international interests (World Bank, 2004), this has not always been the case for Cameroon, where the legitimate construction of gendered identities not only serves to build in-groups and out-groups but also sustains and maintains the status quo and in the process denies females access and opportunities in formal schools (Tchombe, 1997). Arguably, the educational systems in contemporary Cameroon have remained essentially the same as that which was introduced by the

colonialists (Odora,1993). For most women in colonial Cameroon, educational opportunities consisted entirely of primary school and domestic science courses that allowed them employment as low skilled labor. In the same vein, education in contemporary Cameroon is modeled on this restricted framework of providing women with just the basic education to allow them to occupy entry level positions in the work force. As a result, women are conspicuously absent from top leaderships and management positions because they have neither been trained in higher institutions of learning, nor have they had opportunities to develop critical thinking and leadership skills through formal schooling.

My research will look at formal education during different historical periods to allow an understanding of how past and present educational policies and practices have defined and socially constructed gender. In this regard, the research will examine how different social actors and institutions have defined what it means to be a gendered being and how the design of educational programs, policies, and practices are a result of these constructions. While sparse research has been conducted on education in Cameroon, no scholarship has ever examined subjects in a higher institution of learning or focused on women in Math, Science, and Technology. This research thus adds to the literature on female education by examining the discourses on gendered education in formal schools. In today's global age where universities are regarded as knowledge-centres necessary for scientific research and development of technologies, there have been calls to mainstream women into higher institutions of learning. Women still face barriers in their efforts to get education at all levels and particularly so in Science and Technology related education (UNESCO: Science, Technology and Gender: An International Report). On the one hand, the Cameroon government has highlighted the need to provide women with quality education that will give them the skills necessary to take seat at the leadership table at both the local and national levels (Ministry of Women's Affairs, Cameroon). It has also pledged to provide them with more access to schools to enable problem-solving and critical thinking skills development. Yet women are underrepresented in institutions like ENSP, Science, Math and Technology learning spaces, where such skills are developed and through which women could segue into employment and leadership positions within the community. Women make 10% of the government (of 55 ministers and vice ministers, 6 are women) and hold 25 out of 180 seats in parliament⁹. Tensions and conflicts thus obtain in the discourses of Cameroon government; the underrepresentation of women in this institution goes against the very grain of the Cameroon government's aims and efforts to make women more visible in public spaces and leadership spheres. It is therefore imperative that this research be conducted to examine the few female subjects who have ventured into a historically male dominated field of engineering. The research will also add to the national and global scholarship on comparative and international education as it pertains to women in science and development.

Although education systems in Cameroon are residues of her two former colonial powers, Britain and France, France has been instrumental in founding and shaping the universities and training institutes in Cameroon, where a large section of the population is Francophone. While this study seeks to understand the tensions and conflicts that might occur at a historically French institution that trains students from varying linguistic, cultural, and socio economic backgrounds in Cameroon, it also involves the examination of the conventional androcentric assumptions in Science and Technology culture. This research will thus "identify the way Science and Technology cultures

⁹ Cameroon 2011 Election Bulletin

and practices are already constituted within an androcentric gender dimension” (Harding et al, 1995 p. 306) and examine the different priorities of the various social actors –students, males, females, faculty, government- represented in this learning space.

2.2. Historical Perspective



Map of Cameroon

The Republic of Cameroon is located east of the Gulf of Guinea and bordered by the Atlantic Ocean and the African nations of Nigeria, Chad, Congo, Gabon, Equatorial Guinea and the Central African Republic. Cameroon covers an area of 475,000 km² and, according to a census done in 1986, has a population of 10, 446,400 (Neba, 1987, p. 231). According to the US Department of State, France set up Cameroon as an autonomous state in 1957, and the next year its legislative assembly voted for independence by 1960. In 1959, a fully autonomous government of Cameroon was formed under Ahmadou Ahidjo. Cameroon became an independent republic on Jan. 1, 1960. In 1961, the southern part of the British territory joined the new Federal Republic of Cameroon and the northern section voted for unification with Nigeria. Since independence, Cameroon has had two heads of state- Ahmadou Ahidjo (1959-1982) and Paul Biya (1982-present).

Cameroon's estimated 250 ethnic groups form five large regional-cultural groups: western highlanders (or grassfielders), including the Bamileke, Bamoun, and many smaller entities in the northwest (est. 38% of population); coastal tropical forest peoples, including the Bassa, Douala, and many smaller entities in the Southwest (12%); southern tropical forest peoples, including the Ewondo, Bulu, and Fang (all Beti subgroups), Maka and Pygmies (officially called Bakas) (18%); predominantly Islamic peoples of the northern semi-arid regions (the Sahel) and central highlands, including the Fulani, also known as Peuhl in French (14%);

and the "Kirdi", non-Islamic or recently Islamic peoples of the northern desert and central highlands (18%). The people concentrated in the southwest and northwest provinces around Buea and Bamenda use standard English and "pidgin," as well as their local languages. In the three northern provinces-Adamaoua, North, and Far North-French and Fulfulde, the language of the Fulani is widely spoken. Elsewhere, French is the principal language, although pidgin and some local languages such as Ewondo, the dialect of a Beti clan from the Yaounde area, also are widely spoken.

Education in Cameroon has been shaped by the country's colonial history. Strong evidence for this lies in the fact that the systems of education for English- and French-speaking Cameroonians are based on British and French models, respectively—a legacy introduced when the British and French administered Cameroon (Amin, 1994). The educational system is organized into two sub-systems. The English speaking sub-system includes 7 years of primary education, 5 years of secondary education and 2 years of high school culminated with the General Certificate of Education. The French speaking sub-system has 6 years of primary education, 4 years of secondary school and 3 years of high school culminates with a *Baccalaureat*. The two sub-systems co-exist, each preserving its specific method of evaluation and award of certificates along French and English colonial lines. Meanwhile both Anglophone and Francophone high schools feed into higher institutions of learning which consist of professional training schools and degree granting institutions. Most recently, the Cameroon government instituted structural changes at the universities by adopting the Anglo Saxon Bachelors-Masters-Ph.D. (BMP) model from which the French *License-Master-Doctorat* (LMD) is derived.

2.2.1. Pre-colonial Education

The pre-colonial period ends in 1884, the year of the German annexation. Children in pre-colonial Cameroon belonged to the kingdoms and chiefdoms that were situated in this central African region. Cultural norms and practices were of great import in preserving the histories of the various groups and ensuring that traditions established by ancestors transcended persons, places and time. Children learned by observing and copying socially and culturally appropriate behaviors. Through the words and actions of peers and elders, language skills, traditions, and customs were learned. Young people learned the history and beliefs of their people (*African Encyclopedia*, 1974, pp. 181-182). In some societies, an initiation, after a period of training or preparation for adulthood, was the culmination of the informal educational process (Hailey, 1957, p. 1134). Those who went through initiation processes became full members of the society. As for the learning of trades and skills, pre-colonial Cameroonian children had special training through family units. Richard Dillon maintains that the family or household in pre-colonial west Cameroon was “the basic unit of production” (Dillon, 1990, p. 61). Children were assigned certain tasks such as fetching water and procuring firewood. As they grew older, girls assisted their mothers with farming, trade, and domestic tasks, while boys helped fathers rear animals, hunt or build (Dillon, 1990, pp. 61-62; Hailey, 1957, pp. 1133-1135). Children thus had roles to play; they were trained to work, make crafts, and carry out gender-specific tasks. This was likely part of the early socialization process for teaching boys and girls to become adults.

2.2.2. Missionary Education

1844 saw the introduction of formal schooling by the English Baptists in Cameroon. Joseph Merrick, a Baptist missionary, opened the first school in the coastal town of Bimbia (Vernon-Jackson, 1967) while Alfred Saker, an English Baptist pastor, opened another in Douala in 1845 (DeLancey & DeLancey, 2000). Eventually the Basel Mission took over the work of the Baptists, and in 1886 they opened their first mission in Bali, where the missionaries learned Mungaka, the Bali language, and used it to teach and proselytize (Eyongetah, 1974). In the late 1870s the American Presbyterians settled in Batanga (Vernon-Jackson, 1967) where they introduced a written form of the Bulu language which they taught along with English to the locals. (Eyongetah, 1974). In 1889, The German Catholics, the German Pallotin (or Pallotine) Fathers, settled at the mouth of River Sanaga near Edea (Neba, 1987, Eyongetah, 1974) where they worked with the Beti people in central Cameroon (Quinn, 1989). True to their goal of spreading Christianity, the curricula used by the missionaries involved teaching the Bible and Christian doctrine along with other subjects.

In May 1956, Queen of the Rosary College Okoyong, (QRC) Mamfe, the first secondary missionary boarding school, was opened in Southern Cameroon. Convinced that women were and would continue to be the backbone of society, Bishop Rogan in 1952 conceived the idea of opening a girls' secondary school in Southern Cameroon. He invited the Missionary Sisters of the Holy Rosary who arrived from Nigeria in March 1956. On Saturday, April 28th 1956, the school opened with the arrival of the first 18 girls. Classes started on May 4th 1956 with an enrolment of 26 students. Subjects studied included Art, Music, Shorthand, Typewriting, Needlework and Housecraft in addition to the academic subjects and extracurricular activities. Regina Mofor, one of the pioneer students of this institution, recalls a typical day as follows:

One could write volumes about life in Okoyong but I would like to focus on our religious life. The three pioneer Reverend Sisters, Sister Mary Aquinas, Sister Mary Louis and Sister Reginald came to sow seeds that had to grow in many directions. A normal day started at 5:15 a.m. We had exactly 45 minutes to be ready for the 6 a.m. Mass. There was complete silence before Mass, after Mass and during breakfast. Silence was only broken after breakfast. The pioneer Sisters sowed seeds of worship and prayer.

(Queen of Rosary College, Golden Jubilee Magazine, 2012 p.7)

According to Professor Rose Leke, a medical doctor and pioneer of QRC, the decision to establish a secondary school for girls was a complete shift in paradigm in a society where a woman's role especially was confined to the home. In 1956, when the first batch of students were enrolled, secondary education for girls was considered a privilege and some wondered whether girls would cope in formal school settings. It was alleged that students in Sasse College, a male boarding Catholic school, suggested a lower grade of examinations be set for girls. But the Reverend Sisters wanted to ensure that girls would be employable after completing Okoyong. To this effect, commercial subjects like typing shorthand and book keeping were offered to students. Cultural tensions thus ensued as students were introduced to new modes of learning. Girls who were admitted into these formal schools had to refigure their identities across national, ethnic, and cultural boundaries. Personal narratives of students highlight the challenges and tensions school girls faced calling into question their culture, language, identity, and place within the Cameroon society. Life as a student in Okoyong thus introduced new patterns and ambiguous identifications when the Cameroon girl gained entrance into a formal boarding school context

that stemmed from the colonial era. The following excerpt of another pioneer student, Rose Domatob, highlights the multiple identities enacted at QRC.

Time, which remains a great asset was well managed. The twenty-four hour day was organized in such a manner that from sunrise to sunset, no single minute was wasted. Academic and extracurricular activities were blended together for the purpose of training the whole person. From form one to three the following subjects were taught: Singing, Dancing, Music, Musical Instruments (piano and the organ) Home craft, Needle work, Sewing, Arithmetic, Algebra, Geometry, English, History, Physical Education, and Nature study. In form four, students were allowed to focus on particular subjects in preparation The West African School Certificate and the London General Certificate of Education for which students had to sit in Form Five.

Prayer was key to every activity. Students prayed before every activity. Attendance of Holy mass at 6 a.m. daily was compulsory. Students attended Benediction every Sunday evening and in October, the month dedicated to our Lady, benedictions were every held evening. The school's motto was cleanliness is next to godliness. To this effect the hedges, lawns, rooms, and the school environment were kept clean by the students. Manual labor was assigned according to dormitories and classes while Saturday was set aside for general cleaning of the campus.

Personal hygiene was also strictly emphasized. After weekday morning and evening classes, an hour was reserved for games. It was during this period that talented individuals were identified and teams were formed to represent the school in outside competitions. Social evenings were organized on the last Saturday of the month during which students danced to Tango, Waltz, Quickstep, and Highlife music that played from a gramophone. Drama was an important aspect of the extracurricular activity with Shakespearian plays staged under the leadership of the Reverend Sisters. Students also held leadership positions within the school. Most of the girls who were made prefects, dormitory captains or were given posts of responsibility have gone on to maintain leadership positions in the society. (Queen of Rosary College, Golden Jubilee Magazine, 2011)

The above excerpt invokes the cultural multiplicity created by colonialism and missionary education as the springboard for the creation of a new and unique Cameroon identity, highlighting the various strands that have contributed to the making of females in contemporary Cameroon. While the female students were thrust into formal learning spaces that were markedly different from their home settings, learning became a process through which girls were socialized into new ways of being. Students danced to waltz and tango and not to the beat of the African drums. They read and acted Shakespearean plays not African folk tales. In addition, they had to convert to Christianity and adhere to its modes of worship, while shunning their African traditional practices. And while the girls readily embraced their school girl identities, they oftentimes found themselves in between various competing cultural models which also influenced their various constructions of self. Some scholars (Busia, 1964; Rwomire, 1998) would maintain that colonial education had the effect of undermining traditional societies by introducing a value system that was alien to African communal mores and isolating students from their local communities. Ali Mazrui (1978:16) sheds more light on this cultural discontinuity in terms that explain the linkage of education with the rural-urban divide:

“Western education in African conditions was a process of psychological de-ruralisation. The educated African became ... a misfit in his own village ... when he graduated ... his parents did not expect him to continue living with them, tending the cattle or cultivating the land.”

While formal schools, initially created divisions and alienation, introducing new languages and modes of being, they also enabled the formation of new identities, creating a fusion of traditional and colonial modes. The analysis of women and girls’ negotiations of formal education reveals heterogeneous stories of contradictions, conflicts, and negotiations in determining female agency, social standing, and identities. While girls grappled with the cultural and linguistic multiplicity, they also formed new constructions of self with their uptake of educational discourses. In the process, school girl identities were contested by some traditionalists and members of the community for they interrogated patriarchal ways of being. Similarly, the identity construction process was also chaotic for they introduced new gendered patterns in the community and paved the way for more formal education spaces for females. In January 1962, Saker Baptist College, a second missionary boarding school founded by the Baptist Mission, was opened in Southern Cameroon with an enrollment of 30 girls. Girls in particular had a hunger and need for a rounded education that did not just confine them to roles as housewives and mothers. The opening up of general education thus saw an influx of female candidates who hitherto did not have formal education opportunities. Below is an eyewitness account from Eunice Kern, one of the first missionaries and teachers in Saker Baptist College:

1961 was the beginning of Saker Baptist College. I needed to choose the girls for the first class from given a list of 300 girls who that had passed the same examination that was set for the girls in England. So my first choice went to the selection of those with the highest scores. At first the limit I was given was 30 but later it was extended to 36. Dormitory space was one of the limiting reasons.

The first classroom was a recycled building - a previous carpenter's shed, and it was also used as a chapel, study area, domestic science classroom, as well as a kitchen. New buildings were underway before the end of the year of the school's opening.

The most trying time was to talk to mothers, fathers, aunts, uncles, cousins, brothers, and sisters who had money to pay for fees for the girls who were not on my chosen list. I knew that if I took the money they offered they would assume that their relative had been put on that list. The walk to my house was almost worn down by such visitors. It was a constant stream of people. To have to say “No” was such a difficult thing for me to do.

For one selected girl, the first tuition payment was made by her father, a Pastor, who was not at all sure that the family could manage the fees each year. Her family had applied for a Government scholarship, but she was not sure of getting it. When the confirmation of the scholarship arrived, I took it down to the classroom and gave it to her. She was so happy that she danced up and down the only aisle in the classroom for a very long time. I had not seen such a dance of joy before in my life! (The girl was Marie Ngong, now Mrs. Johnson.) Last I heard she was a nurse in Yaounde, training other nurses and co-writing a book about nursing.”
(Interview with Ms. Eunice Kern, 2012)

Expansion of secondary schools for girls continued in 1962 with the founding of Our Lady of Lourdes, a third secondary school for girls. These boarding schools, which offered an all rounded education for girls, culminated in the General Certificate of Education, allowing girls to

pursue higher education and career opportunities outside of the home. In addition to molding girls to become Christians, mission schools created new spaces and sites for the negotiation of diverse cultural practices and identities. Girls who hitherto were groomed for roles as wives and homemakers were exposed to a wide range of school subjects and extracurricular activities such as sports, western dances, allowing them to broaden their horizons and enact different identities. Girls at these schools were also pressured to abandon a whole range of practices. Speaking their indigenous languages, for example, was strictly forbidden and would lead to punishment. While the use of local languages was frowned upon, the attitude to English was the exact opposite: any achievement in spoken or written English was highly rewarded with prizes, prestige, and applause. According to Fanon (1952), to speak a language is to take on a world, a culture. Students in this institutional space thus had to take on new cultures, identities, and ways of being as they engaged in formal schooling practices and acquired foreign languages. This institutional space would thus become a contact zone (Pratt, 1991, p 34), i.e., “a social space where cultures meet, clash and grapple with each other in the context of highly asymmetrical relations of power”. In this learning space, there were feelings of hostility opposition, and tension between the new identities the girls were asked to assume and their indigenous identities. At the same time the education at these institutional spaces enabled them to cross physical, cultural, economic, social, and psychological frontiers that had hitherto been closed to them. Through formal education, girls were able to transcend barriers and journey to new worlds of school and work. The girls who eventually had careers took on new roles and identities that were markedly different from their community care-givers roles. Thus they were not only changed themselves but they became a part of the dynamics of change within their families and that of their immediate societies.

2.2.3. Colonial Education

2.2.3.1. German Colonial Education (1884-1914)

While the German government, the first colonialist, limited its educational work to training locals to assist in the administration of the colony, it relied on the missionaries to educate the general population. In 1888, the first colonial school was opened in Douala by Theodore Christaller, a German schoolmaster. He also wrote a German grammar book of the Douala language providing an orthography that was accepted by both missionaries and the government. The school curriculum included Reading, Writing, Arithmetic, Geography, German History, and General science knowledge in minerals, plants, animals, rainfall, barometers, and simple machines (Rudin, 1938, p. 356-357). Additional schools were opened in Deido in 1890 and in Victoria in 1892 to “produce the needed labor force for government and business” (Orosz, 2008, p. 19). Theodor Christaller’s close relationship with the then King Manga Bell of Douala was one of the reasons why he promoted the Douala language. On April 25, 1910, the governor issued the Education Decree of 1910 outlining the following:

- School admission age would be between the ages of five and six.
- Students must stay in school until graduation or pay a fine.
- People preventing children from going to school would be fined.
- Children in Douala schools were to pay six Deutsche Marks for tuition.
- Schools must teach the German language in order to receive cash aid.

- The amount of aid a school received will depend upon the success of students' official examinations in German language.
- An average of 20,000 Deutsche Marks was appropriated to missions as aid for German language instruction.
- Prizes would be awarded for proficiency in the German language.
- Missionary schools were expected to instruct their students in the promotion of German language, culture, and civilization.
(Ruppel, 1912, Doc 614)

Agricultural schools were opened in Dschang and Yaounde to train workers for agricultural work. Candidates had to complete a two-year course in a mission or government school to qualify for admission. Admitted students received tuition and board in the first year and were eligible for a stipend of five Deutsche Marks a month in the second year. They also had to be proficient in German and were required to sign a contract with the government that compelled them to remain in school for a period of two years and to work for the government for five years upon graduation. However, if a student dropped from school, he was obliged to pay the government 200 Deutsche Marks for each year spent in school. Students were taught how to process palm products and prepare rubber for exportation to Germany—two programs that were officially mandated by the German government. With regards to trade occupations, a school was opened in Buea to train students as journeymen apprentices in cabinetmaking, upholstery, and manufacturing (Kolonialblatt, 1913, pp. 857-859). In 1913, there were 54 colonial schools, with 833 pupils, while the 631 schools, with 49,000 pupils belonged to missionaries (Le Vine 1964). After the First World War, Germany had to cede its colonies. As a result, Cameroon was handed over to Britain and France who consolidated missionary education under colonial rule. Additionally the British and French systems of were introduced.

2.2.3.2. French Colonial Education (1914-1945)

French colonial education sought “to meticulously train a chosen elite to become auxiliaries of the administration in every area and to educate the masses in order to assimilate them into the French way of life” (Moumouni, 1968, p. 42). The French thus sought to promote French culture and ideals in the colonies. A French educational program was thus drawn up for Cameroon in the circular of August 29, 1916, that was addressed to all divisional officers. The Educational Program to be implemented was issued in February 1917; it emphasized the importance of the French language as the language of instruction (France, *Journal Officiel de la République Française*, 7 Septembre 1921, *Annexe, Cameroon*, p. 430). The 1920 education decree was thus passed with the following goals and objectives:

- Regulate the organization of private schools,
- Create a school inspector to ensure that schools followed government laws,
- Provide a subsidy of 150 francs for every pupil who passed the annual French exam for his or her *certificat d'études*. (Orosz, 2008, p. 224).

The French education system had three levels: elementary, secondary, and technical. Elementary education entailed seven years of formal schooling, while secondary education, which culminated in a *baccalauréat*, required six to seven years. In addition, technical and teacher-

training courses, separate from the standard courses, were offered at the secondary level. At the elementary level, emphasis was placed on French, Arithmetic, Hygiene, Simple Science, Agricultural Principles, and Domestic Science. In secondary school, courses focused on academic or technical subjects while teacher-training schools emphasized French. Passing an entrance exam was a requirement to get into secondary schools where two *baccalauréat* exams were offered- one after three years of secondary education and the other upon terminating secondary school. (LeVine, 1964). Beyond secondary school, no higher education was possible in French Cameroon. Students seeking higher education were encouraged to pursue further studies in France. Exceptional students were also offered scholarships at the technical and university levels in France (LeVine, 1964, p. 74; Vernon-Jackson, 1967, p. 14). According to the 1949 United Nations Trusteeship Council Report, the French also developed professional, vocational or technical training to train technicians and skilled workmen. Technical education institutions included a technical school in Douala and two others established for training in such subjects as Surveying, Industrial Designing, and Architecture.

Home Economic Centers

During the French colonial administration, home economic centers provided the female population with an opportunity to receive specialized training to become good housewives (League of Nations, Geneva 1931). Home economic centers gave girls access to practical education on Childcare, Home care, Cookery, Sewing and Knitting. Theoretical lessons on spoken French, Reading, Writing, and Arithmetic were offered in addition. The French interest in training of girls was based on the principle that “training an individual while training a girl is training a whole family is seen through the support she will lend her family” (Annual Report, 1923, pp 24-25.) The first home economic centers were created in Douala and Yaoundé in 1923. In the course of the year home economic sections were opened in regional schools of Dschang and Ebolowa.¹⁰ To make these schools prestigious and encourage parents to enroll their daughters, students who performed well were recruited as chief housemaids, junior civil servants, and local sales ladies. But the locals realized that General Education certificates could provide access prestigious jobs in the colonial government administration with more attractive salaries.¹¹ This and the lack of trained teachers caused a steady enrollment decline in home economic centers between 1923 and 1938. Subsequent education policies later sought to create a well-rounded education for girls. Consider this excerpt from a 1952 United Nations report:

“The need to develop formal schools for girls led to the conception of a more active and concrete system inspired by new methods and supplemented by domestic education courses. The establishment of schools reserved for girls in primary schools increased from 19,000 in 1950 to 24,000 in 1951. To encourage an elite group of students to pursue secondary education, The College of Young Girls was created in Douala to accommodate 150 boarding students.”

Such efforts were especially significant because they enabled girls transcend boundaries and pursue higher education opportunities. This led to a small cadre of women who occupied government positions when Cameroon gained independence in 1960.

¹⁰ Madiba, E., Ibid, p 121

¹¹ Ibid, p 121

2.2.3.3. British Colonial Policy-1914-1945

British Cameroon had the following four main types of schools: Government, Native Authority Administration, Mission Assisted, and Mission Unassisted Schools. According to Cameroon historian, George Epah Fonkeng (2012), British government schools served as models for other schools. In this regard, the government through its schools, set and maintained educational standards for all its territories. Meanwhile various regions constructed schools that were supervised and run by the Native Authority Administration. For such schools, the indigenes were to manage their educational affairs by building and equipping schools, while the colonial government retained administrative rights that included teacher training and recruitment. Mission Assisted schools were built and run by missionaries and supported by grants from the government upon fulfillment of conditions specified in the education ordinance. Meanwhile, the mission unassisted schools were managed by catechists or persons with basic literacy. The curriculum was constituted of religious teaching and congregational singing in native languages such as Douala or Mungaka.

After World War II, the British colonial administration focused greater attention on the education of girls and women (Callaway 1987, 115). This increased attention to girls' and women's education was linked to the growth in the number of female colonial officers in the British administration. British reports to the League of Nations and later to the United Nations provide general data on girls' school attendance rates in Southern Cameroons, which indicate that they increased over the course of British colonial rule. Narrative reports also indicate that these gains were not accidental but rather a part of a conscious effort to increase girls' and women's access to education. The 1954 report notes, for example: "Prejudice against the education of women dies hard, but the number attending school is increasing gradually throughout the territory." (Great Britain 1955, 80) Still, even as girls' attendance rates increased, the gains occurred overwhelmingly at the primary level, meaning that women were still greatly underrepresented in fields requiring higher levels of education.

In 1949, Great Britain launched a special training program to increase the number of educated African women in Nigeria and the Cameroons, and in that year, three women from Cameroon undertook studies in Great Britain. In 1950, five women from the Cameroons were pursuing higher education in either Nigeria or Britain through this program. (Great Britain 1950, 107) These gains were small, and women were limited to a narrow range of occupations. Despite the fact that only a few women benefited from the program, its existence at least indicates that incremental changes were occurring in colonial policies towards women during the terminal colonial period. Reports throughout the 1950s state that there were a growing number of women working as nurses, teachers, and clerks. In this context, higher education provided by the colonial administration to a limited number of women enabled them to take on new roles outside the home. For some women, education opened new opportunities for travel abroad and professional employment. Particularly during the last years of colonialism, the British administration sought to incorporate more women into the civil service. To do so, it needed to promote women's education at the secondary and university levels. For others—and this includes the vast majority of Cameroon women—colonial educational opportunities consisted entirely of primary school and domestic science courses. Yet, even within this restricted framework, some women were able to use the skills learned in these domestic science courses to enter the public sphere as entrepreneurs, teachers, and leaders of women's groups.

2.3.3.4. Similarities and Differences Among Western Colonial Formal Schools

The German, British, and French presence in Cameroon exhibited similar colonial ambitions, as each colonial power sought to expand its colonial sphere in Africa by propagating their respective languages and civilizations. The importance of colonial education and language policy was thus similarly prominent in all three colonial formal schools (Phillipson, 1992, p. 5). With the exception of German colonial education under Theodore Christaller, the language of formal education was the colonizer's language, while native Cameroon dialects and culture were used as secondary or, in most cases, totally discouraged. Similarly, the British, unlike the Germans and the French, allowed the limited use of local languages and Pidgin as a medium of instruction in their colonial formal schools. All three colonial formal schools were also characterized by mass primary public education for the acquisition of the basic skills needed by the workforce. To ensure adherence to the formulated education policies, colonial formal schools were headed by European administrators who followed the government decrees and orders that spelled out both the benefits and consequences of adhering or failure to adhere to government regulations. With regards to higher education, none of the three colonial governments provided any higher education facilities in Cameroon. However, the British and French colonial governments awarded some scholarships for Cameroonians to pursue further educational opportunities abroad (Forgwei, 1970).

While all the colonial education policies had much in common, they also differed in several ways. The German education and language policies, for example, were based on the German colonial policy of direct rule, where the administrative districts were headed by European personnel who assumed responsibility for tax collection, labor and military recruitment, as well as the maintenance of law and order. The British educational policies were based on the colonial policy of indirect rule. By this system, the day-to-day government and administration of areas both small and large was left in the hands of traditional rulers, who gained prestige and the stability and protection usually with a small number of European "advisors" effectively overseeing the government of large numbers of people spread over extensive areas¹². The French policy, by contrast, was focused on the closer integration of the colonies with the *métropole*. The mechanism for this was the policy of assimilation; the French taught their subjects that, by adopting French language and culture, they could eventually become French while natives who had received a western education (*évolué*)¹³ were granted French citizenship and the legal rights of Frenchmen, including participation in elections to urban councils and the French parliament. (Mumford, 1935). Yet another difference in the colonial policies lay in the tuition policy. While the Germans and British levied school fees, the French instituted free schooling, awarded scholarships, and even paid allowances to pupils. With regard to social hierarchies and special tracks, the French, unlike the Germans and British, established special schools for the sons of chiefs, notables, and assimilated Africans to train them for leadership roles within their communities and to ensure their loyalty to France (Forgwei, 1970). While the above colonial practices reflected the goals of the different colonial masters, they greatly impacted formal schooling practices in contemporary times as schooling practices in

¹² The American Historical Association

¹³ a French term (literally, evolved or developed) used in the colonial era to refer to native Africans and Asians who had "evolved", through education or assimilation, and accepted European values and patterns of behavior. *Évolués* spoke French, followed French laws, usually held white-collar jobs (although rarely higher than clerks), and lived primarily in urban areas.

present day Cameroon continues to be instituted along colonial lines. Currently two systems of education exist with two different sets of structures, programs, and exams practices. The Anglophone system is based on the 7-5-2 system (7 years of primary school, 5 years of secondary school and 2 years of high school). The Francophone system is based on the 6-4-3 system (6 years of primary school, four years of secondary school and 3 years in high school). High School education culminates in the General Certificate of Education Advanced Level for Anglophones or *baccalaureat* for Francophones paving the way for entrance into one of the country's universities, technical, or vocational schools.

2.3. The Beginnings of Higher Education in Cameroon (1961 – 1977)

Following independence in 1960, one of the crucial problems faced by Cameroon was the need for trained national cadres, especially for senior positions in the civil service. Before independence, most Cameroonians pursued university education abroad. But the education they received overseas was poorly adapted to the needs of Africa in general, and of Cameroon in particular (Njeuma et al, 1999). To provide higher education suitable for the specific needs and realities of the newly independent nation, the government created in 1961 a university complex known as the National Institute for University Studies (*Institut National d'Etudes Universitaires*). Its activities started modestly in October 1961 with the assistance of the French Government. Its mandate was to prepare students for degrees in Education, Law, Economics, and the Arts. Professional training programs were developed at the same time through the School of Administration, School of Agriculture, and the Military Academy. In 1962, the National Institute for University Studies evolved into the Federal University of Cameroon, and took over the training of senior cadres in Science, Education, and Technology. This institution was composed of organizational units such as faculties, schools, centers and institutes, with each assigned a specific mission.

By 1967, other establishments had been created and attached to the University of Yaoundé (formerly named National Institute for University Studies). Medical training began in 1969 with the opening of the University Centre for Health Sciences (CUSS). At the same time, programs in management and commerce were initiated at the Institute of Management – *Institut de l'Administration des Entreprises* (IAE). In 1970 the International School of Journalism – *Ecole Supérieure Internationale de Journalisme de Yaoundé* (ESIJY) – came into existence as a regional institution. In 1971, the Institute of International Relations -*Institut des Relations Internationales de Yaoundé*- and the National Advanced School of Engineering (*Ecole Nationale Supérieure Polytechnique* – ENSP) became operational.

In summary, the period from 1962-1967 witnessed the creation of general education structures (faculties), while the period after 1967 was devoted to building professional and technological schools. These efforts were aimed at preparing graduates for immediate integration into the public service or government corporations. By 1974, Cameroon had, at the structural level, two principal types of higher educational establishments: general education and technical and professional education. While the education was free in both instances, the method of developing these two types of education was very different. On one hand, general education was open to everyone who had the high school terminal certificate. On the other hand, professional and technical education was very selective, admitting only small numbers of students through highly competitive entrance examinations (Tanjong 2008).

2.3.1. Colonial Residues in the Practices of ENSP

Although it has been over 50 years since Cameroon gained independence, the formal schooling practices do not really reflect the local Cameroon setting and realities. Teaching and learning continues to be carried out in the French and English languages while indigenous languages are limited largely to oral usage in out-of-school settings and family circles (Bitja'a Kody 2001). Although Cameroon has experimented with mother-tongue education through formal schooling with local languages like Ewondo, Duala, Fe'efe'e, and Lamnso' (Tadadjeu 2004), the success of the project has not led to an implementation of nationwide literacy initiatives in indigenous languages. The linguistic boundaries at ENSP are clearly carved out through French and English, the languages of instruction. Meanwhile students who come from a variety of linguistic and cultural backgrounds have to learn to navigate these spaces in different languages. In class, students use French and English while Pidgin, Camfranglais,¹⁴ and local languages are used at recess, lunch time, and at home. ENSP represents what Marie Louise Pratt (1991, p 34) would call a contact zone; "a social space where cultures meet, clash and grapple with each other in the context of highly asymmetrical relations of power." In this social space, there are hostilities, conflicts, oppositions, and tensions between student engineering identities and the local cultural identities with which they are more comfortable. At the same time, these tensions open up spaces and create opportunities for students to take on new roles and identities. The administration at ENSP also has colonial residues. According *France Diplomatie*¹⁵, "France's diplomatic service pursues two policies designed to promote the French language and *Francophonie*, key vectors of soft power, ... a bilateral policy that aims to consolidate the position of the French language beyond our borders through cooperation with local authorities to develop the role of French in their education systems."

France has been very influential in the design and setup of ENSP. From its inception in 1971 to 2001 the ENSP administration was mainly composed of French nationals. Not until 2001 did the institution have its first Cameroon director. The curriculum and course content also mirrors *polytechniques* in France such as L'INSA Lyon. ENSP on its part, is very proud of 35 years cooperation with France and collaboration with L'INSA Lyon, whom they refer to as a permanent partner. In addition to the absence of local languages in this institutional space, the course content does not reflect the local Cameroon realities. On the other hand, the French language is very much in use with the curriculum reflecting the French and global realities. During lectures, all of the tenured professors, who at some point had pursued and obtained diplomas from France, would constantly make reference to the French culture and would draw most of their examples and vignettes on engineering concepts from the French society; a society which is foreign to most students. In spite of the shared markers of language and ethnicity between the students and professors, the examples evoked highlight the cultural differences in the teaching practices. This becomes a source of conflict as students' experiences are largely absent from the institutional texts and classrooms settings. In addition, the inherent discontinuities in the course content, cultural values, worldview beliefs, and behaviors creates a disconnect between students' school and personal experiences. At the same time, the self-same

¹⁴ A blend of Cameroon Pidgin, French, and English used mostly by youths

¹⁵ French Ministry of Foreign Affairs, website

cultural dissonances allow students to participate in plural cultures and in the process enable their construction of new academic identities through their social and scholastic abilities.

The education at ENSP also promotes such values as elitism and corporatism which, to Antoine Picon (2007),¹⁶ is an enduring feature of the French engineering profession. He maintains that institutions like the *Ecole Polytechnique* reinforce the elitist and meritocratic nature of the engineering profession since it is accessed through a highly competitive examination and is based on the mastery of advanced science, analytical geometry, calculus, mechanics, physics and chemistry, concepts. Such concepts and values, which are deeply ingrained in the French culture, are oftentimes abstract and far removed from the local Cameroon context. Meanwhile, success at ENSP would require students' full engagement with the concepts and adaptation to the teaching styles and values, leading students to enact identities that may be in conflict with their traditional ways of being. Conflicts are thus bound to obtain in this institution which becomes a highly tension-filled and conflicting space. It is what Kramsch (1993) would describe as an eminently heterogeneous, indeed contradictory and ambivalent space in which third perspectives can grow in the margins of dominant ways of seeing. When students utilize such unofficial languages as *Camfranglais* in their engagements with one another out of the classroom setting, they bring domestic and school literacy practices into their own constructions of literacy through their choice of language also embodied in their particularity. This not only represents the clashing and conflicting cultures but also highlights the processes through which multi-literacies and identity fusions occur in this institutional space.

2.4. Girls and Formal Institutions of Learning

While gender parity in education is high on the priority list of the Cameroon government and international donors, the challenges of attaining this goal have been well studied. For example, Llyodd and Mensch (1999) have investigated the association between school dropout and the timing of marriage and childbearing among young women aged 15-24. Meanwhile Odaga & Heneveld, (1995) have summarized the factors that constrain girls schooling and outlined practical ways of designing programs that will accelerate female participation in education in the region. Similarly Lewis and Lockheed (2008) argue that one explanation for gender gap is the degree of social exclusion, as indicated by ethno-linguistic heterogeneity, which triggers both economic and psycho-social mechanisms to limit girls' schooling. In the same vein, Bradley (2000) holds that *cultural* beliefs and traditional gender roles have prevented the mainstreaming of girls into formal education systems. These include early onset of sexual activity and high rates of teenage pregnancy which seriously compromise girls' access to education beyond primary school. In addition, extremely high levels of sexual and gender-based violence in schools create unsafe learning spaces (Stromquist, 2012) further deterring girls from getting an education. The gender gap and the low level of girl's participation and performance may also be a result of the combined effects of supply and demand factors and the ways these interact with the policy, economic, and socio-cultural environments (Alderman et al., 1995). Supply side factors include availability of schools, the quality of the services they provide, and the extent to which these services are adapted to the special needs of girls. Demand side relates

¹⁶ Antoine Picon (2007): French Engineers and Social Thought, 18–20th Centuries: An Archeology of Technocratic Ideals, History and Technology: An International Journal, 23:3, 197-208

to how girls and their families respond to the kinds of schooling made available by the state and by religious and private groups. Important determinants include the direct costs (fees, uniforms, transport, books) as well as the opportunity costs of education to the family (Abu-Ghaida & Klasen 2004).

In Cameroon girls usually marry early and settle with their husband's family. In addition access to the labor market is constrained, characterized by high rates of unemployment. For these reasons, parents are more reluctant to send girls to school because of the minimal economic benefits and rates of return in educating females. Furthermore, girls and their families may find little reason to attend school if they are taught that females are of less value than males. Schools thus serve as sites where gender imbalance is reinforced through the teaching and learning practices and through the hidden curriculum (Apple 1971), where girls are portrayed as less capable than boys. Analyses of textbooks in Africa consistently find stereotyped material, with women portrayed as subordinate and passive while men are shown as displaying intelligence, leadership, and dominance (Lloyd & Mensch 1999; Herz & Sperling 2003). This is compounded by the practice of gender streaming in secondary schools, where girls are directed away from Math and Science (Herz et al 1991). Additionally, teaching practices—such as giving boys more opportunities than girls to ask and answer questions, use learning material, and lead groups—may further discourage girls from participating in schools (UNICEF 2002).

Linguistic barriers may also militate against girls in countries where the use of colonial languages is widespread. For example, students in rural areas have to grapple with the linguistic barriers in addition to the cultural, traditional hurdles that militate against learning. Many learners thus fail to successfully complete their schooling not because of cognitive deficiencies or some specific incapacities but because many of the various demands of schooling and formal learning are discontinuous with those of everyday life and practical learning (Akinnsaso, 1992).

To overcome such challenges, Lewis and Lockheed (2006) propose new strategies for reaching the 70 percent of out-of-school girls who are doubly disadvantaged by their ethnicity, language, or other factors. Kane (1995) provides information to help the policymaker or educator understand the research process in order to study problems and opportunities associated with the education of girls in Africa. Similarly, Birdsall et al (2007) offer a rigorous set of interventions that countries can choose from to help provide universal access to high-quality education, focus on hard-to-reach groups of people, and strengthen educational opportunities for adolescents. In the same vein, Herz et al (2003) summarize the extensive body of research on the current state of girls' education and highlight the high social and economic impact of educating girls. To translate such policies into practice, The Millennium Project, commissioned by the UN Secretary-General and sponsored by the United Nations Development, identified practical strategies to promote gender equality and eliminate gender disparity in primary and secondary education preferably by 2005, and in all levels of education no later than 2015.

While education reforms in Cameroon have proved insufficient, the existing body of research focuses on females in basic and secondary education. Missing from the discourses are women in higher institutions of learning. It wasn't until recently that international organizations turned their gaze towards higher education. For several decades Africa and its development partners placed great emphasis on primary, and more recently, on secondary education. The Dakar summit on "Education for All" in 2000, for example, advocated only for primary education as a driver of social welfare while de-emphasizing the impact of tertiary education. In

current times the attitudes towards higher education might be changing. The former UN Secretary General in Koffi Annan in a recent speech argued:

“The University must become a primary tool for Africa’s development in the new century. Universities can help develop African expertise; they can enhance the analysis of African problems; strengthen domestic institutions; serve as a model environment for good governance, conflict resolution and respect for human rights, and enable African academics to play an active part in the global community of scholars”¹⁷.

Emphasis on higher education has also become more visible in the discourses of other funding institutions and stakeholders. A case in point is the World Bank/UNESCO report, *Higher Education in Developing Countries: Perils and Promise*, which frames higher education as essential to developing countries if they are to prosper in a world economy where knowledge has become a vital area of advantage. Yet another World Bank report, *Constructing Knowledge Societies: New Challenges for Tertiary Education*, stresses the role of tertiary schooling in building technical and professional capacity and argues for enabling frameworks to strengthen tertiary education institutions. While economists like Bloom et Canning (2006) extol the virtues of higher education and its abilities to spur economic growth through private and public channels, Hill et al (2010) zero in on science, technology, engineering, and mathematics (STEM) as critical to the national economy, calling for the expansion and development of the STEM workforce as critical for government, industry leaders, and educators. According to Bloom et al (2006) greater confidence and know-how inculcated by advanced schooling may generate entrepreneurship, with positive effects on job creation because workers in science and engineering fields tend to be well paid and enjoy better job security than do other workers. Interestingly enough, these are fields in which women currently hold one-quarter or fewer positions (Lacey & Wright, 2009; National Science Board, 2010). Hill et al (2010) trace women’s underrepresentation in engineering careers to high school practices where females are diverted from Math and Science early in their high school careers because of the perceived difficulty in engineering subjects coupled with the prevailing myth that women are poor at Mathematics. Other deterrents include lack of female engineer role models and ignorance about the engineering field, with the profession being perceived as a technical solitary pursuit in which one works with machines instead of with people. Meanwhile boys get a head start in Math and Sciences through early socialization practices during which they pick up mechanically oriented hobbies that prepare them for the practical aspects of engineering (Zywno et al, 1999). This explains why despite the tremendous gains that girls and women have made in education and the workforce, progress has been uneven and certain scientific and engineering disciplines remain overwhelmingly male (Hill et al 2010).

In the Cameroon setting, although women lack equal educational opportunities, they do have unrecognized and invaluable traditional and local knowledge and are major producers of commodities, merchandise, food, energy, and water. Due to their family roles and because they tend to migrate to urban areas less than men, women are often especially aware of the social, economic, and environmental needs of their communities. They are also tasked with taking care of their families and communities. Women in Cameroon are thus regarded as the backbone of the

¹⁷ United Nations Information Service (2000): “Information Technology Should be Used to Tap Knowledge from Greatest Universities to Bring Learning to All, Koffi Annan Says” Press Release No: UNIS/SG/2625. August 3 2000. Internet: www.unis.unvienna.org/unis/pressrels/2000/sg2625.html (last accessed November 14 2011)

rural economy, even though their role in the overall development process in the country is still minimal. Their efforts at the local level to advance their statuses and contribute more to national government have been thwarted by the lack of government support, poor legislation, and traditions and customs that continue to marginalize women (Tchombe,1994). Traditionally in all of Cameroon's indigenous cultures, the public space is considered to be a male domain. Women have little say in public matters and therefore have no decision-making powers in respect to resource distribution at the communal level. Despite Cameroon's ratification of most international conventions on the protection of women, including the International Convention on the Elimination on all Forms of Discrimination against Women, patriarchal practices still militate against women's advancement. And while laws purport to guarantee equality between men and women, cultural barriers continue to hinder women from full access and control over key resources. Ajaga Nji buttressed this point as follows:

"In Cameroon sub-cultures, women are considered subject to male authority. Male characteristics are considered central to decision-making process at family, community and national levels". (2000:213)

Although education in Cameroon, as in most developing countries, has been often associated with terms like development, modernity ", independence, and status, one can debate whether the education developmental strategies, have had more positive or negative effects in the society. The various schooling programs that have been instituted for girls in various historical periods have not enabled their full participation in the leadership spheres both in government and civil society. Looking at education in this way, we can shed light on how colonial and post-colonial discourses relate to what girls and boys in Cameroon should know and how schools are constructed to create future citizens. We can also shed light on how education is used outside of the school, how relations of power have affected opportunities related to education and the formation of students' identities, and how discourses past and present shape female self-representations and representations of self as the 'other'. At ENSP, women remain underrepresented in all important aspects in this institution. While female faculty members bemoan gender inequities at ENSP, the senior management holds a different viewpoint. According to the Director of ENSP, contrary to what others might think, women have more chances of being nominated into leadership positions. According to him, women are absent in positions of leadership not by design but because of the lack of qualified females in the field of Math, Science, and Technology at ENSP. Such utterances fail to take into consideration the subtle and overt ways in which women have been excluded from leadership and training institutions. Cameroon does not have any policy documents to recruit and retain women in the Math and Science fields. In recognition of the challenges girls face in Math and Science disciplines, The Ministry of Women's Affairs established a special fund to provide financial awards to female students of scientific and technical subjects. While such an initiative is laudable, the awards, which are not widely publicized, are given to a select few. In addition, the Ministry does not take the holistic approach by examining the underlying challenges of girls' access in Math and Science in such short term intervention strategies. In response to this shortcoming, UNESCO designated women and Africa as priority target groups for action during the years 1996-2001 and instituted intervention programs at the secondary level to enable women to pursue Math and Science at the post-secondary level.

2.5.1.UNESCO and Technology Education for Girls

The special project on scientific, technical and vocational Education of Girls in Africa was launched in 1996 as a joint project for Science and Technology Education and for Technical and Vocational Education. The ensuing project, Female Education in Mathematics and Science in Africa (FEMSA) targeted 12 African countries-Burkina Faso, Cameroon, Ghana, Kenya, Malawi, Mali, Mozambique, Senegal, Swaziland, Tanzania, Uganda, Zambia. Funds for the initiative were provided by a donors' consortium made up of the following organizations.

- The Norwegian Agency for Development Cooperation (NORAD)
- The Rockefeller Foundation
- Irish Aid (HEDCO)
- Denmark Development Cooperation (DANIDA)
- Netherlands Ministry of Foreign Affairs
- Association for the Development of Education in Africa (ADEA)
- Carnegie Corporation of New York
- Swedish International Development Cooperation Agency (SIDA)
- Commonwealth Secretariat
- The Royal Norwegian Ministry of Foreign Affairs (UNESCO, 1998).

The main goal of the Female Education in Mathematics and Science in Africa (FEMSA) was to promote girls' participation in mathematics and science education at the primary and secondary school levels. In seeking to enhance female performance in science subjects and enable their access to careers in mathematics and science, the project sought to deconstruct the notion that girls are not smart enough for science. The pilot phase of FEMSA began in 1996 and profiled the following four countries: Cameroon, Ghana, Tanzania, and Uganda. The core activity of FEMSA in each country was an in-depth study of a small sample of primary and secondary schools with a view to determining the attitudes of students, teachers, and parents to mathematics and science learning. The study also examined the difficulties encountered by girls in Math and Science disciplines and their overall poor performance in schools. Upon examination of these issues, the study proposed ways in which mathematics and science could be made more attractive and relevant to the everyday lives of girls and women. Using participatory Learning and Action (PLA) methodology, the research included classroom observations, questionnaires, guided discussions, and interviews with students, teachers, and parents as participants. To translate the research into results, each country had to establish structures and processes to enable program implementation and evaluation.

2.5.1.1.FEMSA CAMEROON

Select schools representing the ten regions in Cameroon were included in this project. At the primary level institutions included, 12 Francophone schools and 4 Anglophone schools. Secondary schools included 7 Francophone and 5 Anglophone schools. The primary and secondary schools representing the different linguistic and cultural regions were selected from the following regions: Adamaoua, Central, East, Littoral, North, South, North-West and South-West provinces. During the preliminary stages of the project, the FEMSA team spent a week in each school creating awareness, connecting with parents, teachers, and students and familiarizing them with the goals and objectives of the FEMSA project. This was followed by a research phase

during which a situational analysis of the state of schooling and performance of girls in Mathematics and Sciences was conducted. Findings of this research was presented to Ministries of Women's Affairs and National Education as well as other government bodies and stakeholders tasked with developing policy documents and creating interventions to provide girls more access in Math and Science education. Between 1997 and 1998, small-scale interventions were carried out to make science teaching and learning more meaningful. Activities such as game competitions, financial awards, and summer science camps were implemented to make science more engaging and interactive. Meanwhile professional development activities and workshops were carried out to equip teachers with gender sensitive teaching methodologies to enable them increase girl's participation in Math and Science at various FEMSA schooling sites.

FEMSA National Center

Phase II of the project witnessed the creation of a FEMSA national center to coordinate the initiatives at both country and regional levels. Working with parents, teachers, students, and community members, the FEMSA center trained personnel on the appropriate gender teaching methodologies and practices to make Math and Science more appealing to girls. Through various cultural and pedagogic activities, girls in select school engaged with the course content and curriculum in new ways. Some of the activities were not only practical and appealing, but were also relevant to the lives of students. These included:

- Radio programs advertising the focus on Math and Science in Pilot Schools
- Writing and composing songs and music about the FEMSA project
- Workshops and seminars for Math and Science teachers
- Production of videos and brochures promoting women in Science
- Monitoring and evaluation of FEMSA programs
- Conducting science competitions (quizzes, Olympiad)
- Organizing pedagogic excursions, sports competitions, and open houses
- Coordinating FEMSA days and cultural evenings

At FEMSA schools, science clubs were a part of the extra-curricular activities. These centers sought to enhance Math, Science, and Technology education for students by providing conducive study environments and interactive teaching and learning methods and activities. While FEMSA had initially sought to create girls only science clubs, the initiative was met with resistance from authorities. Because Cameroon does not have an official gender policy, it was hard to justify the creation of a female-only science club in a public institution of learning that catered to both boys and girls.

2.5.1.2. Successes and Challenges

During the short lifespan of FEMSA, some of the implemented initiatives enabled students learn Math and Science in new ways. Science field trips allowed students to take trips out of classroom settings and visit institutions where they could engage in laboratory experiments and hands-on assignments. For example, students were able to make connections between physics, heat conduction, and cooking. They dissected animals and named body parts in Biology classes. Similarly in their in English classes, they engaged in poetry and persuasive writing making arguments for more inclusiveness in Math and Science subjects. Out of the

classroom, they organized soccer competitions between the different FEMSA schools to promote team building, networking, and connections with the local community. Meanwhile summer camps sessions which catered to girls only housed students in hostels. Away from familial responsibilities and household chores, female students had time to focus on interactive science and build meaningful relationships with peers, teachers, and mentors.

Despite its successes, the FEMSA Cameroon closed its doors at the end the four year period because the project had solely depended on the non-renewable four-year funding from the consortium of donors. Although FEMSA had created partnerships with local schools and the community, there was a need of additional funding to pay teachers and trainers. In addition, FEMSA had to procure materials for science projects, experiments, and excursions. Unsuccessful efforts at raising enough funds from local stake holders, government, and community members saw the close of the project at the end of the four year cycle.

That notwithstanding, FEMSA activities marked a significant period in the history of girls education in Cameroon for its attempts at making science relevant to the lives of students and its focus on females in Math and Science. At ENSP, ten of the girls in my research study had attended one of the summer camps organized by FEMSA. They articulated how FEMSA, through the hands-on teaching and relevant curriculum, had played a huge role in their choice of a career in Math and Science. They also compared the interactive activities at their science camps and the teaching practices at ENSP where rote learning and teacher lectures are the prevalent modes of instruction. There are thus discontinuities in discourses at this institution at multiple levels. On one hand it is touted as a national treasure by the government because of its ability to train cadres and professionals for national development. On the other hand, utterances of some students would indicate that the modes of teaching and learning at this institution leave much to be desired. Similarly the Cameroon government which is tasked with the governance and running of ENSP has pledged support for female education. Policy statements of the Ministry of Social and Women's Affairs indicate the government's commitment to granting girls' access to those institutions that would train them for the 21st century job market and enable their economic independence and social mobility. Yet females continue to be underrepresented at ENSP, one of the institutions with guaranteed pathways to job security, financial independence, and access to leadership positions. ENSP thus becomes a site of differing discourses that are often in tensions with one another.

2.5. Conclusion

As earlier mentioned, ENSP operates in a subculture that is steeped in a traditional patriarchal system. In Cameroon, son preference, where boys' social, intellectual and physical development are favored over girls, has translated into more formal schooling opportunities for boys and exclusion of females in top leadership positions in both public and private sectors. ENSP has a total of 74 professors and lecturers, 68 males and 6 females. Out of a student body of 765, 12% are females. Girls are thus relatively 'absent' in ENSP, an institution modeled after the French *École Polytechnique*, which has traditionally prepared male technocrats to serve in the French government and industry. Discursively positioned as outsiders within ENSP, girls seek to enter a previously male domain and participate in activities from which they have been expressly or tacitly excluded. The gender ideology shapes different lives for men and women by placing them in different social positions and patterns of expectations. Such gendered patterns are also

evident in the administration at ENSP where senior management positions are occupied by males while females serve as support staff. In addition to the outsider status, another subject position frames females as individuals who want to be welcomed into this institutional space. The utterances of female students and teachers highlight women's quest for full participation and desire to be insiders at ENSP. As faculty members and students, they want to locate themselves *within* the departments that have been dominated by men. They believe the official language of ENSP should *include* them, as should the curriculum and traditions of the institution.

The discourse of elitism is also very prevalent in the institutional texts and utterances of both male and female students at ENSP. The institution prides itself as an elite organization tasked with training cadres and engineers for the central African region. This is an excellent example of what Bourdieu refers to as 'institutions entrusted with the education and consecration of those who are called to enter the field of power' (Bourdieu, 1996, p. 74). Indeed, texts from the school's history and brochures very clearly articulate the extent to which ENSP draws on its networks, history, and language to construct an 'elite' institutional identity. This discourse of elitism at ENSP is characterized by a focus on individual achievement and is supported by the broader discourse of enlightenment humanism that privileges autonomy, reason, and progress as the means of achieving human rights and freedom (Weedon, 1999). These discursive practices at ENSP thus reflect the World Bank framing of education as "a tool to promote individuals', groups' and national or international interests (World Bank, 2004)" At the same time these practices also conflict with the self-same bank discourses that seek to mainstream women into higher institutions of learning to enable their economic and social mobility. While ENSP seeks to maintain its elite status in bid to produce high caliber graduates who can compete in the job market, it has no structures in place to recruit and retain historically marginalized groups such as female to enable their participation in the local and regional workforce.

Even while discourse theory maintains that subjectivity is discursively constituted, it simply does not mean that women at ENSP are passive in the process. As Dorothy Smith (1990b) argues, we all participate as subjects and agents in the social relations of discourse. At ENSP, women and men actively participate in the construction of subject positions and subjectivity by subverting or reinforcing various discourses. When male students frame their female peers as weak and intellectually superior and teachers' constant reference to girls' principally as caregivers, these are just some of the femininity discourses shaping images of women at ENSP as vulnerable. At the same time, a feminist discourse exists and highlights women enacting androgynous identities as leaders, aspiring engineers, and project managers. Analysis of the discourse of students in classes and in small group discussions provides evidence that women are caught in the tension between conflicting gender demands. In their academic exchanges, women display a variety of linguistic behaviors that defy gender stereotypes and exhibit linguistic behaviors that range from those traditionally masculine (competitive, assertive, status seeking) to those traditionally considered feminine (cooperative, accommodating, nurturing). Female subjects construct fluid identities reflecting a range of relational subject positions, identities, and identifications. In addition to the dominant discourses constructing stereotypical assumptions about masculinity, femininity and binary gender differences, there are also resistant or oppositional discourses, which construct gender in new ways.

In this chapter, I have discussed the socio-cultural and political context of girls' education in Cameroon and provided an overview on how females were educated during specific historical

periods. In highlighting the recent shifts in education and calls for more inclusive education practices, I endeavored to show the multiple and diverse understandings of education as a context in which gender is positioned and constructed. In presenting, the various schooling opportunities that have been offered girls at various historical periods, I also underscored the discontinuities in theory, practice, and results. In the next chapter, I use discourse theory to underscore the making of subject positions to subsequently highlight how these subjectivities play out in a formal schooling environment.

Chapter 3: Theoretical Framework and Methodology

This chapter begins by describing the rationale for combining approaches of ethnography and critical discourse analysis. I then explain my approach to data collection, emphasizing the implications of viewing knowledge as co-constructed and socially situated, rather than objective and static. Given my view of research as interaction and knowledge as co-constructed within that interaction, I begin my description of data collection by positioning myself, making as explicit as possible my own motivations, previous experiences, and social relations which shaped this study. After describing the research sites and the kinds of data collected, I describe the process of data analysis and conclude with observations about my role as a researcher at ENSP.

3.1. Discourse Theory and the Making of Subject Positions

My examination of subjects in a higher institution of learning in Cameroon and the various constructions of gender identities reveal the dangers of superimposing monolithic versions of gender relations in the Cameroon context. I illustrate the complexities of intimate relationships and highlight the processes of contestation that are so crucial in shaping contemporary, gendered identities. And while I underscore the importance of an approach to gender that permits the exploration of the ambiguities of gender identities, I also present identifications and relationships as imagined and performed in discursive practices. My analysis begins with the ways in which education discourse shapes and constrains how people understand and engage in the world, how gendered beings come to understand themselves and their situation, and how they conduct themselves accordingly in the any given environment. In this study, the term “discourse” is used in two ways.

The first is the relatively straightforward conventional sense of ‘language above the sentence’ or language at text level (Cameron, 2001:11). In this first sense, discourse refers to stretches of text, spoken or written, in monologic or dialogic, which are open to the analysis of ‘patterns (structure, organization) in units which are larger, more extended than one sentence’. This understanding of discourse almost overlaps and intersects with ‘language in use’: that is any talk between people and groups of people in everyday context.

The second and primary use of the term ‘discourse’ is as a form of social/ideological practice (Fairclough 1992). According to Foucault (1972:49) discourses are used in the plural sense to denote ‘practices that systematically form the object of which they speak’. Thus, discourses are forms of knowledge or powerful sets of assumptions, expectations, and explanations governing mainstream social and cultural practices. They are systematic ways of making sense of the world by inscribing and shaping power relations within all texts, including spoken interactions.

Rather than understanding language and discourse as static entities that can stand in isolation and be investigated as such, Foucault described discourse as dynamic and productive. In other words, discourse produces particular versions of reality and particular subject positions that have material effects. (Baxter, 2003; Blackmore 1995, 1999; Mills, 1997;Pillow, 2003;Weedon,1997) The subject positions shaped by discourse serve as a range of possibilities for individuals to occupy. As discourses shift so too do the subject positions available. Individuals could assume or inhabit, multiple, contradictory, and shifting positions. Taken together, these positionings, the conscious and unconscious ways in which we situate ourselves in relation to the social world, constitute our subjectivity (Weedon, 1997).

Discourses can be conceptualized as dynamic constellations of words and images that legitimate and produce a given reality (Allan, 2008). This emphasizes the active properties of discourse – the ways in which discourse constructs and produces not only realities but also our sense of self in relation to these realities. According to Weedon (1997) subjectivity is produced in a whole range of discursive practices-economic, social, and political-the meanings of which are a constant site of struggle over power. These discursive practices construct a “hierarchical social grid of the ‘normal’ categories of gender identity, sexual desire, ethnic identity, class and work, regional solidarity, citizenship and national identity” (Luke 1995, p.14). If discourse is dynamic, then subjectivity constituted through discourse is unstable, as it is inevitably bound to its historical moment. Each individual then embodies multiple contradictory subject positions, and as such, we are continually engaged in a process to choose which discourses to draw upon to represent ourselves. From this perspective, subjectivity is not fixed or essential. Rather subjectivities are shaped through multiple discourses that mutually reinforce or compete with one another producing subjectivities that are continually revised and reconstructed as discourses are contested and disrupted (Allan, 2008). Understandings of the subject are inextricably linked to conceptualizations of agency and strategies for social change. According to some scholars, it is the interplay between discourse and subjectivity that allows subjects become agents in their own creation. In her examination of femininity as a discourse, Dorothy Smith (1990b) emphasizes this point. She describes femininity as a discursive effect within a complex of social relations that organizes people’s lives. Reminding us that people are not passively produced by discourse, she contends that her analysis “preserves the presence of women as active subjects” (p.161) adding,

While the focus is on social relations extending beyond the reach of any particular individual, women participate actively in them in characteristic dialectic: people’s actual activities as participants give power to the relations that overpower them. Women’s work and activities are an integral part of the overall organization of these relations (p.161)

My approach to the study of gendered discourses at ENSP is influenced by work of such theorists who do not subscribe to notions of a foundational self but seek to re-theorize, rather than abandon agency. Post structuralism is not specific to a single school of thought or discipline but is constituted by a plurality of theoretical positions (e.g. Barthes 1973, Derrida 1982, Foucault, 1984). However the specific locus of its interest is in language as a site for the construction and contestation of social meanings. Weedon (1997:21), who has done much to evolve conceptualization of feminist post-structuralism, highlights language as the common factor in any analysis of power, social meanings, and the construction of identities: “Language is the place where actual and possible forms of social organization and their likely social and political consequences are defined and contested. Yet is also the place where our sense of selves and our subjectivities are constructed.”

Rather than understanding women as passive products of discursive fields, or as having assumed false consciousness rendering them victims of male oppression, discourse theory posits that women are active and can intervene on their own behalf. According to Mills (1991), while discourses “actively constitute us as subjects; individuals have some part to play in this process, both challenging and re-writing some of the positions within discourse” (p.68).

People construct meanings on the basis of their “available stock of discursive resources” (Luke, 1995, p.15) However, in some societies, some discourses are taken up and supported more readily than others. These discourses, which could be labeled dominant, can be identified most easily by the way in which they appear to be ‘natural’. In doing so they, they “make

invisible the fact that they are just one among different discourses” (Coates 1996, p. 240). For example, the dominant discourse of masculinity and femininity provide parameters for acceptable behavior on the part of men and women in particular contexts. Mills (1997) maintains that “these discursive frameworks demarcate the boundaries within which we can negotiate what it means to be gendered” (p.18). Post-structural discourse theory highlights both the normalizing and subversive power of discourse. As Weedon (1997) writes, “it is the language in the form of conflicting discourses which constitutes us as conscious thinking subjects and enables us give meaning to the world and to act to transform it” (p.31). Thus a post-structural perspective makes sense for analyzing gendered perspectives at ENSP because it offers a lens for understanding subject positions produced by discourses. At the same time, such an approach helps reveal how this understanding may help women intervene and extend the range of possible identities and subject positions available to them.

3.2. Discourse and Power/Knowledge

An understanding of the ways in which discourse constructs subject positions and subjectivities at ENSP would require a discussion of power, truth, and knowledge as they operate in the discourse of the post-structural frame. I draw on Foucault’s (1978, 1980) work to re-conceptualize power as a productive force rather than a primarily repressive one. In contrast to traditional configurations of power as omnipotent, coercive, and prohibitive, Foucault (1978) delineates the creative functions of power and its relation to knowledge. A Foucauldian understanding of power is thus important to the conceptual framework of discourse analysis for several reasons. First, it reinforces the important role of discourse in shaping power relations in society. Further, it moves away from the dualistic and overly simplistic understandings of the position of women in a patriarchal culture. For instance in describing femininity as discourse, Mills (1992) maintains:

“Discourse theory does not locate the origins of femininity in patriarchy. Rather it sees femininity as a system of discursive frameworks. Although it is obviously in some people’s interest for it to continue, men as well as women....It is a discursive system within which we operate and each act adds to or questions its constitution; it is always changing, but it is not controlled by anyone” (p.281)

Post-structural understanding of local, productive, and relational forces of power, challenges a binary powerful/less configuration of power by contending that power circulates through discourse between and among individuals and groups. From this perspective, the position of women in a patriarchal order is shifted from merely resisting dominant and coercive forces of power to participation in the production of power (Diamond & Quimby, 1988; Mills, 1997). To Foucault power and knowledge are inseparable in his assertion that “it is in discourse that power and knowledge are joined together” (Foucault, 1978, p.100). Also important to Foucault’s configuration of power/knowledge is the contention that truth is produced through the interplay. In other words truth is interplay of power/knowledge operating through; truths are constructed through discourse. Such assertions open up spaces for questioning authority of science and other truth-claims that often position women as inferior to men. From a Foucauldian perspective on power/knowledge, truth claims are discursive effects and as such are open to re-interpretation. Foucault’s conception of power/knowledge in discourse emphasizes how power is

dispersed through the social body. In other words, power is “exercised rather than possessed” (Sawicki, 1986. p.26) Foucault’s understanding of power does not deny the existence of dominant networks of power relations but rather shifts the focus away from them as the ultimate source of subjugation. Instead, Foucault’s work highlights the often obscured forms of discursive power that operates from innumerable micro-level points in the power network. Together, power/knowledge and discourse provide conditions of possibility-conditions necessary to think for ourselves, and our world, in particular ways and not in other ways (Allan 2008).

I use Foucauldian notions of discourse to show school literacies and gender as inextricably linked with the concepts of power, not as a negative repressive force but as something that constitutes and energizes all discursive and social relations. Power will be conceptualized, not as a possession in somebody’s hands, but a ‘net-like organization’ which weaves itself discursively through social organizations, meanings, relations, and the construction of speakers’ subjectivities or identities. I will highlight social actors who are simultaneously undergoing and exercising power located within different competing discourses according to context. According to Baxter (2003) competing discourses work to determine and fix meanings of the material world and hence our experience of social realities. Thus the social realities of individuals at ENSP are always produced discursively while their identities and subject positions are constantly and continuously being reconstructed, open to redefinition through discourse, but never outside it.

While the goal of this study is to obtain greater understanding of how identities are constructed in practices that produce, enact, or perform identity (Blommaert, 2007), my focus on females in a higher institution of learning will highlight how they signify the interconnectedness of cultures in a globalized world of competing ideologies and contesting identities. Similarly, I examine gender as an essential and fundamental part of the individual and conceive language as a culturally constructed ‘system of meaning’ (Crawford 1995). I also suggest that our identities are ‘performed through language (Butler 1990) and recognize language as a potential ‘site’ for struggle and change. Speakers produce fluctuating meanings in relation to how powerful they are positioned within the range of competing discourses. I examine the ways in which speakers negotiate their identities, relationships, and positions within ENSP according to the ways in which they are located by different discourses. By highlighting multiple subject positions, I not only identify the ways in which power constantly shifts between different subjects but also open up spaces for females voices at ENSP. Veering away from the inherent reductionist and generalizing tendencies of the earlier contributions on female education, my dissertation will take multiple identities and identifications as the starting point for careful explorations of gender and gender relations at ENSP.

A central assumption of my research is that the meanings of gender in education discourses and practices are neither shared across global or local contexts nor taken up for the same purpose by the diverse stakeholders. Gendered identities are framed through discursive practices by social actors who make up the formal learning space at ENSP. At this higher institution of learning, subjectivities are constructed in (often unequal) interaction and negotiated in relation to one’s present and non-present interlocutors, as well as the social, political, and economic contexts of use. By understanding the subjectivities of the various social actors, my research seeks to offer a more nuanced analysis of gendered constructions in educational discourses to highlight how discourses produce and circumscribe possible formations of the self.

3.3. Methodology

3.3.1. Rationale for Research Approach: Institutional Ethnography and Critical Discourse Analysis

Critical Discourse Analysis (CDA) studies and Institutional Ethnography each inform my interest in and approach to examining how global discourses of gendered education shape and are shaped by local practice. These approaches critique social theorists for working in the abstract and not paying enough attention to what actually is going on at the micro-scale. Although they start at different points within the micro-context (CDA begins with the text, and IE begins with everyday practice), they each use the micro as a way of examining social phenomena occurring at macro-scales. Central to CDA is an understanding of discourse as “socially situated,” language, embedded in and inseparable from social practice. Discourse, therefore, is not only a component of the social world, but a window to that world which provides insights into how micro and macro contexts shape and are shaped by people’s everyday lives. A critical discourse approach emphasizes language as a tool or window through which to examine the interaction between micro and macro contexts in which texts and their contexts of production are mutually constitutive.

Fairclough’s framework for understanding and analyzing discourse theoretically is useful in seeking to examine discourses in at ENSP. Fairclough considers any instance of language a “discursive event,” which is simultaneously an instance of text (language use at the micro-level), a discursive practice (a process of text production and interpretation in which interlocutors draw on experiences, knowledge, and other discourses gained from outside of the immediate conversation), and a social practice (the institutional and social circumstances which constrain and enable the discursive event (Fairclough, 2001, p. 4). It is here that he links the micro and macro scales.

CDA allowed me to link the social and linguistic processes, in which social actors negotiated gendered discourses and practices within a higher institution of learning. Although Fairclough emphasizes the interconnectedness and mutually constitutive properties of the three dimensions of discourse, Fairclough has been criticized for being overly linguistically motivated—focusing too much on the text, and failing to adequately pay attention to the context in which discourses are produced. In order to bring into focus the “invisible context,” Blommaert (2005) recommends that discourse analysts combine linguistic approaches with ethnographic methods. I found the ethnographic approach of institutional ethnography (IE) useful for my project.

While CDA begins with the text to explore social relations beyond the text, Institutional Ethnography begins with the everyday lives of people. Not unlike CDA, Institutional Ethnography seeks to find out “just how people’s doings in the everyday are articulated to and coordinated by extended social relations that are not visible from within any particular local setting and just how people are participating in those relations” (Smith, 2005, p. 36). Rather than assume that people are being dominated by global discourses or resisting the discourses, ‘institutional ethnography’s program is one of inquiry and discovery,” (Smith, 2005) which begins with the concerns and interests of the people themselves. Although I.E. begins with the interests and concerns articulated by people in local situated contexts, it does not end here. Discourses and texts play a prominent role for an institutional ethnographer, as “texts” embody and mediate the ruling relations, which organize local practice trans-locally, a practice Smith calls “textually-mediated social organization.” Using ethnographic methods (observations and

interviews), I sought to discover which texts are meaningful to the participants. Thereafter, I used these texts to trace the ruling relations and discourses which organize and shape local practices.

3.3.2. Data Collection

Both Institutional Ethnography (IE) and Critical Discourse Analysis (CDA) take post-modern approaches to knowledge production, replacing a search for “true” or fixed meanings with an emphasis on “descriptive nuances, differences, and paradoxes” (Kvale & Brinkmann, 2009, p. 218). Considering an interview as “literally an inter-view or interchange of views between two persons conversing about a theme of mutual interest,” (p. 2) they emphasize how knowledge is co-constructed through interaction, rather than ‘collected’ or ‘mined’ by the researcher who “unearths the valuable metal” from the “subjects interior, uncontaminated by the miner” (p. 48). In contrast to the “miner”, they propose the metaphor “researcher as traveler,” My journey to ENSP began long before I became a researcher. For this reason, I describe these early experiences and the more extensive time line in which my field study at ENSP was embedded. In the spirit of approaching research as interaction and knowledge as co-produced, I will analyze my role within the research interactions and make explicit these findings. Reflecting reflexivity, my research was mindful of the sources of my theories and paradigms. Reflexivity requires that researchers fully understand their methodological choices and how these choices effect positions of authority and representation (Madison 2005). In the case of my research, I paid attention to the power differentials between the various social actors and subjects to consider how race, ethnicity, and gender play into those differentials.

3.4. Preliminary Research and Timeframe

In addition to the literature, which I described in the last chapter, the conceptual framework for this study was significantly shaped by my early years, experiences, and previous visits to Cameroon. My education began at the Government Nursery School in South West Cameroon and a Presbyterian missionary elementary school. I next attended Saker Baptist College, a Baptist mission girls’ boarding school and continued in a co-ed high school, Cameroon College of Arts, Science and Technology. After obtaining my General Certificate of Education, (Advanced level), I concurrently enrolled in the University of Yaoundé and the Ecole Normale Supérieure, the government teacher training college where I obtained a Licence in French and English and a teacher’s certification. My subsequent academic pursuits in France, Germany and later on the United States were spurred by the economic down turn in Cameroon in the 1990’s; I sought better academic and economic opportunities, in Besançon, France, Goettingen, Germany and finally California, USA, as the economic downturn caused unemployment rates to soar in Cameroon. And while I lived in the margins of the French and German societies because of my identity and status as a foreign student, I sought to integrate in the American society by seeking and eventually obtaining US citizenship. Living in a variety of linguistic environments and ethnic spaces in these various countries shaped my consciousness and heightened my awareness and concern for recognizing and where possible learning the social practices and ways of being that would mark me as an outsider and insider.

Returning to Cameroon more than a decade later for my dissertation research required me to adjust to the old ways of being-talking, seeing, dressing, eating, and relating to others. In

summer of 2010, my pre-dissertation trip allowed me to visit ENSP and get a lay of the land. Although classes were not in officially in session, some ongoing activities enabled me to familiarize myself with this institution which would eventually become my field site. Students were on campus for one reason or the other. While some were there to collect transcripts, one group came to complete a project that was carried over from the previous semester. Others came to register for the fall semester while some were on campus to retake exams. In my informal conversations with some of these students, I asked them about life at ENSP and about their individual and personal goals upon completion. Because I had no formally begun the data collection process, I neither took notes nor required students to grant me in depth interviews. I also visited the various laboratories. Accompanied by the facilities manager, I took a tour of the Civil, Computer, and Electrical engineering labs.

In addition to familiarizing myself with this institution, my visit served to inform my decision on using ENSP as a research site. While I met with some with the staff and faculty members, Mrs. Ngabireng, a professor and Chief of Services in Charge of Research at ENSP really helped with getting me situated. When I explained my interest in using ENSP as my dissertation field site, Mrs. Ngabireng briefed me on the research process, and advised me on the procedures for requesting and obtaining the necessary permissions. She also introduced me to the Registrar who gave me some preliminary information on enrollment by gender and discipline. I also was able to collect brochures and such artifacts as newsletters on ENSP. Such encounters, conversations, and interactions with students, faculty and staff at ENSP enabled me conceptualize my study and determine its relevance as a research site.

3.4.1. Becoming an institutional researcher: 2011, 2012.

During my third year of study at Berkeley, I began to give some serious thought on the direction my dissertation would take. While I had explored issues in illiteracy in Sub-Saharan Africa in my theoretical papers, I thought to connect with professionals on the field to help me link theories of education and development to the actual issues on the ground. Often times there is a disconnect between theory and practice and it was my intention to formulate a research project that was informed not only by various theories, but by ongoing issues and evidence from the field.

I discussed at length with Mercy Tembon, the World Bank Director in Charge of girls' education in Eastern Africa who has written extensively on girls' education in Africa. In my initial conversation with Tembon, I outlined my plans to conduct research in Cameroon by investigating the discursive practices used by females in secondary education in the identity construction processes. In subsequent conversations, we discussed the paucity of research education in Cameroon and most particularly in higher education. Our discussions also touched on gender parity and equality within all levels of education, and most especially in Science and Technology education. Coming to the realization that Cameroon lacks empirical studies on higher education at a time when evidence is crucially needed to inform policies and interventions strategies at the tertiary level, I decided to focus my study on gendered identities in Math, Science and Technology education in Cameroon.

I conducted a literature review on gendered education in sub Saharan Africa and designed my oral examination in areas that critically analyzed gendered identities and marginalization in education. Employing methods of critical discourse analysis, I analyzed World Bank's discourses on girls' education in Sub Sub-Saharan Africa which had both conflicting and

contradictory perspectives on education. World Bank discourses were selected for analysis because of the Bank's history, influence, and lending practices to the educational, social, and administrative institutions in Cameroon.

The 1980's slowing economic growth led Cameroon to accept Structural Adjustment Programs (SAP) with goals to open the local market to foreign investors. SAPs resulted in deep cuts in programs such as education, health, and social care and removed subsidies designed to control the prices of basic foodstuff. The ensuing economic hardship hugely impacted poor families who oftentimes had to pull girls out of school to take care of families and run the households. In Cameroon, where women's lives straddle the reproductive and productive spheres, they absorbed more of the pressures of structural adjustment. The impact of the reform measure saw increased number of women engaged in food crop production to satisfy the practical needs of the household while daughters were pulled out of school to take over the running of the household (Fonchingong, 1999).

Such adverse effects on education resulting from the World Bank's Structural Adjustment Policies conflict with the Bank's mission to combat poverty through education. Regarding the inter-linkages between gender inequalities, economic growth, and poverty as the main reasons why girls' education should be funded, the Bank purports to fight poverty and help developing countries invest in their education systems. Instead the Bank's SAP's resulted in an increase in poverty and created more hurdles for mainstreaming girls into formal institutions of learning. The World SAP's also resulted in the introduction of tuition in higher institutions of learning. Up until 1991, higher education in Cameroon was free with government giving scholarships to 75% of students enrolled in the University systems. The newly introduced tuition system created even more hardship for entry into a University system that did not match the needs of the economy where unemployment was at an all-time high.

In 1991, the World Bank sponsored Project Development Objective to develop and test a new and improved model of public higher technical education in Cameroon in the Institut Universitaire Technologique (IUT), Douala. Inspired by the French IUT model, the primary objective of the Douala IUT was to establish a professional diploma focused on middle-level technicians. This initiative was also strongly motivated by the financial crisis of the mid-90s and the resulting decline in the financial resources available to higher education, which forced institutions to generate revenues. The new decentralized system permitted, on a de facto basis, the institutions to retain 60 to 70% of resources generated, and transfer the remainder to the University treasury to which the institution belong. The IUT also received support from the French Cooperation which contributed to the reform of the Cameroon University system, which thus far had been preparing students with full degree courses, with only limited links to the needs of the labor markets. According to this model, three new curricula were selected for development in consultation with enterprises: (i) electrical engineering and industrial computing, (ii) thermal engineering and energy, and (iii) mechanical engineering and productivity. The curriculum which was fashioned after the French IUT programs, was adapted to the specific context of local enterprises. The program aimed at preparing young professionals by equipping them with skills required by local enterprises through teachers who were trained primarily at the IUT of Strasbourg, France .

Only after using CDA to analyze these discourses did I realize the contradictions and contestations in the various institutional and educational discourses. The oftentimes contradictory practices of funding institutions such as the World Bank and the tensions between the global and local educational goals and practices led me to investigate further how the various

social actors negotiate differences in learning expectations, ideological orientations, and power, within institutions of learning. One on hand, development discourses view education as a powerful tool that will lift females out of poverty. Framing women's participation in the national economic growth as critical to sustainable development, they advocate for equitable education to enable all segments of the population acquire the skills needed to compete for jobs in the 21st century labor market. At the same time, the traditions of this patriarchal society still have clearly defined status as well as gendered identities and roles. To that effect, females too often lack access to girl-friendly, safe and supportive spaces in formal schools to enable their training towards participating in community development programs. My analysis of these discourses revealed the various social actors involved in the business of educating Cameroonian girls and boys. From this experience, I learned that discourses are powerful and do shape the way we see and intervene in the world.

3.4.2. Site selection: ENSP

I chose to conduct research on gendered identities at ENSP for several reasons. ENSP trains engineers and scientists to participate in the development of their communities. While science, technology, engineering, and mathematics (STEM) are widely regarded as critical to the national economy, discourses in development call for the mainstreaming of women in all levels of education for the purposes of sustainability. ENSP, where the discourses of participation and gendered education come to be defined and practiced, was an ideal site to investigate how social and environmental factors shape girls' achievements and participations in Math and Science and how the climate of university science and engineering departments is shaped by different social actors.

The educational practices at ENSP are confluences of the French and British traditions. While France was heavily involved in the initial setting up of ENSP, the institution with students from both Francophone and Anglophone Cameroon has had some Anglo Saxon influences. Present day reforms in Cameroon have introduced the BMP (Bachelors, Masters and Ph.D.) system in a bid to align Cameroon's historically French systems of education to the Anglo Saxon model. In addition to training engineers and cadres of professionals for civil service, ENSP now offers opportunities for students to engage in research and pursue doctorate degrees. To thus understand the discourses and practices of ENSP, I thought to examine the discourses of the diverse and often oppositional perspectives and histories of social actors at this site. Using an institutional ethnographic approach, I focused my initial efforts on examining how the practitioners and participants framed education. In order to locate the subject positions in the various educational discourses, I paid particular attention to the texts: brochures, procedures, policies, websites, and discourses with which education was described and how the practices were oriented. This procedure led me to the national and global policies, institutions, and discursive practices which were meaningful to my research. I also collected data at sites beyond ENSP, in order to gain a broader understanding of the national and global "context" in which educational discourses and practices were being promoted.

I visited the Department of Women & Gender Studies at the University of Buea, the only higher institution of learning in Cameroon with a department in Gender Studies, to glean information and collect data on female education policies in Cameroon. But upon meetings and discussions with the head of Gender Studies Department, I learned that Cameroon does not have a clear policy on female education. Instead, the government uses such global benchmarks as The

Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) which calls for equal education opportunities for males and females. The Millennium Development Goals also serve as guidelines for mainstreaming girls into formal education systems. The eight Millennium Development Goals (MDGs) – which range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015 has as one of its goals to eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015. While Cameroon does not have any official policy on girls' education tailored to the needs of the country, it uses the above benchmarks to inform policy and practice.

I also visited the National Archives Buea, in the South West Region of Cameroon for information on colonial policies on girls' education. Because Cameroon's current education policies are residues of her former colonial masters, France and England, an understanding of girls' education in contemporary Cameroon would require an examination of the colonial education policies and history of formal education in Cameroon. A search of the national archives turned up such documents as League of Nations Reports and United Nations reports on British and French administrative and educational practices in colonial territories. I used such documents to trace gendered educational practices and inform discussions on the historical foundations of formal education in Cameroon.

3.5. Methods for collecting data.

3.5.1. The Association of Female Students at ENSP.

Because of the significant role played by the Association of Female Students in my data collection, I describe its role here. The Association, made up of female students at ENSP, aims to create a space where female students are supported in this historically male institution of learning. Founded in the 1990, the Association is funded by membership fee and charitable contributions from members of the alumni. The association meets weekly to discuss topics of interest generated by students as well as issues plaguing female students. After obtaining permission to conduct research at ENSP, I was advised by the administration to contact the Association's President, Agnes, to help facilitate access to female subjects. Agnes is a twenty-one year old fourth year student in Industrial Engineering. She had just been elected as president three months prior to my visit and will hold this position for a year. I arranged an initial lunch meeting with her and her deputy, Estelle, also a fourth year Industrial Engineering student. At this first meeting, I showed them the official letters from the Rector of Yaoundé University 1 and the Director of ENSP granting me permission to conduct research at their school. I also shared with them the recruitment letter for the research study and consent to participate in research. While Estelle spoke and read English very well, I had to translate the contents of both documents to Agnes. After negotiating how the Association could facilitate access to female student, we came up with a plan to recruit female subjects for my study. As leaders of the Association, they knew exactly how I could recruit a cross section of students, from first through fifth year and across all disciplines. They gave me a tour of campus, familiarized me with the different classes, and invited me to attend the next meeting of the Association. At this meeting, I would be formally introduced by the President and I in turn, would introduce my research and begin the process of soliciting research subjects. I had targeted just 30 female students for my research sample. The ladies advised me to take out the monetary compensation that was stated in the consent form. They argued that students might flock to participate in the research not out of

genuine interest but because of the monetary compensation. They suggested that I give students a monetary token upon completion of the data collection process. They felt it would be more culturally appropriate as students would volunteer out of their free will and would provide genuine information. This is another cultural form of behavior which I had to learn in the field. While studies in America would require a full disclosure of the terms and conditions of the study as well any compensation amounts, at ENSP, I was told such a practice might only thwart my study.

Agnes and Estelle also highlighted a potential conflict if students were informed of the monetary compensation prior to their recruitment. They argued that we might have a surplus of students volunteering. And if any students are turned down, this could lead them to believe that the ladies, who were my contact persons, had deliberately turned them down in favor of other students. They further reasoned that this might create some ill feelings within the organization. They therefore proposed that I make 40 copies of forms that indicated consent to participate in the research. At the end of my presentation during the Association meeting, the first 30 students who volunteer would be recruited. In preparation for the meeting, Agnes made flyers which were distributed to students. My visit was indicated on the agenda and all were urged to attend. Below were the agenda items for the meeting:

- Presentation of the different branches of the Association of Female Students
- Job talk with the School Counselor: Preparing Resumes/Interview
- Presentation of a doctoral student interested in conducting research at ENSP

I sat through the first part of the meeting and listened to the discussions. The first agenda item, the Association's presentation of the different branches, was the new government's efforts to put structures in place to allow effective running of projects. Next on the agenda, the School Counselor gave a talk on the best practices on resume writing and interviewing. When asked to take the floor, I presented myself and my research and told the audience of my intentions of recruiting female students for my study. I gave them a brief synopsis on what participation in research project would entail and what would be required of each participant. Since students had to leave for class immediately after the meeting I asked interested parties to leave their contact information with Agnes who would pass them on to me. I would contact them later to set up an initial meeting on campus and discuss how we would proceed with their participation. I also made myself available after the meeting for further questions and clarifications. My collaboration with the Association of Female Students not only eased the process of recruiting subjects but also validated my presence. Agnes gave me a note endorsing my presence on campus to conduct research and this greatly helped when I approached subjects who had not attended the Association's meeting during which I had been officially presented.

My collaboration with the Associations' leaders also gave me different perspectives and contexts on how to approach subjects and conduct interviews and observations. I had hoped that perhaps in their participation in this research, students would see how they have gained access into institutional spaces and practices from which they have otherwise been excluded. I often return to the words of Andrea Cornwall who argued that while simply sitting at the table should not be considered full participation, there is no telling what people take from their experience at that table that can be put towards more transformative ends in other spaces (Cornwall, 2004, p. 4). In my conversations with students, some of them revealed how the process of participating in my research had transformative been for them. To be a subject of study was a whole new

experience for them. They were allowed to tell their stories and describe how they fit into this historically male institution. In sharing their challenges, frustrations, triumphs, successes, perspectives, and future goals, the experience was quite transforming and exhilarating.

3.5.2. Participant Observation

I was able to conduct classroom observations in small classes and amphitheatres. At ENSP, first and second year students take foundational courses in Math, Science and Physics in amphitheatres. Meanwhile third to fifth year students, who are in specialized courses of study, hold classes in smaller rooms. Each cohort meets in a designated room for an entire academic year. I also observed students in Mechanical, Computer, and Electrical Engineering doing practical exercises in their various laboratories.

During each of the observations, I took notes on the interactions between the different participants. I focused specifically on the content of what was being said, the context in which the interactions were taking place, and the activities or materials which guided interactions. I paid careful attention to who was speaking/not speaking, the physical positions participants took, and different kinds of alliances or disjunctures which were made between participants. I also paid attention to the reactions that participants had to the practices, narratives, and content. I was also able to observe instances of “participation,” or partnership that both validated and contradicted gendered discourses. I kept regular field-notes of these conversations in which I described the nature of the conversations and reflected on how these conversations were situated in the larger questions of educational discourses.

3.5.3. Interviewing

While participant observation allowed me to observe the interactions as they took place, interviews gave me the opportunity to ask more specific questions about the nature or historical context of a conversation, the meaning of a particular word or phrase, or other specific details related to what I had observed. Before beginning each interview, I carefully explained the purpose of my research. I developed an interview protocol, which I used in interviewing subjects about their experiences at ENSP. I also conducted more general interviews about the classes, practices at ENSP, as well as students’ experiences and goals. I framed my questions in way that allowed the interview-sessions to be flexible, more like a dialogue than a formal interview. While some of the interviews were conducted in French, I would use English with Anglophone students. During the interviews with Francophones, I would speak in French but would take notes in both French and English. Code switching is a common practice among Cameroonians. As a result, there are several languages used at any given time. Yaoundé, where ENSP is located is no exception. While code-switching was not the focus of my research, I did note when code-switching occurred. During each meeting, I both took notes, which I wrote up into more detailed field-notes after the meeting. I noted my perceptions of the meeting and wrote my reflections which then became part of the data set.

3.6. Types of Data Collected

With an eye to the research questions outlined above, I collected various types of data on the education practices at ENSP.

3.6.1. Gendered Perspectives Interviews

I conducted forty-three interviews with students at ENSP on the education practices at ENSP. My research sample comprised thirty female and five male students. I also interviewed four female faculty members; two from ENSP and two from the Faculty of Science at the University of Yaoundé. Male subjects included the Assistant Director of ENSP, the guidance counselor and two professors. I developed an interview protocol which I shared with students, staff, and faculty. Students were given the interview questions to take home and write responses. After a week I would meet with research subjects individually on campus and we would go over the questions to ensure they had been answered to the best of students' understanding. In the interviews, students were asked to recount their trajectory to ENSP, area of specialization, origin, languages spoken and goals upon completing ENSP. Students were also asked about their motivation to pursue studies as engineers. They recounted the challenges faced in school and described how they felt in this institutional space. I probed the females especially, to describe the various identities they bring to ENSP and how through their discursive practices they carve their spaces at ENSP. I was especially interested to find out how individual subjects view themselves vis-à-vis their male counterparts and how they negotiate their different ways of being as females, as students, and as future engineers. I probed them further on their views about the administration, curriculum and classroom learning practices. I was curious about their thoughts on the ENSP environment, if it was gender friendly and how students are supported as gendered beings - females and males. I questioned their relationships with their opposite gender; if there were any conflicts or contestations and negotiations. While I was interested in their relations with each other, I framed their identities and legitimacy at ENSP not from their biological sex, but from the social and cultural constructs as well as their social positions. In this regard, I probed students on how they frame themselves as gendered beings and engineers in training. With regards to the interviews with faculty and staff, I made appointments with each individual. On the day of the interview, I met faculty members in their office, read the questions off the script and recorded their responses. I would also write down comments and observations in my notes. I asked female professors about their teaching trajectory, challenges they face as females and as professors, how they project their various identities towards colleagues, (male and female) and towards students. The teaching methods, classroom environment were also of interest. I enquired if teachers observed any differences in classroom participation, skills and/or aptitudes in their male and female students.

3.6.2. Classroom observations

The school administration, gave me a permission letter which granted me access to observe all classes. Before observing a class for the first time, I would meet with the classroom professor to introduce myself and my research. This initial meeting allowed me to plan the classes and activities I would be observing in collaboration with the classroom professor. Classes start at 7:30 am and each class runs for four hours with a twenty minute break in between. During the first two years of study, classes are held in amphitheaters while during the

specialization years, the last three years of study, classes are held in smaller classrooms. During these specialization years, each cohort has a designated classroom for class lectures and a designated lab for practical exercises. Students have to be in class on time as tardiness and absences negatively affect students' grades. Students are so conscious about class attendance that sometimes, when feeling unwell, they would come to class in their discomfort rather than risk the consequences of being absent. Students can only repeat a class once during the entire program. Students are expelled if they fail two academic years. At the beginning of class, students would all rise to acknowledge the teacher's entrance and would take their seats at the teacher's instruction. During their lunch break from 11:30 a.m. to 1:30 p.m., students stay on campus in classrooms, catch up with friends, study or attend one of the association meetings. Afternoon classes usually end at 6 p.m. after which students have to leave campus immediately. I took notes during each class and wrote field-notes, which included classroom activities and my observations. I observed the following Classes and Activities:

3.6.2.1. Mathematics Year 1

This class, one of the foundational courses that prepare students for specialization, is held in an amphitheater. The class is fairly airy. Large ceiling fans at the center of the class blow cool air while windows at the back allow some cool breeze. In a class of 165 students, 14 are girls. The class is not very interactive. Students are mainly engaged in note taking as the teacher writes down the Math formulaic expressions and calculations on the board. Occasionally a student who does not follow the lesson would ask a question. If the question is asked in French, the teacher would answer in French. If the question is asked in English, the teacher would answer in English. The teacher would write on the board while at the same time explaining the computation with his back to the class. No microphone is used and students at the back of the class have a hard time understanding the lecture. Because the class is so large, not everyone pays attention. Oftentimes students would start side conversations. When the talking gets too loud, the teacher would hit his table with one of his crutches to get student's attention.

3.6.2.2. Computer Engineering Year 4

This class holds on Thursdays from 8 a.m. to 10 a.m. There are five female and thirty male students. In front of the class is a whiteboard and a table reserved for the teacher. As the students await the teacher's arrival, they chat with each other at the top of their voices and joke around. The head of the class is female student who helped me settle in the first day of my observation. She is petite with an oval face, long braids and usually dresses in denim pants and t-shirts. She assigned me a desk on the first day of my observation which I switched during subsequent visits. As the professor enters the classroom all the students stand up to acknowledge his presence and take their seats after the professor is seated or after he requests that they should be seated.

"On commence avec l'interrogation" (We will begin with the quiz) were the professor's first words. Professor tells the class they will be correcting a quiz students had taken during a previous session. During correction of exercises, students are sent to the board to provide the answers. Sometimes they volunteer to do this exercise while the rest of the class watches, comments, and/or give feedback. On this particular day, Professor Njoh sits at his desk writing while Pierre, a male student volunteer writes out the answers on the board. When the class gets

too noisy, the professor would occasionally lift his head up from his writing and give the class a stern look. The class would quiet down to murmurs. One male student played solitaire on his laptop while the rest just talked to themselves. The rod that was holding the curtain gives way and falls on the ground, taking the curtain down with it. The Professor keeps writing oblivious to it all. This window incident prompts comments from the class. The teacher tells the class “*qui que ce soit qui parle, doit sortir de la classe immédiatement*”(Whoever talks leaves the class now) There is dead silence apart from the occasional clearing of the throat. The teacher walks to the front of the class, looks at the board, at Pierre’s equations. He comments “*Ça c'est un bon dessin*” (This is a nice picture). He goes back to his desk and keeps writing. When Pierre finishes writing down the answers, the teacher looks up and says “*La prochaine*” (Next question).

Apparently *Pierre* has written out the answers correctly. But there is no interaction between him, the class, and the professor who neither asks Pierre to explain his thought process nor require him to explain how he arrived at his answers. Similarly, he does not say whether the written answers are right or wrong. One can only deduce that the answer is correct by his instruction to have a second volunteer go to the board and provide the answers to the second question. This pattern continues throughout the correcting exercise. As a third student takes a turn, the professor walks to the board and starts a conversation with him. They talk briefly prompting the student to make corrections on the board. The rest of the class, especially those sitting at the back, do not participate in the exchanges. One student stands up and goes out of the class to hand a document to a fellow student waiting outside. Upon returning to the class, the professor prevents him, asking the student to leave. When the student tries to plead, the Professor shoves him out and closes the door.

A total of five students take turn writing out answers on the board with very little input from the teacher and/or interaction with the class. Of the five students to take turns on the board one is a girl. When she completes the writing process, the teacher asks her, “*Est-ce que vos camarades comprennent ce que tu as fait au tableau?*” (Do your classmates understand what you have done on the board?). The class erupts in laughter while the girl chuckles. She takes a seat without responding to the teacher’s question. A male student seated in the front attempts to give an explanation to the girl’s written answers on the board and the conversation continues amongst the teacher and the students sitting in front of the class. At the end of class the teacher takes roll.

3.6.2.3. English Class

While the official languages of Cameroon are French and English, institutions offer supplementary courses in the minority language. Since French is the dominant language at ENSP, English courses are offered to enable students meet the language requirement. The English class I observe holds for one hour from 1:30 -2:30 p.m. The male teacher gives them a written text in English on the topic of micro and macro computers. The class is neither interactive nor conversational. Students are required to answer questions on the content and most of them who are Francophones have a hard time with the text. Students would occasionally use dictionaries to find word meanings in order to respond to the teacher’s questions. The text is very dense and students have difficulty responding to the teacher’s questions in English. The teacher asks a female student to read the text out loud. As the student reads, the teacher would write down all the words that the student had pronounced incorrectly on the board. Then he would

proceed to conduct a grammar and pronunciation lesson using the words that the student had difficulty pronouncing. This is followed by a mini lecture on voiced and voiceless consonants and an explanation on word forms using the following words as examples:

- similar(adjective)
- similarly(adverb)
- similarities (noun)

He asks students to explain the difference. When no one volunteers, the teacher would offer an answer. Throughout the lesson, the teacher would stand in front of the classroom asking questions and explaining words or grammatical items. Students only spoke out when they had to respond to the teacher's questions. There is neither interaction beyond the question and answer nor do students interact with one other.

3.6.2.4. Tutorial Classes

While professors would give lectures in amphitheaters, tutorial classes are assigned to junior lecturers to revise key concepts with students. I observed a fourth year mechanical engineering class comprising of 40 students, eight of whom are girls. Prior to class, students are supposed to have completed a set of exercises. The classroom setting provides a space where students can seek corrections for the work completed at home and discuss in small groups. Students take turns on the board writing down the answers with little interaction from the class. Sometimes the student writing down the answers would engage with those sitting in front of the class. During one of such sessions, a female student is called to the board. When she encountered a challenging problem, she asks those sitting in the front for help. A male student helps walk her through the problem. The male teacher joins the conversation but does not engage with the female student who is writing the equations on the board. Instead, he asks the male student to explain to the class what he has been discussing with the female student. The male student goes to the front of the class and takes the marker from the girl, who looking displeased, murmurs under her breath and returns to her seat. Once seated, she works individually by herself until the end of class. Meanwhile the boys seated in front of the class continue the conversation with the teacher. At the back of the class, some students rest their heads on the table and doze off while others hold conversations in small groups.

3.6.2.5. Research Symposium

The research symposium meets every two months. Participants include students and professionals who are enrolled in the Masters or doctorate programs at the University of Yaoundé. Four professors serve as moderators while audience members consist of professors and students from various science and research institutions. I was invited to participate in this symposium by the Assistant Director of ENSP who teaches a research course. The symposium had four presenters; one female and three males. The panel of discussants comprised of three male professors and one female. At this symposium participants would present their work-in-progress or completed research and receive feedback from professors and audience members. The professors serving as moderators take turns critiquing participants' research before opening up the floor to audience members for questions and feedback. The first presenter is a female, an

ENSP graduate and professional engineer who is currently working towards her doctorate. Her research examines how electricity is conducted in the field. She connects her laptop to an overhead projector and uses PowerPoint to present her work, utilizing a combination of texts, charts, and graphs. At the end of the presentation she takes questions from the professors and then from the audience. The second presenter is a male. He gives a presentation on the effects of soil erosion on farming and presents samples from different geographic areas and regions in Cameroon. At the end of the presentation, he is advised to narrow down his sample and make his project is less ambitious. The third presenter is a male from the Faculty of Sciences at the University of Yaoundé 1. At the end of his presentation, he is chastised for being unprepared and for not having enough data. To round up the session, the Assistant Director encourages students and members of the audience alike to work towards publishing more papers. He reiterates the importance of publishing papers for academic and professional growth and asks interested parties to contact him and other panel members for guidance and resources. He also highlighted the need to project ENSP to the globe through published empirical studies.

3.6.2.6. Electrical Engineering Lab

This class provides practical activities to complement lectures received in class. Dressed in blue overalls, students would crowd around a table holding machinery on which the day's activity is based. Each student has a piece of paper and pen and would take down notes as the teacher explains, parts, functions, and uses of the machine. The room has various functioning and non-functioning electrical devices. There is defunct street light and other heavy equipment which are utilized during different phases of the lesson. At the beginning of the activity, the teacher would instruct specific students to lift machinery off the floor and place on the desks for further examination. When this happens male students would take the lead.

At the end of each lab session, students are required to write a report in addition to responding to a set of questions. These questions are given to students at the beginning of class with no two students having the same set of questions. Students have to answer the questions during the course of the lab exercises and turn in completed work to the teacher at the end of class.

Sometimes the teacher assigns group projects. During this session, the male teacher is very short tempered and irritable when students don't provide correct answers to his questions. When a student later asks him to clarify a question, he responds,:

“C'est moi qui pose les questions ici, pas vous” (I am the one who asks questions around here. you don't.)

In the courses of the lesson, the teacher asks student volunteers to place heavy equipment on the table. A girl calls out loud “où sont les garçons” In other words, “where are boys” to do the heavy lifting? This remark is made tongue-in-cheek with the female student ventriloquizing a patriarchal discourse while at the same time articulating that the classroom is a gender-neutral. As if in response, two girls pick up the machine and place it at the center of the table. The teacher connects cables to the machine to find alternative energy. As the reactions changes with each connection, the students become very excited as they see theory come alive. They comment on the levels of electricity with each new connected cable. At the end of class, student volunteers give a recap of the goals and objectives of the exercise while the teacher passes out more homework to be completed before the next class.

3.6.2.7. Student Organized and led Associations and Club Meetings.

I also attended several Students Associations and Club Meetings. During my field visit campaigns for the presidency of the Student Association was on going. I observed the presidential campaigns and sat in a debate featuring the two candidates vying for presidency. This debate, which occurred in an amphitheater, was formatted according to the US model. The three moderators, one of whom was a female asked the candidates to clarify their positions different issues. They also took questions from the audience and moderated the discussions. Neticia, the female moderator later told me that while it was her first time addressing such a crowd, she had had initial reservations when approached to serve in this capacity because of her stage fright and fear of public speaking. But watching her moderate the debate and quiet down the crowds, she looked very comfortable in her skin and on a public stage.

While the debate initiative was laudable, the campaign was ill equipped for this exercise. There were no microphones to project candidates' speeches to the audience. Additionally, the noise from the audience was uncontrollable and drowned the candidates' voices. Notwithstanding, the exercise was energetic with students dressed up in the colors of their favorite candidates; blue or white. It was a very hot day and the campaign strategists brought in water, juices, and snacks for the audience members. At some point the Vice President of the Association, who was also one of the candidates for Presidency invited me on stage to give a speech. I declined the invitation for two reasons: I had not been notified earlier and thus had not prepared a speech. Secondly, I planned on staying neutral during the campaign and did not want to be seen as endorsing a candidate. I had earlier met the Vice President during my initial visits and been referred to him as an authority figure who could help recruit male participants for my study. We had met briefly during which I told him of my intentions to conduct research at ENSP and my intentions of having some male perspectives in my study. While he had promised to help navigate the process, his heavy involvement in his campaign and conflict schedules proved challenging for us to work together.

Unfortunately, the debate was cut short by a teacher who had to hold class in the amphitheater. While the administration was aware of the campaign activities, the teacher had not been notified that his classroom would be utilized for the debates. Despite pleas from the campaign strategists and the crowd, the teacher insisted that the debate be terminated. Students had to move across campus to another amphitheater in order to continue the debates. In the process, a considerable amount of time was lost and the candidates did not have enough time to delve into issues and articulate their different points of view as planned.

During this campaign, I also found myself playing the role of a photographer. I always had a camera with me during my fieldwork and would take pictures of events and activities at opportune moments. I thus took pictures of the sights and sounds of the campaign. Because the campaign did not make provisions for a photographer, I became the "official" photographer and was solicited to take pictures of groups and specific individuals.

I also observed Club Meetings during which designated club members did presentations followed by a question/answer sessions. ENSP has many student organizations and clubs which connect students with a stronger sense of community while providing opportunities for students to engage in organizational and leadership development. These organizations serve as outlets for self-expression, sharing of talents, and networking. Each department has a club or association with members primarily from the department. To sustain the activities of the club, students are charged a small fee for membership. The club meets once a week during lunch breaks. Club

activities include presentations from members and periodic lectures from guest speakers, who for the most part are professionals in the field. The President of the club, who is usually a third year student decides on the activities in consultation with members of his office. Sometimes associations serve as support centers where students in upper grades tutor students in lower grades. Additionally, senior students provide survival tips and strategies to the junior students to help them cope with the stresses of school. The clubs also organize field trips to corporations and industries and sometimes liaise with these organizations for internship and future job opportunities for club members.

3.6.2.8. Sports and Recreation

Apart from ping pong, there are little or no recreation activities at ENSP. A lone ping pong table which is stationed between two classrooms in the lower part of the campus is a highly contested area. Male students have not been shy to exclude female students from this space. At some point female students were not allowed to play. They complained to the staff in charge of sports before their rights were restored. Students would play against each other during breaks or lunch. With just one table, one ball and two ping pong blades, there are usually more spectators than there are players. Students would crowd around the table to watch, cheer, and/or comment on the games. Sometimes one or two audience members would take the role of referee. A game between a male and female would usually draw a good audience with members eager to witness the outcomes. Since the audience is predominantly male, it is a rare occasion that the audience gets to root for a female contestant. During one of such matches, Agnes a third year student faces Gilles a male student. Agnes, an eighteen year old student, loves to play ping pong because as a way of relaxing. On this particular day, she is dressed in skinny jeans and loose white top. She has long hair extensions with hot pink highlights. She is very determined to win and is leading her opponent, Gilles who gets booed by the audience members for trailing behind a female. Each time Agnes scores a point, she would do a victory dance while the audience members would chastise her opponent Gilles for failing to catch up. At some point, Pierre, an audience member tells Agnes “Tu n’es pas gentille” (You are not nice) Upon further probe, Pierre explains that his comments were meant to articulate his beliefs that girls could not possibly beat a male. He is one of those who had chastised Gilles saying “Comment peut-t-il se laisser battre par une femme?” (How can he let a women beat him?) While his comments reflect the opinions of some students who hold that females at ENSP are intellectually and physically inferior to males, in this case they further serve to energize and motivate Agnes who becomes more determined to win the match. She not only wins her first opponent but almost beats a second opponent. When she is eventually eliminated from the game, the predominantly male audience cheers in relief. Notwithstanding, Agnes is elated despite the lack of support from the audience.

3.7. Data Analysis

Once the above data sources were identified and collected, analysis continued by reading and rereading all collected documents. According to Altheide, (1996) data analysis generally consists of “extensive reading, sorting and searching through your materials; comparing with categories, coding and adding key words and concepts; and then writing mini summaries of categories.” In the same way, I spent numerous hours working my way through data, reading and sorting documents according to their status as primary and secondary data sources. While

reading each primary and secondary document, I made notes about patterns and irregularities that emerged from the data which helped inform my subsequent analysis. Next I developed coding categories, reflecting different settings. Situation codes allowed me use units of data to understand student perspectives at ENSP- how they define the student life, what they hope to accomplish, and how they navigate through the institutional hurdles. My coding also included viewpoints held by students-their constructions of self in relation to other social actors at ENSP. I also coded research subjects' ways of thinking about people and their understandings of each other and classified activities that captured students joking around, engaging in classroom discussions, or holding casual conversations. Building on insights gained from textual and discourse analysis, my reading and analysis of the documents followed a multilayered approach that examined presences as well as absences in the text. Using established methods of qualitative inquiry as a guide, I employed coding and categorization processes that made use of both inductive and deductive approaches (Bogdan & Biklen 2007, Coffry & Atkinson, 1996; Denzin & Lincoln, 1994; Miles & Huberman, 1984; Patton 2002) Combining institutional ethnography with methods of critical discourse analysis, I used two different, yet complementary approaches to data analysis. As is common to ethnography, I thus engaged in an interactive process of data collection and data analysis (Miles & Huberman, 1994). Using a discourse analysis framework provided a useful lens through which to create descriptive and interpretive codes, allowing me to focus on both linguistic and non-linguistic practices.

According to Miles and Huberman, data analysis should not be isolated from the rest of the study. It is not a linear series of steps but rather a "continuous, interactive enterprise"(Miles & Huberman, 1994, p. 12). I therefore began my data analysis while collecting data. I wrote down notes during key interviews and meetings, regularly reviewed field-notes, and wrote memos describing emerging themes. These reflective memos informed future interviews and observations.

3.7.1.Transcription

I did several stages of transcription. During the first round, I was most interested in documenting content. I did not paraphrase, but rather wrote verbatim what informants said. Once I had selected focal transcripts, I did a more careful and consistent data transcription. And finally, when analyzing texts in relation to arguments I was developing for the written chapters, I checked the transcription a third and fourth time. Considering transcription as a critical step of analysis, I did my own transcription. Because of my lack of access to resources and literature during my field visit, the transcription conventions were not followed accordingly although I tried to the best of my ability. While I transcribed all of the interviews, I selected places of conflict, disagreement, and moments in which learners were asked to reconsider their daily activities and identities in new ways.

3.7.2. Coding

While I came to the study with particular orientations and questions, I used an inductive approach to data analysis, seeking to be open to 'surprises' presented by the data rather than searching for evidence to fit my research questions (Miles & Huberman, 1994, p. 61). I began this process by reading through field-notes and transcriptions and assigning "descriptive codes," or labels to segments of texts representing "a class of phenomena" (p.57). Initially I read the data

asking myself, “what is going on,” which led to descriptive codes of practice. Seeking to describe, rather than interpret, at this stage I developed codes using the language, metaphors, and discourses of the interlocutors. I made a list of these initial descriptive codes and then organized and categorized them according to the patterns I was discovering. The processes of developing descriptive and interpretive codes were not discrete but rather informed each other; new understandings developed through initial readings and interpretation of data. I used the following questions recommended by Gee (2005, pp. 11-13) to focus my attention more specifically on language and how language was used to index identity, activity, relationships, connections, politics, knowledge:

1. How is this piece of language being used to make certain things significant or not and in what ways?
2. What activity is this piece of language being used to enact?
What identity or identities is this piece of language being used to enact, (or get others to recognize as operative)?
3. What sort of relationship or relationships is this piece of language seeking to enact with others (present or not)?
4. What perspective on social goods is this piece of language communicating (i.e. What is being communicated as to what is taken to be “normal,” “right,” “good,” “correct,” “proper,” “appropriate,” “valuable,” “the ways things are,” the way things ought to be,” “high status or low status,”)?
5. How does this piece of language connect or disconnect things; how does it make one thing relevant or irrelevant to another?

While coding provided a means for discerning similarities and patterns, it also provided mechanisms for fragmenting data in ways that allowed for different kinds of exploration(s). The utterances and texts used in the analysis draw on prior texts and connect to social issues, societal beliefs, customs and traditions associated with the ways of being in the Cameroon society. In articulating their thoughts, individuals at ENSP use language and forms that echo certain educational issues and gendered framings that span across distance in time, space, culture, and institution. Institutional texts and individual utterances evoke the many discussions on what it means to be gendered in the Cameroon society. Statements on gendered roles, access to formal schooling, equity and opportunities, training a small section of the population to serve as leaders and engineers, competitive entrance examinations, and gendered representations of self and the other(s) are all layers of intertextuality that highlight the conflicts, resistance, and contestations that arise as women seek to gain access into institutional spaces that have been historically reserved for males.

I carefully read my transcribed data, line by line, and divided the data into meaningful analytical units (i.e., segmenting the data). Whenever I located meaningful segments, I coded them with descriptive words or category names. During the process of coding, I also kept a master list (i.e., a list of all the codes that were developed and used in the research study) which I reapplied to new segments of data each time an appropriate segment was encountered.

Based on the above, I created the following categories of descriptive, interpretive, and inductive codes:

Demographics Participant demographics Family background Parents education level Parents profession	Relationships Academic Friendship Romantic Dating Family	Courses Course content Grades Professors Class heads Cohorts
Student Clubs Leadership Activities Rational Meetings	Life out of School Family Responsibilities Recreation Relationships	Taking Up School Space Classroom Group work Roles Student engineer
Major Why major Choosing a major Investing in Major Internship/placement	Leadership Student clubs Class Heads Skill building Networking	Performances Gender Class Femininity Masculinity
Discrimination Stereotyping Sexism Resistance Confrontations	Routines Class schedule Homework Time constraints Arrival/departures	Home Life Renting Living with parents Living with guardians Living in dorms
Identity Representations of self Representations of other(s) Identity markers Negotiations with self (identity struggles) Agency	Student Codes Smart Math and Science Capital (cultural, social/economic) Technology	Talk Joking around Class talk Cultural clichés Gossip
Ideology Individualism Heterosexuality Group belonging Engineering student	Sports Classroom Peer Sport rules Spaces	Technology Internet Computers Access Availability

Examining data in its original form and fragmented form provided an opportunity to brood over the data as suggested by McCoy (1995) and to allow for themes, patterns, and stories to emerge on multiple levels. The coding process thus allowed me to consider intertextuality-how the different texts spoke to one another. Finally coding provided an opportunity to examine particular issues and identify regularities and irregularities across discourses over time. Following the coding phases and the parallel process of interrogating the visible, key concepts were traced within and among texts in order to: (1) make connections among them (Silverman,

1993; Coffrey & Atkinson, 1996); (2) develop constellations of meaning (McCoy 1995); and (3) identify subject positions discursively constituted by the various texts. Informed by my analytic notes, I examined the coded data for conceptual patterns and linkages to identify the overarching discursive themes that emerged from the data. Themes included women circumventing the power hierarchies at ENSP to create agentive selves, ways in which they disrupt the vulnerable woman narrative, and how they too sometimes participate in playing the gender card. These processes enabled me to consider how coded text reflected and shaped discourses and how these discourses produced particular subject positions such as the vulnerable woman, women as change agents, and women as scientists and engineers. Through the process of examining these subject positions, I sought to understand what premises underpinned the ways in which gender was constructed and identified the systems of meaning that allowed for these positions to take form.

3.7.3. Role as a Researcher

I begin with the acknowledgement that the researcher is an instrument of the analytic process (Lincoln and Guba, 1985). As such, the data analysis is shaped by the experiential and conceptual lenses that I bring to bear on the data. For this reason, it was vital that I develop familiarity with such key concepts as power, knowledge, and subjectivity as they are understood and contested among feminist, critical and post-structural frames of inquiry.

Related to the conceptual and experiential lenses of the research, another central element of discourse analysis is researcher reflexivity. Reflexivity is “the process of reflecting critically on the self as a researcher, the ‘human instrument’” Being self-reflective is a process of seeking to understand how race, class, gender, religion, and personal/social values influence a researcher’s perspectives of the power dynamics of the research setting, the phenomena under study, and the researcher-respondent relationship” (Bloom 2002, p.290). I developed and maintained reflexivity throughout the research process by recording regular entries in a journal where research-related “...assumptions, experiences, worldviews, and theoretical orientations...” (Merriam et al 2002, p.6) were foregrounded and traced.

As well, a commitment to reflexivity emerges from the acknowledgement that researchers are multicultural subjects with life experiences and theories that shape perspectives that are not simply set aside when conducting research. As such, it was crucial that I acknowledge my positionality and actively reflect on how it may limit and/or enhance the analytic process (Denzin & Lincoln, 2000; Merriam et al., 2000; Oleson, 2000). As a student of color who has lived in various countries and communities, I may be quite conscious of gender-based discrimination by virtue of my experiences as a female in a patriarchal society. However, while I am aware of the classism and racism in the various countries that I have called home, my identities during the data collection period as a graduate student from the University of California and naturalized US citizen provided me with a degree of identity privilege that tends to be invisible to those who carry it (McIntosh 1988). As result, I tried as much as possible to blend in the student community through my mode of dress and ways of interacting with students. At the same time, my activities made me stand out as an outsider.

My several interviews which were carried out during lunch and break times, my meetings with the authority figures at ENSP, and my stash of technology (Apple laptop, Ipad, and iPhone, two cameras) to help with the data collection process, brought some attention and accorded me some privileges. As such, I worked harder to be conscious of the material effects experienced by those whose subjectivity do not carry such markers of privilege. Since I was keenly interested in

examining the discursive constitution of subject positions shaped by institutional and individual discourses, it was vital that I commit to self-reflexivity throughout the process.

Relative to my role as “instrument” for this research, it is important to note that at the time of analysis I had obtained my Bachelors from the University of Yaoundé, my field site, and acquired robust training in qualitative and quantitative research as graduate student at the University of California at Berkeley. Additionally, I had also trained and worked as a teacher in both Cameroon and the United States. My familiarity with the education system in Cameroon provided me with an insider’s perspective for this inquiry, which affected the research in a number of ways. My insider perspective helped me collect data and facilitated my understanding of how gender is situated in formal learning contexts in Cameroon. Additionally, my access to a network of professors at the University of Yaoundé facilitated my orientation at ENSP as well as access to institutional data. The University Rector served as Director of Studies during my student years at the University of Yaoundé. My connection to him greatly facilitated access to the University and ENSP. To maintain professionalism at all time, I would introduce myself and my research at the beginning of each interaction (interview, classroom observation). Although I was primarily viewed as a researcher, it sometimes proved a challenge to engage in matters concerning institutional gender inequalities with male professors and authority figures. A few were most often respectful and open to discussing their understandings of gender as it plays out at ENSP and the larger Cameroon society. In cases of resistance, I abandoned my script altogether and resorted to improvised casual conversation where I deftly inserted issues in gender.

During interactions with students, staff and professors, I was framed as woman, a Cameroonian, an American, and a Berkeley doctoral student, amongst others. Most individual inquired about my interest in Math and Science, while some wondered if I was an engineer in training or a journalist (as I was constantly writing down notes and taking pictures). Just like the subjects in my study, I found myself straddling multiple identities at any given time. A product of this very patriarchal society, my dissertation topic and site selection were intentional as I intended to foreground women who like myself have been able to break through the restrictive patriarchal systems on one hand but who on the other hand, are absent from the narratives, institutional discourses, and literature on education in Cameroon and the larger society. Attentive to my role as an instrument of analysis and interpretation in this study, I paid close attention to my assumptions and experiences. Using a blend of interpretive and critical approaches, I employed these means to sustain my insider/outsider positionings of this inquiry throughout the data collection process.

Chapter 4: Representations and Understandings of Gender

My study employs a proper use of context to allow cultural factors both to describe and give meaning to the research environment at ENSP. As a result, the research carried out is largely qualitative in character and pays close attention to the cultural nature of both the content of the research and the processes involved in carrying it out. In my efforts to ensure this balanced approach, I utilize participant observations and interviews to underpin not only a cultural system of classification but systems of representation, as well as different conceptualizations of space, time, and gender.

Because Cameroon scholarship is “thin” on most subjects, the unique context and history of formal education in this country makes it a fascinating place for advanced educational research. While others may frame the lack of local research as limiting for “literature reviews”, I regarded this limitation as an opportunity to be among the very few to open up new layers of inquiry in Math, Science, and Technology Education in Cameroon. It was indeed exciting as I embarked on the research. Also interesting is the fact that little is understood in Cameroon contexts about the relationship between culture, language, identity, and education. My research was thus conducted in part to fill this gap by embedding the study in the local political and colonial context to allow for an essential understanding of the discursive practices at ENSP. Furthermore, to understand the traditions, character, and assumptions about education and training that are central to ENSP, I began the study by examining the relevant history of formal education in Cameroon. In the process of situating the education practices at ENSP, I also highlighted the borders and boundaries of that history. My historical review thus not only looked at formal education through pre-colonial to contemporary Cameroon, but went further to examine the French and Anglo-Saxon traditions to understand how the discursive practices at ENSP, a French-inspired school of engineering which trains engineers and scientists in Cameroon and the surrounding regions, are shaped by both cultures. It was thus necessary to carry out an examination not only of the content of the research activity but the processes involved. That said, in moving from design and purpose through to writing up and disseminating the findings, the research was guided by ‘where’ and ‘why’ dimensions as well as the ‘who’ and the ‘how’.

While scholarly studies on education in Cameroon vary in approach, most are focused on basic and secondary education. Additionally, they are conducted using sparse country-wide statistical data to arrive at the research findings. My study differs in that I focus on a particular site, an institution of higher learning, to examine how the discourses taken up by social actors and subjects in this learning space contribute to re/producing particular images and constructing gender in the context of Math, Science and Engineering Education. Using ENSP as a field site, I examined the nexus of identities of these social actors in power relations that are constantly shifting, rendering individuals at times powerful and other times powerless. My study is thus the first to use discourse analysis to examine gendered constructions through the lens of discourse theory.

The findings presented in this chapter are based on field site observations, interviews, policy documents, and supporting data collected at ENSP. While discourse analysis focuses primarily on the written and spoken text, attention to the context in which the texts occur is also important. For this reason, I situate the study within the socio-cultural and economic context of Cameroon. I draw on information provided in records and interviews collected from ENSP, as

well as brochures and policy documents on girls' education in Cameroon to position the study within the broader context on gendered identities in education. I selected interviews, classroom observations, and policy documents from such government institutions as the Ministry of Women's Affairs in Cameroon. I also looked at global funding institutions such as The World Bank and focused on the discourses as they represent the primary means by which gendered identities are articulated, foregrounded, and positioned. In so doing, I highlight the multiple and competing discourses to convey the contestations at the *Ecole Nationale Polytechnique* at the University of Yaoundé 1. I also underscore the dominant discourses circulating at ENSP and examine how they re/produce various subject positions for women in higher education. While findings from this research may seem critical of some of the practices at ENSP, it would be a misunderstanding to consider this research a criticism of the institution. Arguably much has improved for women and girls in Cameroon over the past several decades; however statistics still indicate that marked inequities remain for female faculty, students and staff working and studying in formal institutions of learning. As stated in the introduction in this study, the lack of research in Math, Science and Technology Education in Cameroon as well as gender inequity and inequalities in higher education prompted me to conduct a qualitative study through the lens of discourse theory. At the same time, in undertaking the research, certain limitations were identified. These included the low capacity of institutions in Cameroon to collate and store data and limited information on projects that are being implemented on Science and Math and girls' education. This slowed down the process of data gathering and sometimes allowed for conflicting messages when information was transmitted by word of mouth by authority figures. While these limitations will be considered when reviewing the findings, it is my hope that they will also inform future research and work in education in Cameroon. That notwithstanding, other reliable data sources were identified and the outcomes of their examination are the foci of the following paragraphs.

This chapter could be divided into three sections. The first section deals mainly with the status quo, the roles as established or inherited that states the all too obvious fact of the patriarchal dominance in the exercise of power, occupation/ownership of space, possession of authority, assumptions of male leadership, all against female second fiddles, subservience, subaltern roles, and dependency. While those findings are expected, the fact that those constructions are taken as the normative even today speaks to the uphill battle that female students are confronted with, and which the authorities are in no hurry to tackle. The second section reveals the determination of the women who compete for roles and spaces hitherto considered male. The articulation of their own voices challenges the social constructs that define them as 'others' and 'outsiders'. Section three discusses femininities and masculinities as a complex interplay of discourse and discursive practices. It exposes the complications and resistance towards women who dare to break out of typical/traditional roles to assume leadership positions within their various communities.

4.1. Subject Positions

How are subject positions discursively produced at ENSP? The data from this study reveal that one of the dominant positions is that of females attempting to overcome obstacles and barriers that prevent them from gaining access and succeeding at a historically male institution of education and profession. In Cameroon, son preference, where boys' social, intellectual and

physical development are favored over girls, has translated into more formal schooling opportunities for boys and exclusion of females in top leadership positions in both public and private sectors. Girls are thus relative 'absent' in ENSP, an institution modeled after the French *École Polytechnique*, which has traditionally prepared technocrats to serve in the French government and industry. Established in 1794 to teach military and civil engineering, the *École Polytechnique* in France has been one of the most privileged routes into the elite divisions of the French civil service. Selecting students for admission is based chiefly on national ranking in competitive written and oral exams; the *École Polytechnique* in France did not open its competitive entrance exams to girls until 1972. In like manner, ENSP was set up in Cameroon to train civil servants to serve in the government. The institution also trained engineers to help with the development of the country. After Cameroon gained independence from France in 1960, ENSP was created in 1967 with the assistance of the French government, to prepare graduates for immediate integration into the public service and government corporations. And while entrance into this institution was based on a competitive national examination that focused on Mathematics and Physics, it was not until 1990 that this entrance examination was open to females. Up until then, females were conspicuously absent from ENSP as students and professors.

Additionally, ENSP operates in a subculture that is steeped in a traditional patriarchal system. As a result, females who are considered subject to male authority-with male characteristics being considered central to decision-making process at family, community and national levels - are excluded from positions of leadership (Ajaga Nji, 2000). Women who pursue secondary and tertiary education are encouraged to prepare for care giving and support occupations such as nursing, teaching, clerical services and lower administrative services (Tchombe, 1997). In this regard, formal institutions of learning in Cameroon are invested consciously and unconsciously with authority to reproduce dominant ideologies, hierarchies, and gendered culture and thus serve as sites for gender construction and reproduction. While women are often socialized into pursuing careers in the humanities, males on the other hand are encouraged to pursue Math, Science and Technology careers which in turn leads to positions of power and leadership in the community. Data from interviews with female students at ENSP reveal their desire to be considered as capable of pursuing a career in engineering as their male counterparts while female professors express the need to be accepted as equals by their male colleagues. Ebong, a third year female engineering opines.

"It is tough. I sometimes feel I will never be as good as my male classmates. One of the boys in my class often tells me that no matter how hard I try, I will never come close to being top in my class. But I don't let such talk deter me. I just work hard and prove to all my male classmates that I am as capable as they are."

The discourses shape subject positions of girls seeking to enter a previously male domain and participate in activities from which they have been expressly or tacitly excluded. Yet the female subjects at ENSP position themselves and are positioned as "outsiders/within". I borrow this term from Patricia Hill Collins who uses it to describe the Black woman's "unique standpoint on self and society" (1991a, p.11) underscoring her subordinate status in the labor market along with her African derived traditions of self and community. This term conveys the often contradictory location in which female subjects find themselves at ENSP. They have gained access into the institution as students, academics, and administrators. By virtue of their

location within the institutional structure, they have become insiders. Yet they continue to be discursively positioned as outsiders within an institutional culture that can be described as male centered. According to McIlwee and Robinson (1992), the culture of engineering values behaviors and orientations consistent with the male gender role. To succeed at ENSP thus means looking, talking, and acting male. Such discursive strategies not only position women as opposites of men, but place them outside the boundaries of ENSP.

In addition to the outsider status, which shape a vulnerable woman subject position, other discourses at ENSP work to shape images of women as potential victims in need of both physical and emotional support and protection. These discourses not only re/produce the vulnerable woman and outsider subjects, but also position women as supplicants dependent on the institution to make change on their behalf. Meanwhile yet another discourse, a discourse of feminism, intersects and conflicts with the outsider and vulnerable women discourse by discursively constituting females as capable and tenacious change agents. In the following analysis, I examine these discourses of access, femininity, and feminism and consider how they construct multiple and competing subject positions.

4.1.1.The Outsider

How do the discourses of access re/produce the woman outsider subject position? Data from the interviews with female students, professors and staff make clear their desire to be on the inside. Since its inception in 1961, the University has had just one female Chancellor who briefly occupied the position for two years. Within the senior management at ENSP, there is one lone female, the Director of Research. Overall, six females are part of the faculty of sixty-seven members. Of this six, three are lecturers; one is a senior lecturer while two are Associate Professors, one of whom serves as the Director of Research at ENSP. A female has yet to attain the position of full professor at ENSP. The lack of female leadership and representation make the case that women remain underrepresented in important aspects of ENSP. While female faculty members bemoan gender inequities at ENSP, the senior management holds a different viewpoint. According to the Director of ENSP, contrary to what others might think, women have more chances of being nominated into leadership positions. He traced the lack of female representation within the administration to the lack of qualified females in the field of Math, Science, and Technology. To hold a senior management position at ENSP, individuals must have attained the Associate professor status which means being a faculty member at ENSP for a minimum of five years and publishing a minimum of 6 articles in peer reviewed journals.

Professor Boyo, Associate Professor at ENSP, and Professor Wolva, lecturer in the Faculty of Science at the University of Yaoundé hold different viewpoints. In their explanation of the lack of female leadership at ENSP, they highlighted a culture where women are considered less capable than males. At ENSP the senior management positions of Director and Assistant Director at ENSP are selected by the Presidency of the Republic, while the Counselor of ENSP and middle level management such is nominated by the Minister of Higher Education. In this very traditional society where women are considered lacking in the leadership acumen, the public space is still considered a male space. As a result women are not readily considered capable of serving in public office. Care of their home and family are supposed to be their top priority and responsibility. To these female faculty members, it therefore comes as no surprise, that women do not occupy any senior management positions at ENSP. Further insights were offered to explain the absence of females in senior management. To Professor Boyo, career progression for women is hampered because the guidelines for promotion are not very clear. She

mentioned instances where junior faculty acquired management positions in the University system without having fulfilled the conditions of promotion. Such individuals rose up the career ladder to assume positions of leadership while she was passed up. Because of the lack of clarity in guidelines and the absence of uniformity in implementation, she could neither contest the decision nor deny the fact that she had been overlooked for promotion.

At ENSP women are thus discursively constituted as academically inferior to their male counterparts. As a result, female students and professors feel the need to work twice as hard to earn respect in this male dominated environment. As professors, they not only have to be well prepared for class, but have to be very knowledgeable in their subject matter content. Professor Boyo recounted how she was challenged during her first year as a lecturer at ENSP. Male students would ask questions to test her aptitudes and skills as a professional. She recounted her first day in class during which a male student remarked that the “Professor looks good enough to eat”.

Objectifying women at ENSP is common place. Female students are often reminded of their inferior status and bias against them is made salient at every opportune moment. Not only are they constantly taunted and teased by their male counterparts, but their belonging at ENSP is often called to question with male students referring to them as “weak”, “incapable” and “less intelligent” than boys who are ‘naturally gifted’ in Math and Sciences. While there are no rules to curtail such behaviors, the female professors take up such occurrences as challenges to prove themselves.

Dela, a female fourth year Computer Engineering student recounted her class experience during which she was booed by the males for asking too many questions. Regarding her questions as cognitive deficiency and requests for clarification as “classroom disturbances” she was dissuaded by her male peers from interrupting the class with her interrogations. But Dela’s quest for knowledge would not be curtailed and such behaviors from her peers only pushed her to ask even more questions and make her male peers understand she was at ENSP to stay.

The vulnerable women subject position reproduced through the discourses represent females who want to be welcomed into spaces that have actively discouraged them from being there. They desire to be insiders at ENSP. As faculty members and students, they want to locate themselves *within* the departments that have been dominated by men. They believe the official language of ENSP should *include* them, as should the curriculum and traditions of the institution. It is important to note that the female discourses do not construct an image of an outsider content to be so. Rather, they contribute to the shaping of a women outsider who wants to be granted permission and ultimately welcomed inside- welcomed to those institutional spaces and practices that have thwarted or continue to thwart and exclude their presence and participation. Professor Boyo would like to have the same infrastructure as members of senior management in ENSP- an air-conditioned room, Internet, appropriate technologies and access to the latest publications- to enable her to churn out publications and keep abreast with the latest scientific publications and technologies. Professor Wolva also yearned for the institutional support to nurture her budding career and academic growth.

Female students expressed longings for basic services such as bathrooms, a student lounge or cafeteria where they can unwind from stressful class sessions and socialize during lunch and breaks. At the time of my field visit, there was one just bathroom for students in the entire campus. Facilities for women were not only lacking but this lone bathroom was always secured with a lock. In cases of urgency, students would resort to relieving themselves in the

bushes behind the classrooms. Access to the latest publications is non-existent. The school library is in dire need of up-to-date scientific journals while laboratories most often are equipped with outdated technology and machinery. There, a fourth grade Electrical Engineering student, bemoaned the lack of power in some buildings.

“How can we call ourselves Electrical Engineering students and at the same time have no power in the classroom? Our institution could take such challenges as teaching opportunities by assigning us classroom projects to figure out how to make the electrical systems work”

As such the dependency discourse provides that women must rely on the institution and their colleagues to create change on their behalf. Female students by virtue of being the minority have to work in groups with boys. Sometimes females actively seek to belong to groups made up of boys because of the belief that boys are smarter. When I probed Gisele, a member of one of such male dominated groups, she had this to say:

“Our male classmates always seem to know all the answers. They are confident, participate actively in class and always volunteer to go to the board to provide answers during test and homework corrections. They also act like big brothers, always encouraging and helping me with homework when we work together in groups”.

The above examples portray how a particular discourse constructs women as reliant on the males in the institution to provide for, advocate for, and protect them. The reliance supports the dominant discourse of femininity that shapes the feminine woman as passive and thus dependent on the masculine man (or institution) for support and protection.

4.1.2. The discourse of Access

The education discourses in Cameroon contribute to shaping the outsider subject position through a discourse of access that is closely tied to understandings of equity. The call for access has been central in the discourses of the Cameroon government through the Ministry of Social and Women's Affairs which was initially established by presidential decree in 1984. In December 1997, in a bid to improve the status of women in Cameroon, the Ministry of Women's Affairs was given the following mandate.

“The Ministry of Women's Affairs shall be responsible for drafting and implementing measures relating to respect of women's rights and strengthening guarantees of gender equality in the political, economic, social and cultural spheres.”

The call for access is also reiterated by the Millennium Development Goals, the eight international development goals that were officially established following the Millennium Summit of the United Nations in 2000. One of the goals which member states, Cameroon included, agreed to achieve by 2015 was to promote gender equality and empower women. This entails providing more access to educational and training opportunities for women to enable them gain access to knowledge, information, and new ideas that will help them question, reflect, and act on the conditions of their lives. Access has also been reiterated through The Committee on the Elimination of Discrimination against Women (CEDAW) which informs the Ministry of Women's Affairs' policy development and program implementation. However, it is not access

per se which interests me here. Rather it is the discourse of access and how this discourse produces and positions particular subject positions that I examine in the following paragraphs. The access discourse produces the woman outsider subject position and in so doing, shapes understandings of equity that are primarily quantifiable.

Through this study, I have identified three kinds of a discourse of access offered by government institutions and international organizations. I have linked the three together because they describe efforts at mainstreaming and including women in formal schooling, yet I consider them separately because each frames the problem of inclusion/exclusion differently. For instance the access discourse is made most implicit through policy declarations such as *The Integration of Women in Development*, *the Multi-sectorial Plan of Action on Women and Development*, and *the National Plan of Action on the Integration of Women in Development* which were drafted and approved by the Ministry of Women's Affairs in 1997 and adopted by the Cameroon government in 1999. Analysis of the data led me to develop three sub categories of the discourse of access:

1. Access that calls for women to enter and participate in the formal institutions as well as the social networks that support them;
2. Access that calls for greater representation and involvement in arenas dominated by men;
3. Access that calls for women to be welcomed, valued, and affirmed by the institutional culture.

The call for access to enter and participate in formal institution is most pronounced in the discourses of CEDAW and the Ministry of Women's Affairs which states:

(a) The same conditions for career and vocational guidance, for access to studies and for the achievement of diplomas in educational establishments of all categories in rural as well as in urban areas; this equality shall be ensured in pre-school, general, technical, professional and higher technical education, as well as in all types of vocational training. (CEDAW)¹⁸

(b) Access to the same curricula, the same examinations, teaching staff with qualifications of the same standard and school premises and equipment of the same quality. (CEDAW)¹⁹

(c) Adoption of a new school-oriented Education Act emphasizing the compulsory and non-fee paying nature of primary education in Cameroon and non-discriminatory access to education for children of both sexes. (Ministry of Women's Affairs, 1999)²⁰

(d) Establishment of a special fund to provide support to female students of scientific and technical subjects, and other forms of assistance to deserving students of both sexes. (Ministry of Women's Affairs, 1999)²¹

The above texts underscore the role of regional and national bodies in taking appropriate measures to eliminate discrimination against women in order to ensure equal rights with men in the field of education. Such texts not only influence the shaping of the representation and affirmation discourses, but also contribute to understandings of equity as articulated by local and regional institutions. The discourses also support conceptualizations of equity that are

¹⁸ CEDAW: <http://www.hrcr.org/docs/CEDAW/cedaw5.html>

¹⁹ *ibid*

²⁰ Ministry of Women's Affairs National Plan of Action on the Integration of Women in Development

²¹ *ibid*

quantifiable; they highlight that attainment of equity should be measured by the number females present within formal education institutions.

4.1.3. The Discourse of Representation

The discourses of representation focus on women's need and desire for full participation in the university as students, athletes, faculty, administrators and leaders. The same gender imbalance is mirrored in the administration unit of ENSP where all the top leadership positions are occupied by males. Professor Gabireng, the lone female within the top administration tasked with Research ENSP expressed the hope that "ENSP will create a climate which permits and develops opportunities for the full participation of women staff, faculty and students in the decision making process." And while Professor Gabireng acknowledged the lack of female representation at ENSP, she highlighted that the conditions that individuals have to fulfill into becoming an administrator leaves little room for women's success. Women's care-giving roles in the family sometimes interfere with career progression as women have little time out of school to work on their research. As a result female professors have a hard time earning promotion, professional accolades, and recognition within the structures of the University. Professor Kwang who teaches both at ENSP and at the Faculty of Sciences at the University of Yaoundé suggested that more effort is required to increase the numbers of women hired and appointed to upper level administrative positions, particularly as heads of departments, deans and rectors of the university. Such yearnings for inclusion are not only articulated by the female faculty members, but by female students as well. Marthe, the outgoing president of the Association of Female students also evoked such discourses of representation in her discussion of her tenure as president. While the Association of Female Students provides a space for female students on campus, it is just a branch of the umbrella Association of Students, which has always been headed by males. As a result, the Association of Female Students is not financially supported by the ENSP. While the Association of Students receive some funding for its campus activities, the Association Female Students has to raise its own funds and is solely responsible for its sustainability. In Marthe's words:

"I don't think this is fair on the Association of Female Students. I am looking forward to the day when a female will head the Association of Students. When that happens I am sure the funds received from ENSP will be equitably distributed in both organizations. Last year there was a female candidate on the ballot, but she did not secure enough votes to win the presidency."

Blanche, a fourth year Mechanical Industrial student not only shares the same views as Marthe but took specific steps to effect the change in leadership at the *Club Industriel*²² where she had served in various subordinate positions in previous years. She was not only strategic but used her leadership qualities to help her secure the coveted position of the club. She recounted the challenges she had to encounter in her efforts to become the club leader.

"The boys were not very enthusiastic when I indicated I would run for the post of president. In the past, I had served in several capacities in the club such as secretary and social coordinator. I felt I had what it takes to become leader and decided to run for Presidency. My decision did not sit well with the previous President who decided to run for the position again. My decision to run was also splitting our organization as some club members still had allegiances to the sitting

²² Student-led club with membership open to all students in the department

president who was also my opponent. When I won the Presidency, the outgoing male President wanted to sever ties with the club and take his supporters with him. In the interest of the club, I offered him a position in my administration because I wanted him and all his supporters to stay on as club members. My strategy worked and I now not only represent the female members of the school but collaborate with my male peers to build on the success of the club. That was a major accomplishment to me because we need more female leaders on campus”

In my conversations with the Director of ENSP, I brought up the issue of representation. While acknowledging the underrepresentation of females at ENSP, he also evoked another way of representation by citing other fields and training schools in which women are overrepresented. His examples included the *Ecole Normale Supérieure*, (the Teachers training College) which attracts a lot of females because the nature of the teaching job, with frequent school breaks and short school hours, gives female graduates ample time to take care of their families. He also pointed to the School of Medicine which attracts female students because of the focus on soft science subjects such as Biology and Anatomy. At the same time, he underscored the difficulty ENSP faces in recruiting strong female candidates. While ENSP has mechanisms in place to recruit more female students, the challenge lies in getting secondary and high school students interested in Math, Science and Physics. The main problem of 'leakage' thus occurs even before entry into the pipeline. Gender stereotyping that favors males in science; restrictions on young women's access to university education such as pregnancies, early marriage, and heavier domestic workload for daughters are just some of the challenges that prevent girls from taking courses such as Math and Science. The female faculty members at ENSP are not without their own challenges. Women find it difficult to break into the already established network of professors and administrators that is strongly male-dominated. Not only do they not feel welcome in these male spaces, but they do not have the time for socializing after regular work hours. Additionally, females are less able to travel to attend conferences because of other competing commitments.

In above cases, the problem of representation situates women as outside of a desirable location. Whether the problem is framed as under representation or over representation, the focus remains the same—women are outsiders to positions of leadership, as students and scholars in Science and Engineering fields, on decision making committees, and in various activities traditionally dominated by men. In both the case of under representation and over representation, the discourse often centers on the “problem” of women not having the necessary qualifications for particular positions. In this way, the discourse tends to construct the ‘problem’ as a lack/deficiency located in women themselves.

4.1.4. A discourse of Affirmation

Affirmation discourse provides another (yet more subtle) way of positioning women as outsiders. It is a discursive strategy that shapes the woman subject and informs understandings of (in)equity at the institution as it circulates. In contrast to representation, the affirmation discourse of access is identified by the ways in which women's outsider status are acknowledged in relation to the institutional culture.

The following excerpt from Ministry of Women's Affairs is an example:

“The past 20 years have witnessed significant increase - but not sufficient - enrolment of the female population in higher education. They (women) will certainly not accede to leadership posts in higher education or in society in greater numbers until the following issues are addressed:

- Abolition of certain restrictive regulations such as age limits, unfavorable to women in higher education;
- Adoption of a declaration on the new educational policy to combat classroom exclusion, reduce regional inequalities, and remove existing obstacles to education for girls”

Here the affirmation discourse works to construct the outsider subject position. In their recommendation of practices and policies that will create an institutional agenda fully inclusive of and responsive to women and girls, The Ministry of Women’s Affairs looks at equity as a step towards ensuring fairness between men and women to put both genders in positions of equal opportunities and action.

The challenges that prevent women’s full inclusion at ENSP were also the subject of discussion in the interviews with female professors and students. Professor Mariam, a Scientist and Professor at University of Yaoundé highlighted how the institution “fails to recognize women’s professional abilities and achievements.” To her, the systems for determining merit and promotion are neither straightforward nor clearly articulated making them subject to biased interpretation by the higher ups in the department. Additionally there are neither mechanisms nor policies in place to ensure the recruitment and retention of female professors. Interviews with female students also underscore how the absence of females in positions of leadership at ENSP creates an alienating and unsupportive learning environment for them (female students). Gaelle a fifth year Civil Engineering student affirms:

“Men don’t see us as their equals. The curriculum does not reflect the contributions of women. The teaching methods are far removed from my reality. I would have loved to see more female achievements and contributions in the curriculum. I love Professor Boyo’s teaching style. I wish there were more professors like her.”

Judith, a second year computer engineering student states:

“The teaching methods could be more practical and hands on. Sometimes during our practice sessions in labs, students have to share the few working computers. In such cases, the boys always take the lead in using the computer while girls just watch or take notes.”

Pierre, a male student would like to see more females mainly for their supportive roles in group work.

“I like working in groups with girls because they are very thorough. They take very detailed notes and that helps when I need to study for exams.”

It is not uncommon for females to serve as note takers and scribes in group work and classroom discussion. During a classroom observation, the professor asked Marie to write down notes on the board as the class brainstormed through a Math problem. And while the teacher would hold conversations with the predominantly male population in the class, Marie would write

down the notes on the white board without participating in the discussion. She would occasionally ask the male classmates seated in front of the class to verify if the answers she on the board were correct. While the role of note taker could be powerful in small groups settings because Marie could add her twist to whatever she is writing, writing notes on the board while the entire class is discussing tests her understanding and ability to recall details. This could be a disempowering activity because both students and the teacher would not hesitate point out errors and highlight her lack of understanding and efficiency. As a result, Marie asks students seated in front of the class to verify if her notes have captured the main discussion points.

The above discourses highlight an institutional agenda that excludes, ignores, and fails to recognize and respect women. They continually position the woman as outside the dominant institutional culture in spite of subjects' desiring to become a valued part of that culture. While the discourses construct the outsider subject position, women on the other hand are positioned as wanting to be allowed into the institution and its various domains. Female subjects would like to be more involved and visible in the institutional arenas and practices that have excluded or marginalized their participation. While more representation is what the females desire, they also long for affirmation or desiring to be included in and valued by the institution's culture. One could castigate the 'system' for relegating female students to 'outsider' roles, it appears from the anecdote above that there is a kind of 'acceptance' if not 'acquiescence' by the females of those subservient roles as evidenced by the note taking female above. One cannot help but wonder if her assuming of that role is indicative of defeatism or if it is a survival strategy formulated to fit in without the appearance of being 'aggressive'. While these discourses construct the outsider position, this is not the only subject position made available through the data. Gender and sexuality discourses also circulate at ENSP to construct the vulnerable woman position which is, at times, interrupted by a discourse of feminism. Bhasin and Khan (1999:3) would describe the discursive constructions through feminism as an "awareness of patriarchal control and oppression at the material and ideological levels of women within the family, work place, and in society in general, and conscious action by women and men to transform the situation".

4.1.5. The Vulnerable Woman

"Intimidated", "insecure", "scared", "doubtful", "stressed", "torn" are some of the ways that the female subjects at ENSP describe themselves. These characterizations are accomplished through discourse of distress articulated in interviews with female professors and students. These discourses are also produced and supported by a dominant discourse of femininity circulating in the broader social context of this very patriarchal society where women are subject to economic constraints and discrimination. Lack of basic human rights such as the right to education and professional training support the unequal economic and occupational structure of Cameroon that leaves women with few alternatives to advance their interests and/or move up the social and economic ladder. The dominant discourse constructs femininity as an outcome of natural womanhood and reinforces male dominance by shaping femininity in ways that promote women's appeal to and dependence on men (Brooks, 1997, Coates, 1996; Mills 1992.)

Ms. Obiageli Ezekwesili, World Bank Vice President for the Africa Region, highlighted this inferior status accorded to women, by articulating how the discourses name and frame women in Sub-Saharan Africa. At a recent conference on the impact of the global economic

crisis on women in Africa, citing the findings of the latest edition of the annual World Bank publication, *Africa Development Indicators*, she stated “The face of poverty is female,” sketching the portrait of the typical poor African youth. “She is 18.5 years old. She lives in a rural area. She has dropped out of school. She is single, but is about to be married or be given in marriage to a man approximately twice her age. She will be the mother of six or seven kids in another 20 years.”

Pervasive in Cameroon are cultural attitudes of societal preference for boys on one hand, and the deprivation of females and ascribing them to inferior senses of self-worth on the other hand (Tchombe 1997). Discrimination against girls and women in education occurs as a result of son preference which often occurs when families choose to send boys to school while girls stay at home. Aside from financial constraints, there is an expectation that instead of going to school, girls should help in crop farming, animal husbandry, and household activities in preparation for their future roles as wives, mothers, and caretakers of the community. Henriette Ekwe Ebongo, a Cameroon Journalist and recipient of the International Women of Courage Award states:

“Most parents would go out of the way to get their sons educated while most of them would not even bother doing the same for their daughter.... We have many problems with getting women into leadership positions. In Cameroon, there are only 21 women members of parliament (MPs) of a total of 180, and 29 women mayors out of a country wide total of 360.”

Exclusion of females at ENSP and other formal institutions of learning is a reflection of the socio-political landscape which excludes women from public spaces and position of leadership. Thus gender inequality in this very patriarchal and traditional society, is not only a product of that structure, but is deeply rooted in the social and ideological construct which considers men as superior to women. In this system, the hierarchical and unequal power relations control women’s production, reproduction and sexuality while masculinity and femininity character stereotypes serve to strengthen the unequal power relations between men and women. In efforts to alleviate the inequities, The Ministry of Women’s Affairs works on programs “designed to improve women’s conditions of life.”

Together the above mentioned discourses of distress and dependency shape the vulnerable women subject position. I identified the subject position as vulnerable women because these discourses provide that women are insecure and desire some protection from global, regional, and national institutions and governments. At ENSP data from interviews with female professors correlate with women’s helpless state and their need for institutional support. Professor Ava expressed her desire for ENSP to support her in multiple roles as professor and nursing mother. As mother of a young child, there is a lack of supporting facilities on campus such as childcare services, lactation facilities, clean bathrooms and toilets. As such, she cannot bring her child to school when she has to work on her research. Neither can travel for conferences as often as she would love to, nor work on her publications at home because lack of both home and institutional support. Evarine, a female fourth year student who is also mother of a young child expressed the same challenges as a mother and a student:

“ When I was a pregnant no special provisions or considerations were given me. I had to attend classes like all other students. On days when I was sick, I was not excused from my classroom responsibilities. I went through the pregnancy unsupported. My child is now two years old. The

father is also a student at ENSP. While he goes to school uninterrupted, I have to balance child care and completing home and school work. Although we are still together as a couple, I am primarily tasked with raising our daughter. I live with my parents and that is really hard. When I am at school, my mom looks after my daughter but as soon as I return home, I take over her (my daughter's) care. As a result, I can't do any school work at home. During weekends, I have a long list of chores. In addition to cooking and cleaning for the family, I have to take care of my daughter. My child's father sees his daughter when he wants to but he is under no obligation to do so. He does not support the child financially and I am the primary provider."

The Cameroon society propagates the ideology of motherhood which restricts women's mobility and burdens them with the responsibilities to nurture and rear children. The biological factor to bear children is linked to the social position of women's responsibilities of motherhood: nurturing, educating and raising children by devoting themselves to family. Similarly the traditional notion of 'public-private divide' which locates formal education and positions of leadership in the public sphere and family and personal relationships in private sphere serve to reinforce the inequities. While the public leadership sphere is preserved for men, the private domestic sphere is reserved for women as housewives, mothers, and caretakers.

In this gendered culture (James & Saville-Smith 1995), the legal, political, educational and material institutions both create and reinforce expectations about how men and women should behave (Cornwall & Lindisfarne, 1995; Holmes, 1995; Narayan et al., 2000). The gender ideology shapes different lives for men and women by placing them in different social positions and patterns of expectations. Not surprisingly, such gendered patterns are also evident in the administration at ENSP where senior management positions are all held by males while females serve as secretaries and support staff.

While the institutionalized discourses work to construct the Cameroon woman as marginalized, absent from these texts are the counter-narratives that portray Cameroon women as survivors and victors, actively engaged in their own emancipation. Women work as individuals and groups to effect change within their families and communities. At the family level, women wield power through their economic, earning power and position as family matriarchs. They are small business owners, farmers, caregivers and petty traders making significant contribution to the livelihood and wellbeing of their families. At the group level they bond together and pool resources for the community. One of such groups is the Catholic Women's Association (CWA) Cameroon founded in 1964 by the wife of the first Prime Minister of Cameroon, Anna Foncha to enable women's participation in political and church affairs. The Association which now has branches in all regions of Cameroon organizes education classes, prayers and retreat sessions, and leadership training for community members. In addition, they work with women at grassroots and provide training to help them build entrepreneurial skills. At the global level, CWA has represented at The World Union of Catholic Women's Organization (WUCWO) conferences in, Italy (1967), Bangalore, India (1979), Canada (1983), Roehampton, London (1987), Mexico (1994) and Australia (1996). At the regional level, they represented in Nigeria (1984) and Ghana (1990). Bali Nyonga Sisters, Nkumu Fed Fed (NFF) is another organization that portray women as efficient leaders. The group works to defend the rights of children across Cameroon and increase public awareness on women's health issues. With six branches in Cameroon, two in the United States and one in Great Britain, they engage in training, advocacy workshops and a wide range of self-help development practices to bring awareness to women's issues.

These are counter narratives that serve deconstruct the master narratives of the oppressed Cameroon woman, incapable of acting on her own behalf. The examples not only provide multiple and conflicting models of understanding social and cultural identities but also challenge the dominant discourse that portrays a predominantly patriarchal culture that is held to be normative and authoritative.

The above vignettes thus highlight the competing discourses of feminism and femininity at play. While discourses of feminism work through international organizations, local women's groups, and the Ministry of Women's Affairs to interrupt the statusquo, discourses of femininity tend to reinforce it. The texts and utterances of the World Bank, female faculty and students at ENSP are discourses of feminism which highlight the need to focus on improving women's access and status at formal institutions such as ENSP. At the same time, a discourse of femininity still circulates in ways that contribute to shaping and sustaining the vulnerable and disempowered subject position. These discourses, which include benevolent sexism, views women as delicate beings who need care and protection. Such is the case in Adele's class, the fourth year Mechanical Engineering cohort which has four girls and 30 boys. She maintains:

"It is almost impossible for any girl in my cohort to cut class. We are so few in number that every absence would be immediately noticeable. One of the professors calls us 'princesses'. At the beginning of each class, before he takes role he asks "Where are my princesses?"

The professor's utterances frame his female students as fragile and delicate subjects in need of attention and protection. Such statements align with the patriarchal discourses of femininity. They do not only reinforce benevolent sexism, a subjectively favorable, chivalrous ideology that offers protection and affection to women who embrace conventional roles, but they also highlight the consistent and pervasive ways in which women continue to be framed as weak and unequal to their male counterparts. However, there are alternative discourses available at ENSP through which femininity or ways in which women should behave are re/interpreted. In the subsequent paragraphs, I present examples of texts which underscore that multiple and competing discourse exist within a single strategy (Foucault, 1978; Weedon, 1997).

4.1.6. A Femininity Discourse

Numerous scholars have described the shaping of subjectivity through discourse of gender (masculinity and femininity) and heterosexuality (e.g. Butler, 1990; Coates 1996; Kimmel, 1987; Messner, 2002, Mills, 1997, Weedon, 1999). Even while discourse theory maintains that subjectivity is discursively constituted, it simply does not mean that women are passive in the process. As Dorothy Smith (1990b) argues, we all participate as subjects and agents in the social relations of discourse mediated by texts. Smith makes it clear that women and men actively participate in the construction of subject positions and subjectivity by choosing to subvert or reinforce various discourses. However, it must also be recognized that some discourses are more readily accessible than others. These dominant discourses make what is possible to say or think appear to be self-evident or "natural" because of what they discursively obscure. Numerous discourses circulate at ENSP. Some discourses align with and support the dominant discourses of femininity and heterosexuality, while others challenge these. As described in my earlier discussion, the subject positions constituted through the ENSP provide that women are outsiders to the structure and culture of the institution. Yet, as I will elaborate in the following paragraphs,

the discourse of feminism supported by a dominant discourse of enlightenment humanism, can contribute to shaping an alternative image of the change agent.

4.1.6.1. Women as Change Agents

While the discourses of femininity shape the vulnerable women subject position at ENSP, an alternative discourse of feminism also circulates and contributes to constructing the change agent subject position. In contrast with femininity discourses that shape images of women as insecure and in need of protection from the institution and its male leaders, a feminist discourse contributes to women making change in their own behalf. Female students at ENSP meet formally and informally on campus and in peer groups to discuss personal experiences and connect those experiences with understandings of inclusion and exclusion. Once a week the Association of Female Students gather in a designated classroom to discuss issues and brainstorm on solutions that could help students succeed at ENSP. In their efforts to communicate with each other to translate personal experiences in some form of action, the Association produces and distributes a bulletin for students across campus with information and news on upcoming events. The Association has also created a website to highlight female-centered activities on campus and transcend the boundaries of ENSP. Other kinds of consciousness-raising efforts include the organization of women's networking meetings for the purpose of building alliances among professional women engineers and female students at ENSP. During such events, the Association invites speakers, who are also working professionals, to share information about professional life, challenges as professionals and female engineers, and advice on how to navigate through work-related challenges. Other activities such as Job Talks allow students to gain vital information on how to navigate the job market, create eye-catching resumes, and learn about interview tips and techniques. Meanwhile field trips to companies create opportunities for networking and securing internships which later helps students transition into the world of professional work.

The discourse of feminism also occurs when females' accomplishments and abilities are highlighted at ENSP. The Association of Female Students maintains close contact with female graduate students who in turn share job accomplishments and goals with current students in efforts to motivate and encourage them. Thus while the representation and affirmation discourses tend to emphasize institutional leaders as decision makers and women as petitioning leaders for recognition of women's contributions, a feminist discourse places the emphasis on women creating their own space for recognizing and celebrating women's contributions and accomplishments. As such women are positioned as change agents working to influence the cultures of the institution by being proactive in their own learning. The subject positions shaped through the discourse of feminism is one who recognizes constraints of institutional discrimination, but refuses to accept these as inevitable. On one hand students acknowledge difficult learning conditions at ENSP and on other hand, they are bent on succeeding in spite of the hardships. Marie, a fifth year Research student, opines:

“While the conditions make studying difficult, we have learned to cope. If I succeed at ENSP, I will succeed anywhere else.”

Thus images of women circulating at ENSP can shift from that of supplicant and petitioner to a women-centered change agent. Students take control of their lives by actively seeking resources to help them cope. Data from interviews with first and second year female student reveal how they lean on the Association of Female Students for academic, emotional, and social support from senior students. Mezrine, a first year student Computer Engineering student asserts.

“The Association has been so helpful to me. The students in upper grades not only help me with my homework but encourage me when I am feeling overwhelmed. They remind me that they understand what I am going through because they too have gone through the same experiences. In fact, they are like big sisters to me.”

Such discourse of femininity provides an opportunity to avoid subtle yet powerful blaming of women for problems related to inequity (i.e. women’s underrepresentation is a consequence of lack of training and experience; women’s feelings of invisibility are reflective of their failure to be sufficiently assertive). However, this discourse is not as prominent as other discourses circulating and thus the change-agent subject position is often obscured by the more pervasive image of the vulnerable woman.

I have described some of the ways in which the discourses at ENSP construct subject positions for women in relation to male subjects and in relation to the institution. Discourses of access situate women as outsiders of the institution and hold implications for how equity is understood and assessed. Femininity discourses of distress and dependency produce the vulnerable woman subject position as petitioner of institutional (and typically male) authority. At the same time, a discourse of feminism interrupts these femininity discourses and produces a change-agent subject position where the focus is on recognizing women’s contributions and potential while also acknowledging the constraints of institutionalized sexism.

4.1.6.2. Achieving Women: A Discourse of Triumph

Thus far, I have discussed the vulnerable women and the woman outsider subject positions produced through the discourses of femininity and access. At ENSP, there are always plural and competing discourses constituting power relations within the institution. While the dominant discourse constructs stereotypical femininity and binary gender differences, there are resistant or oppositional discourses that deconstruct prevailing gendered identities. While the dominant gender discourses present female subjects who are weak and in need of institutional and male protection, a discourse of feminism also circulates and shapes the change agent subject position. The discourses taken up by the social actors at ENSP thus do not stand alone in constructing the subject positions. The discourses of gender themselves compete with other institutionalized or less formal discourses in the classroom such as discourses constituting peer or teacher approval, and modes of teaching and learning. Individual speakers are implicated in the business of negotiating meanings according to the way they position themselves, and are positioned by specific discursive contexts. They also employ discursive strategies that circulate and intersect within broader discursive fields (Weedon, 1997). In the process, these discourses neither stand alone, nor are they static. Rather, discourses are dynamic constructions; they circulate, intersect, and/or collide with other discourses. Some discourses are more dominant than other discourses and hence more readily available for the shaping of subject positions and

subjectivity. In the following paragraphs, I highlight a dominant discourse of triumph and analyze how its circulation produces particular subject positions for women.

First, I elaborate ways in which the articulation of problems and solutions for women is predicated upon a configuration of women as a collective. As a result institutional discourses contribute to producing a homogeneous view of women as a group which may lead to unintended and exclusionary consequences for many females working and studying at ENSP. “Inevitably, characterizations of women’s ‘nature’ or ‘essence’ - even if described in as socially constructed tend to reflect perspectives of those making the characterizations “ (Nicholson, 1994, p.94). I offer this quote as a starting point for thinking about possible implications of the ways in which women are presented as a coherent group. Phrases such as “women’s needs,” women’s issues” and concerns of women pervade the sample of institutional texts examined in this study. The Ministry of Women’s Affairs highlights that “gender issues are still considered women’s issues” and “*women in Cameroon* constitute the poorest of the poor”. Mention is also made of the “*underprivileged women* in the society while efforts are made to bring “greater awareness of *women’s needs*. The configuration of women as a category is quite central to the articulation of problems and solutions within institutional texts. The following excerpts is one of such examples that reflect ways in which texts typically articulate problems related to sex-based discrimination:

(1) Promoting gender equality and improving the *status of women* has been a constant concern for UNESCO (Tchombe 1997)

(2) ‘The World Bank is a partner and one of many players in the international drive to.... *empower girls and women* (World Bank Education Strategy 2020, “Learning for All.”)

(3) There are major barriers impeding *women’s progress* (Prof Gabireng, ENSP)

With an estimated population of 16.5 million inhabitants Cameroon’s population is dominated by women. Females occupy 51% of the population, while rural women make up 65% of the female population (Sikod, 2003). These women from different linguistic and socio economic backgrounds hail from two hundred fifty ethnic groups such as Bali, Ewondo, Duala, Bamiléké, Bakweri, Bassa, just to name a few. Females from such a wide spectrum are usually lumped together in one category. Such is the configuration of women in the proposed policy solutions below.

- Promotion of appropriate technologies for easing women’s work
 - Improvement of women’s access to credit and to production factors.
- (Ministry of Women’s Affairs)

Taken together, these quotes serve as an example of the problematic ways in which institutional texts tend to homogenize women. This is potentially problematic in that policy recommendations built on unified configuration of women may unintentionally contribute to the marginalization and exclusion of difference within the category.

The Anglophone students at ENSP, a Francophone institution, face additional challenges. These students who have gone through the Anglo-Saxon education systems from elementary school have been suddenly thrust into the French system of education at ENSP where lectures are carried out entirely in French. Additionally the difference the Anglo-Saxon and Francophone systems presents a dramatic shift in curriculum and teaching methodologies for them. While

students from Anglophone Cameroon thus have to learn in a new language and work with a new curriculum, no additional support is provided for these students with different linguistic and educational backgrounds. Joy, a fourth year student earned her Bachelors in Physics from the University of Buea, where she studied primarily in English. Upon successfully making the entrance exam, which secured her a spot in fourth year Mechanical Engineering, she had a hard time integrating.

“It was a huge learning curve for me. Not only did I have to learn the language, but had to study advanced engineering concepts in French.”

Njile, another student of Anglophone origin mentioned the challenges learning in French.

“I would sit in class sometimes and not understand the lecture. I would have to ask my class mates for help when classes were over. When I became confident enough to speak in class, I would ask questions in French. I was afraid that if I asked my question in English, the teachers would not understand my enquiry and might not answer correctly. That would be detrimental to my understanding of the subject matter.”

While Cameroon has a multitude of ethnic groups, languages and socio-economic scales, the different groups are not usually differentiated in targeted interventions. Not surprisingly, the needs of many subjects are slighted because policy initiatives are undergirded by this view. The configuration of women as a homogeneous group thus undergirds the discursive constitution of the faculty/student subject positions. While female students often articulate the difficult learning conditions at ENSP, at the same time, they are determined to graduate from this institution and become future engineers. As Joy would concede, “long hard days at school only serve to prepare us for the real life of professional engineering.” The School Counselor is also of the view that “the school of engineering is not for the faint of heart. Here we insist on hard work and professionalism.”

Across the board, students also articulate how their success in the national competitive exams is an understanding that they have to be proactive and depend on their personal initiatives for success. They believe they are the best and brightest in the entire nation and have to apply themselves to the best of their abilities. Out of class, they work and study in groups. Oftentimes, they connect with peers in the clubs/associations of the various departments, and at other times they seek advice and help from outside mentors and professionals. Additionally, students who have opportunities to pursue internship opportunities with companies pay particular attention to the hands-on concepts. They not only learn the practical side of engineering but also bring back new knowledge to ENSP which they share with fellow students during group work and club meetings. Constituted through a discourse of triumph, this subject position characterizes students’ experiences primarily from a perspective that seeks to re/make them in a professional image. As such the discourse positions them as individuals who would do whatever it takes to succeed at ENSP and fulfill their aspirations of becoming professional engineers.

4.1.7. Discourse of Elitism

The discursive positioning of elite status of ENSP is an excellent example of what Bourdieu refers to as ‘institutions entrusted with the education and consecration of those who are called to enter the field of power’ (Bourdieu, 1996, p. 74). Indeed, texts from the school’s history and brochures very clearly articulate the extent to which ENSP draws on its networks, history, and language to construct an ‘elite’ institutional identity.

ENSP is modeled after the French *grandes écoles*, the premier institutions of higher education, from which the upper echelons of French society are drawn. According to Craig Smith of the *New York Times*, (Dec. 18 2005) the *grandes écoles* from which many of the country's leaders emerge, accept just a handful of students. Of the 350,000 students graduating annually from French high schools, the top few *grandes écoles* accept only about 1,000, virtually all of whom come from a handful of elite preparatory schools. Nothing represents the stratification of French society more than the country's rigid educational system. Most of the country's political leaders, on both the right and the left come from the *grandes écoles* while the National School of Administration has produced most of the technocrats who have governed France.

Just like France, Cameroon is proud of its engineers, proud of ENSP that educates them and proud of the fact that it created the first engineering school in the Francophone Sub Saharan African region. The brochures on ENSP describe this institution as a “*grande école*” which trains an elite corps of engineers to cater to the social and economic development of the region. They further state that ENSP hopes to become a model training institution in the entire African continent because of its competitive international standards and focus on regional development. The school’s website also highlights the institution’s national and international networks, its close partnership with L’INSA Lyon²³, and its 35 years of collaboration with France. In addition, the school brochure underscores the role ENSP has played in training cadres for civil service in Cameroon and elsewhere, by referencing the 2000 high level professionals that have passed through ENSP and have gone on to serve as leaders in private industry and in top government positions. The above discourses of excellence and elitism can be traced to the French pride and engineering culture which is still evident in current times. Each summer in Paris, an enormous military parade commemorates Bastille Day, July 14 1789, when commoners stormed the royal fortress and wrestled power from the King, formally initiating what later became known as the French Revolution. The parade is led each year by 2nd year students from the École Polytechnique, the top engineering school in France. At the key moment on the key day when the entire nation is focused on itself and its accomplishments under the leadership of a republican government, France makes its elite engineers visible to an extent found nowhere else in the world. Those engineering graduates who make it into the state administration, in fact, constitute the highest-ranked occupation in the country. (Downey, and Juan. 2005)

The discourse of elitism is thus characterized by a focus on individual achievement and access to an exclusive institution. The entrance examinations offered once a year in all the ten provinces of Cameroon are so competitive that candidates who gain entrance into ENSP wear their successes like badges of honor. The rigorous preparations in Math and Physics and rigorous selection processes leads to an engineering diploma and is directly linked to high social prestige. The male and female students at ENSP understand the prestige ENSP affords them and are not

²³A premiere Ecole Polytechnique in Lyon, France

shy about articulating how intelligent they all are- for each one of them were top candidates from their various regions. Joelle, a third year Electrical Engineering student explained how her success at the entrance exam propelled her to a new level of prestige. Because the entrance results are published and broadcast nationally, her entrance and belonging to this exclusive institution brought spotlight on her village. Mather, a third year student of Civil Engineering mentioned that her high school friends don't socialize with her as much because of their perception that she is too smart. While Mather acknowledges that she does not have as much free time to socialize, she has a hard time understanding why her friends see her differently. Agnes, a fourth year student understands why and explains how the new identities adopted at ENSP are in conflict with their former selves and allowed for a shift in their interests and discourses. Prior to enrolling at ENSP, she would engage in small gossip with her friends but now her conversations focus on classroom projects, engineering concepts, and future aspirations. And while she is excited about working with machines and tools, identifying patterns, and thinking up solutions to problems, such discourses fail to resonate with her non engineering friends who view her as "too smart" because of her belonging at this "elite" institution.

While elitism discourse serves as an example of how power operates discursively, it does not stand alone in normalizing particular approaches to constructing the social status and professional subject position. Rather, this discourse, like others, is supported (and contested) by a web of other global institutional discourses. For example, the discourse of elitism is supported by the broader discourse of enlightenment humanism that privileges autonomy, reason, and progress as the means of achieving human rights and freedom (Weedon 1999). A discourse of elitism also intersects and is closely aligned with the discourses of excellence, quality and productivity circulating in the broader society and within institutions of higher education (Hey and Bradford, 2004; Readings, 1996). An ENSP education guarantees subjects' upward mobility. Graduates from ENSP gain the most societal power in Cameroon as their training provides them such proficiencies and degrees that will translate into political tools, economic mobility, and ultimately power. Accordingly, this dominant discourse not only produces a prestige hierarchy that is dispersed through the social body, but also serves to differentiate and regulate. The discursive formulation of subject positions and subjectivity provides that elitism allows subjects to see themselves according to particular "standards" established through ENSP.

4.1.8. The Discourse of Leadership

Leadership like the concepts of achievement is offered by policy statements and subjects at ENSP as means of improving women's status. The discourse provides that leadership is a desirable activity for women and that increasing number of women in leadership positions will serve to improve the experiences of women as group. I have included leadership discourses because its use is typically linked with understandings of professional achievement and success. The discourse of leadership emerges in the data in the classroom observation and interviews with students. Most often, however, the leadership discourse is taken up to describe how women have ascended or aspire to hold positions of leadership at ENSP. Female students have attained leadership positions such as Class Heads. Out of the six classes that I regularly observed, four of them had females as Class Heads. Their responsibilities include, taking roll, entering test grades in grade book, and making photocopies of handouts for classroom distribution. When a professor has homework assignment or any form of literature to disseminate, the Class Head collects cash

from students and makes copies for the class. Sometimes copies are made out of pocket for immediate distribution to students, while the Class Head keeps student payment and debt log. The Class Head is also the contact person for visiting professionals and researchers. During classroom observations and in the absence of the classroom professor, the Class Head would ensure that I had all the information I needed, taking inquiries and attempting solutions. In some cases s/he would take me to the professor's office for further advice and would always reserve a seat for me during classroom visits.

A male student Francois, had a different take on why there are more female head of class than males. According to him "female students are a minority. To make them more visible, the professors give them this position to force them into the limelight and make them more proactive in class."

While Francois insinuates that females depend on the institution to be handed leadership positions at ENSP, a different discourse interrupts his narrative. Blanche, for example, who sought the post of presidency in her club had to challenge the males who had previously held this position. Additionally, upon winning the Presidency she sought ways to create a balanced government by having a good number of males in her administration.

Typically, the data draws a connection between leadership and achievement for individual female students and female students as a group. In other words, students who become designated leaders at ENSP have not only advanced their own status (and thus helped all women) but they are also perceived to be in a position to influence the culture of the institution that will benefit all women. Such is the case of the Association of Female Students which makes it clear that leadership is a critical ingredient for improving women's status. As noted earlier, members of this Association make decisions that will improve the learning environment for all girls at ENSP. Unlike the dependency strand of discourse where women are positioned as supplicants to the predominantly male administration, the leadership strand takes a different form by providing that women become leaders by virtue of their skills and expertise. It also implies that becoming a leader is something that requires education, training, mentoring as well as opportunities. The Association discourses clearly contribute to the education training and mentoring of girls/women at ENSP. At the beginning of each academic year, the Association holds a welcome meeting for new students during which they are briefed on the organization's mission and vision of creating safe, supportive, and gender-friendly spaces on campus. The organization not only outlines the activities targeting females but encourages new students to become members in order to benefit from the organization's initiatives. Such outreach and mentoring activities take place throughout the school year.

The discourse of leadership is also evident in girl's involvement in the planning of club activities such as workshops within their various departments. One of such workshop speakers included the Human Resources Director of a major telecommunication company and the Managing Director of Maetur, a civil engineering company in Cameroon. In preparation for the workshop, female students were highly involved in the planning and set up of the event space. I observed them setting up the room, preparing the appropriate media, (powerpoint, overhead projector) and seating arrangement for the guest speakers. Additionally they had provided light refreshment for guest speakers as well as audience members for the social mixer that ensued. Additionally these females had coordinated fund raising activities to cater for all the expenses incurred including the honorarium for the invited speakers. Such activities do not only expand women's leadership sphere at ENSP but also helps cultivate a positive campus climate where both genders are equally represented.

An examination of the leadership discourse provides an opportunity to consider how this discursive strand contributes to the constructing of the professional woman subject position. In producing this subject position, the discourse establishes leadership as a desirable set of traits that females at ENSP have developed and refined in order to improve their status as individuals and as a group. Thus the discourse re/produces a particular view of leadership-a view that accords an elite status; a view that provides that female students like other professionals, possess particular leadership qualities such as critical thinking, collaboration, and problem solving. In this sense, leadership is portrayed as a set of traits or qualities that are natural to women or that might be learned by women in the course of their daily lives and education at ENSP. As such the discourse implies that women are not deficient or lacking in leadership skills. Rather the lack of women who are adequately prepared to assume the leader position subject is shaped by the dominant discourses in this patriarchal society, which portray women as deficient. Within this discursive constellation, women are viewed as lacking leadership potential while men are not, further reinforcing power differentials between the genders and shaping women's status accordingly. Interrupting the above narrative is the Director of ENSP's explanation on the lack of female representation on campus. For women to move into key leadership positions within the university, they would have to fulfill certain eligibility conditions. These include teaching at ENSP for a set number of years and publishing a required number of articles. The leadership discourse thus works to differentiate by re/producing an understanding of leadership that warrants specialized training and development. According to the Director, women with "potential" for leadership need to be identified and leadership skills need to be cultivated. The shaping of the leadership ideal through the discourses of achievement, professional development and leadership may seem self-evident in the context of ENSP-after all it is an academic institution, an enterprise designed to educate and provide training for professionals. Indeed it is precisely this predictability that evidences the normalizing power of the discourse of leadership. This discourse supports particular versions of achievement and success and become accepted as normal. In other words, they are no longer seen as just one of many possible perspectives. The dominance of the discourse makes it difficult to see how dominant meanings of achievement or leadership might serve to disempower many women whose self-identity does not align with these particular meanings. The deployment of the leadership discourse is not uncomplicated and serves to illustrate them within/against positioning of female subjects. Discourses are multiple and competing and despite what might appear to be an uncritical deployment of the leadership discourse, it is sometimes interrupted by other discourses most notable the discourse of femininity and feminism.

4.1.9. Family Matters-A Discourse of Caregiving

The tension between the discourses of access and the discourse of care-giving is illustrative of the conflicting identities within ENSP. The discourse of access, as it circulates at ENSP, marks the insider status of subjects who have gained entrance into this institution as professors and students because it re/produces dominant institutional values, hierarchies, and social class. At the same time, however, the subjects are discursively positioned against the institution as the care-giving discourses of femininity interrupt the discourse of access. While females at ENSP are proud of their belonging to this exclusive institution and work hard to prove themselves as scholars and future engineers, their narrative is often interrupted by their acknowledgement of their roles as care givers in the society. Professor Ava, a trained Scientist would love to further

her career by attending conferences and publishing scientific journals, yet her role as mother to a young child takes priority. Eva in efforts to balance her roles as student and mother, cannot participate in her department's club activities as she would love to. Professor Gabireng maintains that women are not interested in research because of the time it takes away from their other roles as caregivers. Upon graduation from ENSP, girls look forward to getting married and raising families, thus rendering the pursuit of further scholarly endeavors challenging. Wife and mother hood thus become hurdles, standing in the way of advancing their research, and consequently their careers within the University.

While the above examples reflect the discourses of vulnerability and dependency, they also are strands of the dominant discourses, which works at various moments to dis-empower women by providing discursive interruptions to the discourse of professionalism and leadership. I consider these care giving discourses to be a component of the larger discourse of femininity because they encompass characteristics traditionally described as feminine. The caregiver subject position that emerges from the discourse embodies the qualities and values of nurturing and emotionality. The care giving strand of discourse was also manifested at a research symposium during which student researchers and professors presented their completed work or work in progress for audience review and critique. At the end of the session, the audience was invited for light refreshments in an adjoining room. Daphne, the lone female researcher in the group quickly morphed from her professional researcher role to her care giving role by serving all the professors and audience members with food and drinks. She ensured that everyone had had something to eat and drink before helping herself. As a sign of respect, she would bow slightly while offering plates of food to her superiors who were mostly males.

The care giving discourse is also evident from interviews with male students who are of the opinion that engineering is too strenuous for women. While they enjoy collaboration with their female counterparts, they believe women are not cut out for such hard work. They also hold that women would be best served in professions such as teaching because the teaching schedule afford them ample time to take care of their families. Gisele also highlights how the care giving roles at home sometimes prevents her from focusing on school work. While she has to help with cleaning and cooking for the family, her male counterparts are not tasked with such activities. One male professor even cautioned male students against dating and eventually getting married to females from ENSP. To him, women not only bring into their marital homes the competitive streak and critical thinking skills acquired at ENSP, but the long hours on the job prevents them from taking care of their families. Yet another male student, Gilles, told his female classmate "The only project you will ever conceive is a baby."

The caregiving strand of the femininity is thus often articulated in statements from both male and female subjects in their concerns and their abilities to adequately care for family in the context of their professional work or academic study at the University. These excerpts also provide a glimpse of how the care-giving strand of the femininity discourse is set at odds with the discourse of professionalism. Coincident with traditional institutional values, the discourse of leadership is deployed to position subjects as achievers, leaders, and professionals within the institution. In contrast, the discourse of caregiving contests predominant institutional values, thus challenging or positioning women against these self same institutional values.

4.2. The Gendered Dichotomy

Together, discourses of femininity and masculinity shape the cultural constructions of women and men as gendered beings. As Jennifer Coates (1996) explains, dominant discourses of gender provide that masculinity and femininity are perceived as “natural” outcomes of being male and female respectively. Further gender discourses merge with the dominant discourse to construct the masculine (man) and feminine (woman) as two halves of a complete whole (Butler, 1990). As I have detailed through this analysis, the discourses at ENSP underscore the tensions and conflicts in the various positionings of female subjects. While discrimination against women in formal institutions in Cameroon have been documented (Tchombe 1997), its mention is virtually absent in the official ENSP texts. Ironically the gendered dichotomy is often evidenced in the naming of the subjects at ENSP.

Data from interviews with subjects at ENSP underscore the pervasive focus on the males in ENSP. In my interviews with the Counselor at ENSP, I enquired how ENSP supported the female students. Citing recent studies that call for the engendering of institutional spaces to accommodate females in higher institutions of learning, I inquired if there are any structures in place to accommodate females at ENSP. The counselor responded. “That would be discrimination. At ENSP, there is no discrimination. Everyone here is equal. Students are admitted to ENSP not because of gender but because of their cognitive abilities.” These institutional discourses are also supported by individuals at ENSP. Professor Nga, during a Mechanical Engineering lab session told the class, “There are no females in this class. Every student at ENSP is a male.” In other words, once accepted in ENSP students have to suppress their feminine side and take on the qualities and traits of the inherently male engineering profession. The counselor, like many educators, believes in a gender-neutral cognitive ability that supersedes gender and makes male and female students equal in intellectual aptitude. This view is readily taken up and supported by some female students who feel they are as capable as men. Women who thus cross traditional gender boundaries and integrate into historically male institutions have to assimilate into roles that had been reserved for men. In so doing they also preserve the clear hierarchical boundaries between femininity and masculinity that typically characterize institutions such as ENSP. For these females, having the same opportunity as their male counterparts to become engineers proves to be a meaningful experience that raises their confidence and allows them showcase their individual achievement and cognitive abilities. They have to act and speak like engineers. Their discursive and bodily practices characteristic of male engineers thus provide a powerful manifestation of the process of masculinization, identified by Sasson-Levy (2003) as an essential aspect of women’s integration in masculine roles. As women embrace or are asked to embrace masculine discursive practices, masculinity thus becomes associated with engineering. In this respect, it appears that masculinity legitimizes female students as “real engineers.” Within this gendered regime, the masculine is clearly preferred over the feminine while engineering and femininity are perceived as antithetical.

In the construction of gendered identities at ENSP, femininity and masculinity thus operate as two poles of the gender dichotomy where the masculine (man) is positioned as active and the feminine (woman) as passive. Dominant gender discourses construct masculinity and femininity as mutually exclusive components of a gender/sex split. As a result, by virtue of their

belonging in ENSP, female studies have automatically assumed male identities by possessing traits such as critical thinking and competitiveness, which are traditionally considered as male. In other words, whatever traits are understood to characterize the masculine also serve to connote the antithesis of what is taken to be feminine-or that which is culturally defined as masculine oppositionally defines feminine. Active/passive, strong/fragile, aggressive/submissive, independent/dependent, invincible/vulnerable are further examples of gender binaries that depict that masculinity and femininity as polar opposites of the cast gender divide. Further, this gender configuration is typically cast in ways that privilege masculinity over femininity. An exception to this discourse occurs when women act in ways that are perceived to be too masculine. There are no want of cases in ENSP where girls who study too hard and work to become top of their class earn the moniker “Mary Book”. Male students would make fun of such individuals for spending too much time studying and not enough time socializing. As a result, females find themselves situated in a lose/lose situation where the performance of femininity is often devalued (and disempowering to them), yet the alternative performance of masculinity often results in negative consequences as well. Thus, women are in a double bind-disadvantaged when they act in gender appropriate ways and when they don’t (Frye, 1983).

Not surprisingly, some female students at ENSP do not want the school paying too much attention on girls by engendering the learning spaces. To this group of students, girls should study in the same conditions as the boys because both genders are equally capable. According to them, females are constantly being ridiculed and framed as less intelligent and competitive than their male counterparts. Further provision of gender sensitive spaces for girls would only speak to their “intellectual inferiority” because that would provide evidence that female students cannot survive the rigorous engineering program.

Thus, like the other dominant discourses, an analysis of gendered discourse involves an examination of its presence and absence. In fact, explicit references to sexual identities are invisible in the official texts of ENSP. According to Foucault (1972) discourse is related to power as it operates by rules of exclusion. The dominant discourse therefore is controlled by male authority figures who have the right to name subject positions, including the masculine and feminine binaries at ENSP. Therein lies the power of these authority figures who silence female subjects not only by according male traits and qualities to females but also by the refusal to identify them as females. At the same time, women can escape these binaries intellectually and discursively by enacting gender in complex ways and taking up a range of fluid identities that cannot be reduced to a single category.

The meanings of these female absences are also influenced by what is present in text. In the case of ENSP, the silences around sexual identity are juxtaposed with the foregrounding of ENSP as the premiere flagship institution in Sub Saharan Africa which trains an elite set of cadres for national and regional development in Cameroon and beyond. The exclusion or marginalization here is not a consequence of focus on professionalism per se, but from refusal to recognize feminine ways of being in the dominant discourses of professionalism and excellence in the institutional texts of ENSP.

While the professionalism, care giving and agency discourses circulating at ENSP contribute to shape the female subjects, these discourses tend to be supported by configurations of women as a collective. Such understandings would fall under the linguistic dimension of the ideological struggle, which according to Bahktin (1981), is at the center of all discourses. ENSP,

a unified and linguistic and social community is characterized by heteroglossia (Bahktin 1981), whereby language becomes the space of confrontation between differently oriented voices as different social groups fight it out on the terrain of language. While the dominant discourse at ENSP strives to make a given sign such a “woman” uni-accentual and endowed with an eternal reified character, resistant discourses rise up to challenge and disrupt conventional understandings offering multi-accentual readings.

4.2.1. The Discourse of Gender Differentiation

During classroom observations, students’ interactions with each other and with the professor appear not to be constituted by a single list of speech features or communication skills but by a complex interplay of discourse and discursive practices. While the formal classroom setting explicitly foregrounded gender as a discourse worthy of investigation, I found it interesting to learn from my interview and observation data just how much student and teachers constructed and thereby naturalized their experiences in the classroom according to constructs of gender differentiation. I observed this process of naturalization operating on two levels. First there was the overt level of reflection in the research interview setting where participants were encouraged to be evaluative of their roles and relationships within the research study. In such instances, students and teachers were not shy about expressing their understandings of gendered roles and behaviors at ENSP. Through such conversations, I got a sense of how some dominant discourses of femininity not only co-exist with the discourses of feminism but how gendered beings subvert and interrupt such dominant discourses. I also noticed how a discourse of gender differentiation surfaced unprompted as common sense thinking in a way both teachers and subjects generalized about many aspects of their classroom experiences, as these examples illustrate:

Federick: “We constantly tease girls about their intellectual inferiority. But they understand we are just joking.”

Mark: “In your survey questionnaires, you should have asked students what gender is smarter than the other. I know boys at ENSP are always top in their classes. I have evidence and class results from previous semesters”.

Elise: “Boys are so mean. During test correction when a girl goes to write out the answers on the board, the boys tell her she is wrong even before she starts writing out a singular response. They are highly critical of girls when we contribute to classroom discussions. But they don’t display the same behaviors when a boy goes to the board to share his answers. Instead they listen and participate in solving the problem.”

Professor: (during a class discussion) “We need a secretary. (To girl Marie sitting three desks from the front row) Go to the board and write out student responses.”

In the above utterances, generalizations about boys’ and girls’ skills, aptitudes and behaviors were usually offered spontaneously and were rarely solicited by me. While I sometimes asked gender related questions when students and teachers describe their experiences in gender related terms, I did not consider that they were necessarily saying what they thought I wanted to hear. Secondly, I realized that gender differentiation is not only a matter of common

sense thinking that routinely informs normal conversation. It is also deeply embedded with the structure of classroom discursive practices. This is manifested, for example, in the roles of social engagement between boys and girls, in their apparent styles of speaking and listening, in small group and whole class dynamics and in teacher-student relationships. At ENSP females try to resist the prevailing norms of masculinity or femininity by working hard to prove to themselves and peers that they belong and will succeed in this traditional male environment. While the dominant discourse of masculinity circumscribe or inhibit female students' contributions in ENSP by closing the possible range of ways of being available to them, female students still assert themselves through other discourses such as feminism. In this manner, they are positioned by different and competing discourses rendering them variously powerful and powerless.

4.2.2. Discourse of Masculinities

Theories about masculinities (e.g., Connell, 1995; Jackson & Salisbury 1996; Martino 2008) suggest that there are multiple discourses (Gee 1996) or ways of being and doing masculinity. These discourses are constructed and reconstructed within the institutional context at ENSP in such spaces as in peer groups, classroom settings, club meetings and sports. These discourses recognize that masculinities and femininities are constituted in relation to one another, and that the discourse of being masculine holds more social status and power than others within particular social contexts (Connell, 1995, 1996; Jackson and Salisbury, 1996; Reed 1999). In this section I draw on discussions that theorize masculinities as they take place within education (e.g., Hinchman, Payne-Bourcy, Thomas, & Olcott-Chandler, 2002, Martino & Meyenn, 2001, Young, 2001, Young & Brozo, 2001) to explore the ways in which ethnicity and social class makes visible the practices of masculinity in ENSP. Evidence of this discourse was manifested in the research data in many ways and intersected with other competing discourses to shape a number of encounters. For example, during a World Bank sponsored meeting to debrief on the efforts to increase female presence at the University of Yaoundé 1, (of which ENSP is a part), one of the panel members had this to say about her male colleague who had taken upon himself to open the floor.

“How can you explain the fact that we are here to talk about gender mainstreaming in higher education; how women can be included in power structures of the University administration. Yet the first person to take the floor is male. Would it not have been logical for a woman to lead the discussion?” (Professor Odom, Professor University of Yaoundé)

In other group settings, in which students were working on a group project, one male states:

“ You girls are too fragile. Let the boys do the work and show you how it is done.”

During a Ping-Pong match, between a girl and a boy where the girl beats her male opponent: Male spectators to boy: “How can you let a girl beat you?”

Male spectator to girl: “You are not being nice. How can you beat a boy in broad daylight?”

Discourses of masculinity are definitely at play in ENSP in the various ways it works to define boys and men's approaches and participation in different social settings. At ENSP males

strive for membership in the more dominant discourses (ones that defines them as real men) and adopt particular discourses that they believe will identify them as members of that particular real men discourse. Their actions include running for student office, taking more turns to speak out in group meetings, taking lead in mixed group projects, chastising a boy for losing a tennis match to a girl, and calling out a girl for beating a boy at a tournament.

The cultural model of masculinity at ENSP is exemplified by the patriarchal society which excludes and silences women in public arenas. Males at ENSP have learned to incorporate and emulate this model of masculinity into the discourses where they claim membership. The attributes of masculinity- intelligence, physical strength, favored gender- is evident in how they represent themselves through language and social practices. In my observations, both students and teachers conceptualized their experiences at ENSP from a clear perspective of gender differentiation justifying its choice as a discursive frame of reference. Ironically Professor Odom was the only female subject in the group and class observations to be gender explicit in her comments and terms of reference, perhaps aware of her “othered” status according to the androcentric principle (Coates, 1993) governing social relations. There was evidence that gender differentiation was inscribing the discursive practices in her group setting and Professor Odom was not shy about expressing it. She further stated.

“In any case I am not surprised. The whole country is steeped in patriarchy with men telling women what to do at each opportune moment. Look at the main political party of the country. How many women are in key positions? So even on issues that directly concern us, men will always have an opinion.”

What emerged from the data after re-reading notes from this meeting and other classroom observations and group interactions was a strong sense that a discourse of masculinity was governing the interactions. Male subjects were making sense of their environment by inscribing discursive practices in which they harness stereotypical constructs of masculinity such as hierarchy, order, structure, dominance, competitiveness, rivalry, aggression and goal-oriented action. This clearly differs from the a discourse of gender differentiation which was applied earlier as conventionalized ways of differentiating individuals’ identities in a world primarily framed according to their sex and gender. In this case, masculinity was a discourse that constituted a kind of resistant subculture within ENSP affecting relationships, terms of engagement, management practices, and ultimately, contesting the institution’s ethos.

4.3. Conclusion

To conclude, I have delineated the subject positions shaped via the dominant and competing discourses at ENSP. In the process, I have provided examples of how the dominant discourses contribute to power differentials in their reflection and re/production of subject hierarchies at this institution. To complicate the controlled, categorical, homogenous, hierarchical, one dimensional and institutionalized understands of identity, I used the discourse theory lens to open up new spaces, allow for a plurality of voices, and think differently about gendered constructions. In so doing, I demonstrated that discursive shifts are possible by evoking more fluid, multiple, ambivalent, and transformative meanings of gender. If predominant discourses of difference support existing inequities evident in the subject positions at ENSP, then new ways of thinking about gender and identity are possible to disrupt the statusquo.

Chapter 5. Gendered Ways of Being an Engineering Student

This chapter takes as its first premise that gender is a shifting, fluid, category, ‘an “act”, as it were, which is both intentional and performative, where “performative” suggests a dramatic and contingent construction of meaning (Butler 1990:139). Gender roles are thus constructed and enacted through discourse (Ochs 1992). Looking closely at the context in which this given community engages in such constructions, the chapter explores the variations and significance in the sanctioning of gender roles. Rather than accepting predefined dichotomous categories, the chapter looks at how the discourses in a school of engineering confirm existing social relationships and behaviors while at the same time introducing new meanings and patterns of behavior. In the process of examining the fluid identities that exist within the dichotomies of male and female, it also teases out the resisting and conflicting constructions and enactments of gender through a variety of discursive practices.

5.1. How the discourses Confirm Existing Social Relationships

5.1.1.Traditional Enactments and Constructions of Gender

In Cameroon, traditions and customs dictate acceptable behaviors and spell out how males and females are supposed to act, dress, and speak in public and private spaces. Such gender roles are made salient to individuals through constant reminders, subtle hints, and overt references to the cultural mores of the given community and larger society. In this patriarchal environment, male/female, girls/boys would be the two distinct categories in identifying, enacting, and sanctioning appropriate behaviors. This gender polarization arises from years of strong dichotomous gender role socialization. From birth through early and later years of schooling in formal institutions, students’ gender determines how they are treated and supported both at home and in their academic pursuits. As a result, the constructed gendered identities in formal schooling environments and institutional discourses conform to these neat divisions between behaviors of ‘male’ vs. ‘female’ through social role assignment and expected behaviors. At the same time, these dichotomies overlook the socially influenced interplay of roles that cannot be placed in neat categories of male and female.

These interactions suggest female students at ENSP are subject to the forces of traditional stereotypes, even though in interviews, they assert that the classroom is a gender-neutral territory. Their discourse shows that they often position themselves not as females but as confident engineers that ENSP puts at equal par with males. Their awareness of the problems related to gender has been made salient to them by the pervasive stereotypical behaviors enacted by them as well as by other social actors in ENSP and within the larger society. Although some female students reported positive experiences in the classroom, several others voiced their frustrations about what they perceived as unequal treatment and different expectations for male and female students. Some female students reported with indignation that men expected them to accept secretarial roles, such as typing reports when working in groups. In such cases, it seems as if male students expect their female counterparts to resign themselves to the roles of paraprofessionals instead of engineers-in-training. Therein lies the tension between the

egalitarian goals of the school and the sexist behavior of their male counterparts. In these respects, the expectations of women to take on secondary roles while working on hands-on engineering projects is similar to behavior patterns found in the larger Cameroon society where females typically are excluded from active leadership roles and often are assigned supporting roles out of the public eye.

Highlighted here are the tensions between the emancipatory principles of the school and the still traditional patriarchal worldview of society at large. These students are in a French-type school that is deliberately gender-neutral and merit-driven. In my conversations with the director and counselor of the institution, they both underscored how ENSP does not distinguish between males and females but looks at individuals' cognitive abilities and aptitudes. That notwithstanding, some male students see no harm in reducing the roles of female students to that of passive observers. According to them, their taking charge and assignment of less cognitive-intensive tasks to females, is meant to lighten the workload to enable them (females) succeed. Male students make reference to the long hours spent in school and intensive lab sessions as practices that could physically and emotionally wear students out. They also make reference to some of the lab sessions that entail working with heavy equipment and machinery, requiring use of physical force. In this regard, male students believe that their taking lead in group activities is meant to facilitate tasks for females and render the learning processes less onerous. They also are of the conviction that assigning note-taking tasks to females should be viewed in a good light because such activities tap into positive qualities that girls inherently possess. To them, girls are more organized and meticulous, traits which help in organizing class notes and materials for group work. Dieudone, a third year Mechanical Engineering student maintains:

“Je suis d'accord que tres souvent je demande aux filles de mon groupe de prendre des notes. Les filles sont vraiment meticuleuses quand elles prennent des notes et cela m'aide vraiment plus tard, quand je suis seul, revisant le materiel ou etudiant pour les epreuves.”

(I agree that I often ask girls in my group to take notes. Girls are really thorough when they take notes and this really helps me later on when I am on my own, reviewing the material or studying for tests).

Such stereotypical expectations of women as caretakers and nurturers are reflective of the ways of the traditional community from which the students are drawn. Stereotypical comments and behaviors are not only exhibited by male students and professors but also by professionals. One female student noted how during her internship at a company, her male supervisor was more concerned about her appearance than her qualifications as an engineer:

“Il m'a demandé .. pourquoi fais-tu le travail d'ingénieur? Une belle femme comme vous devriez trouver un homme riche pour prendre soin de toi. Une fois, il m'a même demandé de sortir avec lui pour prendre un pot.”

(He asked me..why are you doing working as an engineer? A beautiful woman like you should find a rich man to take care of you. Once he even asked me to go out with him for drinks.)
(Veronique, Third Year Industrial Engineering)

Such situations frustrate girls who want to be treated just like the boys and who want to be respected for their academic capabilities, not their physical appearance. Female students thus go to great lengths to prove themselves at this institution and in the process challenge males' low expectations of them. Their attempts to excel at ENSP and prove their worth as capable

engineering students are thus deliberate actions meant to counteract the dominant stereotypical narratives that women are academically inferior. To counteract such stereotypical attitudes, students develop various strategies to navigate academic environments and build comfortable communities. Freshmen for example identify and affiliate with groups in the ENSP to aid them as they learn and make sense of their larger campus environment (Hurtado and Carter, 1997). Academic and social groups, such as the Association of female students, provide academic, emotional, and cultural support, and serve as formal and informal peer networks for female students (Datnow and Cooper, 1997). When female students succeed in enacting identities as competent engineers-in-training, they thus resist any gendered constructions that might frame them as inept and incapable. Their frustration over female stereotyping is a kind of resistance to the traditional beliefs that dictate suitable careers paths for males and females. In this traditional society where the woman's place is still regarded as the home, students are quick to note that they have been nurturing desires to pursue studies and careers in Math and Science, since their secondary and high school years. In defiance of societal beliefs where females expected to take on traditional care giving and supportive roles as teachers, secretaries and nurses, these students sharply veer away from such expectations. Instead they pursue engineering for a variety of reasons, ranging from their interest in Math and high ability in the Sciences, to their desire to be a part of the problem-solving community. In addition, students' acquisition of strong foundations in Math and Science in their early schooling years testifies to the fact that they have harbored dreams and goals of becoming scientists from an early age. They understood from an early age that being adept in Math was necessary for a career in engineering. Some of them were quick to articulate the skills and aptitudes that led them to pursue a career in engineering.

“My plans to pursue engineering really took shape in High School. I really liked Math and Science. I was one of the best in math and science in my class. Initially I thought about civil engineering. After taking physics in high school, I decided civil engineering wasn't for me. Living next door to SONARA in Limbe, I have had opportunities to interact with petroleum engineers. That got me thinking about specializing in petroleum engineering.”

(Joelle, Third Year Student)

Analyzing personal pronouns through American and cultural lenses based on Hofstede's Cultural Dimensions, (1990, p160) particularly the individualism/collectivism (IDV) dimension yields to the following analysis. Looking at the use of pronouns throughout the excerpt, Joelle uses “I/ME/MY” personal pronouns 9 times. Joelle belongs to this highly collectivist culture, where people use the group as the unit of analysis and think of themselves as interdependent with their in-group (family and community). Yet this excerpt demonstrates how Joelle gives priority to her personal goals and interests. Her decision to study Math was based on her aptitudes while her change of academic trajectory was influenced by her interactions with professional engineers. From the excerpt, it can be deduced that Joelle is an autonomous individual who acts independently of her group; she made a decision to study engineering, independent of her family. From information structure and the logical sequence of her ideas and thoughts Joelle's discourse enacts a rational, logical, organized identity that clashes with the ‘vulnerable, helpless female’ that male students at ENSP and the patriarchal society portray her to be.

To another student it is her passion and creativity that led to her choice of engineering, acknowledging the problem-solving nature of engineering as her reason for pursuing a career in the field.

“I like the idea of creating solutions and working with technology. I have always been fascinated with machines and figuring out how things work.”
(Adele, 2nd Year)

From the above excerpt one can deduce Adele’s proactive nature. She uses words like “creating solutions” “working with technology” “fascinated with technology” to articulate her reasons for getting into the engineering field. In defining herself as a problem solver willing to embrace new technologies to solve societal problems, she identifies with the World Bank discourses that promote the use of emerging technologies for societal development. She thus enacts identities that stand in stark contrast to the reductive gendered constructions of some male colleagues and professors. To another student, it was the experiences of a science camp that got her interested in pursuing an engineering career.

“What made me decide on a career in Science was a Science Camp that I attended one summer. It was so different from my regular classes. All the students were females and most of the teachers were females. We did real Science experiments. Teachers were encouraging and gave us opportunities to work in groups and solve problems. When the camp was over, my interest in Math and Science was activated and I knew I would somehow end in a Science career.” (Amélie, 2nd year Student)

The above excerpt demonstrates Amélie deviating from the essentialist gendered positioning that the Cameroon traditional society locks her. Her choice of verbs (decide, we did, work, solve), adjectives (real, encouraging, science, different), and ideological terms like ‘real experiments’, ‘opportunities’ and ‘problem solving’ corresponds to a neoliberal entrepreneurial discourse. While Amélie is Francophone, she insists on carrying out conversations in English, for such speaking opportunities enables her practice her English and perfect her fluency. While her utterance might sound different if she was speaking French, it still echoes the discourse of both the World Bank and that of ENSP who aim to provide relevant training and education that would prepare workers of the 21st century. Amélie and Adele’s discourses are thus layered in simultaneity (Blommaert, 2005). While they occur in a real time, synchronic event, they are simultaneously encapsulated in several layers of historicity. Their utterances reference the gendered constructions of the Cameroon patriarchal society. At the same time they also index the neoliberal perspectives of education funding institutions such as the World Bank. While the Cameroon patriarchal society has always framed women as inept and incapable, both girls have re-categorized such constructions to enact identities that do not reflect the vulnerable women discourse. There are thus several layers of historicity in the above excerpt which include the marginalized woman, the victim, and change agent, rendering the above discourse into a complex and historically layered object. The different layers of historicity to which the social subjects in this excerpt orient themselves and speak creates enormous amounts of tension between continuity and discontinuity in meaning (Blommaert, 2005) and between coherences and incoherences in how women are positioned and how they position themselves within ENSP and the Cameroon society at large.

The excerpts also show females deviating from the essentialist gendered positionings by taking on and enacting new roles and identities that do not neatly fit the two binaries of male vs. female. While the binary does not come from the ENSP administration itself, that claims to be gender-blind, some male teachers and students at the ENSP and the androcentric discourses prevalent in Cameroonian society still place women in strict gender categories. The female students thus veer away from their culturally ascribed roles by engaging in social interactions that demand a more complex notion of socially constructed and manipulated gendered identities. These differences are, in fact, not aberrations of gender identity, but arise from challenges to implicitly conflicting gender roles. On one hand, these women are expected to be actively participating students, assertive in pursuing their scholarly goals. Yet this assertive behavior comes into conflict with traditional gender expectations of non-competition, especially at this time in their lives when their social identities may be at their most binary. However, most of these women do not perceive gender issues as a limiting factor in their academic lives. The very acknowledgement of the gender biases at ENSP, fuels the conflicts they experience. Indeed, these female students are very much aware of their conflicting gender expectations under which they operate and the ways in which gender conflicts affect their conversations, their intellectual development, and their future success as engineers. It is a constant struggle with the females working against the odds to insert their voices, and multiple identities into the discourses of engineering environment at ENSP. They also contest the broader issues of gender and strive in various ways to undo stereotypical notions of gender by taking on behaviors that challenge prior conceptions of gender (Tannen, 1994). They tap into resources provided by the Association of female students, and also work, seek and provide emotional and academic support within their various groups. Thus while gender appears to be a crucial issue, it is both salient and contested in this learning community.

5.1.2. Engineering Identities as Masculine Ways of Being

École Nationale Supérieure Polytechnique, ENSP, is thus an apt setting in which to examine how gender roles are constructed and enacted through discourse. During the years when students are engaged in their studies to become engineers, they may suppress gender identities differences since student academic success at ENSP to a great extent depends on their abilities to deftly accommodate masculine behaviors that conform to the role of engineers. From interviews and conversation with subjects, it is evident that multiple gender roles and conflicts are at play in the discourse of students at this institution. Female students, for instance, recognize the institutional biases that challenge their efforts at becoming engineers. At the same time they frown on any form of accommodation for girls as indicated in the following comments from Alice, a fourth year student. Asked if she is of the opinion that ENSP should provide special accommodations to make the learning environment more conducive for females. She responded:

Non, nous sommes égaux. Les filles peuvent survivre dans les conditions d'apprentissage difficiles. Je l' ai fait. Ceci est une école d'ingénieurs et les filles ne doivent pas avoir un traitement particulier. Nous sommes aussi capables que les garçons. En outre, si

l'école donne tout privilèges il, ne fera que confirmer l'opinion des garçons stipulant que nous sommes moins capables. Avant de venir à l'ENSP, j'avais entendu parler des conditions difficiles de l'étude. j'ai réussi les concours d'entrée difficiles et je suis maintenant en quatrième année. Cela signifie que les filles sont tout aussi intelligentes que les garçons.

(No, we are equals. Girls can survive the harsh learning conditions. I did. This is an engineering school and girls should not be given special consideration. We are as capable as boys. Besides, if the school gives any privileges, that will only confirm boy's opinion of us as less capable. Before coming to ENSP, I had heard about the tough conditions of study. I passed the tough entrance exams and I am now in fourth year. That means girls are equally as smart as boys.)

The above excerpt demonstrates Alice's resistance against any accommodations for girls. Note her emphatic "No" at the beginning of the sentence. In her subsequent sentences, she gives cogent reasons why special accommodations should not be put in place for girls. She also provides evidence- her passing of the entrance exams and her success at ENSP- to support her stance that girls do not need hand holding. In addition, she shuns any attention to girls for fear that their male counterparts might interpret any attempts at feminizing the learning spaces as watering down the standards to enable girls to succeed. If accommodations were put in place for girls, it would only confirm existing opinion that girls do not possess the same intellectual acumen as boys. While ENSP is gender blind and encourages cognitive excellence regardless of gender, male students and some professors still exhibit sexist behaviors. Yet females resist pushing for any measures that might ease the learning process for them. These females are, in other words, suppressing their feminine side while at the same time foregrounding their assertive and competitive selves to align with masculine engineering identities. The institution and male authority figures also contribute to suppressing female identities at ENSP. When Professors utter such phrases as "There are no girls in ENSP. Everyone in this institution is an engineer-in-training" and the school counselor, who happens to be male, frame girl-friendly learning spaces and practices as discrimination against male students, they are in fact silencing the female voices and refuting the existence of girls in ENSP.

Technology has long been considered a masculine domain within which men create the tools of Science to dominate unruly nature. The engineering profession has deep roots in male-dominated military history. The first engineering school arose in France, where technical training was fused with 'cultural socialization that stressed hierarchy, discipline, loyalty, and self-control.....As graduates of these military schools became leaders in civilian society, they shaped organizations and institutions along military and thus patriarchal lines' (Harker 1989:61). Women who enter into these hitherto male learning spaces either take on or resist the gender roles and discourse of this androcentric profession. Manifestations of this androcentricity include a traditional hierarchical power structure, competitiveness in and out of classroom and the desire to create logical, ordered technology to control nature (Keller 1985, Friedrich 1989).

Conversations with students at ENSP reveal that all the students choose the engineering career path because of their passion for designing, building, and working with technology. To them, engineers have contributed to communities, countries, and civilizations by designing and building tools and machines that help improve lives. Students thus look forward to belonging to this cadre of professionals tasked with developing and delivering better technologies for their local and global communities. And while female subjects at ENSP have to enact identities that conform to the traditionally masculine norms of science and engineering -competitiveness and assertiveness- they simultaneously respond to the conflicting, traditional feminine role expectations arising from the social environment. The cultural context in which students at ENSP learn to become engineers is thus both androcentric and gender-polarized. Consider this excerpt

from my conversation with Jeanine a fifth year student who occupied first place in her class during her third and fourth years. I particularly sought to include her story in my data pool because of her reputation of holding top positions in her classes. Asked about her the challenges she faces, she had this to say:

“Être premier de la classe comporte ses propres défis. Dans ma troisième année d'étude, bien étant en classes spécialisées, je posais beaucoup de questions dans la classe. Certains garçons en classe n'ont pas aimé le fait que j'étais curieuse. Je me souviens un étudiant masculin m'a dit de limiter mes questions qu'il pourrait m'expliquer les concepts après les cours. D'autres ont trouvé que mes efforts proactifs étaient une forme de perturbation de la classe. Un étudiant masculin a demandé: Pourquoi perturbez vous la classe?” Leur réaction ne me dérangeait pas. Au contraire, elle m'a incité à poser encore plus de questions. Aujourd'hui, certains de mes camarades masculins de classe n'aiment toujours pas mon attitude, mais d'autres sont arrivés à m'attribuer le respect en tant que étudiante en ingénierie étant inquisitive et compétitive.”

(Being top of the class comes with its challenges. In my third year of study when I moved to specialized classes, I would ask a lot of questions in class. Some boys in class did not like the fact that I was inquisitive. I remember one male student told me to cut back with my questions that he would explain the concepts to me after class. Others saw my efforts to be proactive as a classroom disturbance. One male student asked “Why are you disturbing the class?” Their reaction did not bother me. Instead it spurred me to ask even more questions. Now some of my male classmates still don't like my attitude but others have come to respect me as engineering student who is inquisitive and competitive.)

Analysis of Jeanine's statement provides evidence that women are caught in the tension between conflicting gender demands. In their discursive practices, women display a variety of behaviors that defy gender stereotypes. Jeanine and Alice express their perspectives assertively in ways that is associated with masculinity. By any strict notion of gender as simply a duality of feminine and masculine roles their behaviors would lead them to be labeled as either aberrant, not fully subsumable under either category, hence deviant as either males or females. Within this context, their behaviors could be explained as a socially situated, on-going performance. This model focuses not on ongoing dichotomous differences expected under categorical roles of feminine and masculine, but on fluid enactment of gender roles in specific social situations (Butler 1990, 1193; Ochs 1192). Both girls construct gendered identities through the everyday actions and discourse of participants within a social order at ENSP. From this perspective, the subjects at ENSP can be seen as agents symbolically enacting or reacting to situation-specific gender expectations. Their complex discursive interactions provide a critical site for the examination of gender roles, theories of gender, as well as expressions of and challenges to gender.

5.2. Identity Constructions in the Discourses of Female Engineering Students

Although female students desire careers in engineering and successfully persist through the academic study of the field, they seem separate from it, like “outsiders within,” a term coined by Collins (1986). The intense workloads and fast-paced curriculum of the engineering program challenges and requires them to study long hours to complete their rigorous academic

work. At any given time, the students at ENSP are enacting a wide range of identities- academic, social, and intellectual. These identities not only provide insights into the complexities of their lives as female engineering students but broaden our conceptions and understandings of female students as they persist through their various engineering programs. Students' academic and intellectual identities are observed through discussions of their past, present, and future goals. Meanwhile their engagement in study groups and associations is not only important in the development of their academic identities but helps in revealing their social identities as well. Studying for examinations and completing individual and group projects demands most of students' time and leaves them with few free moments for relaxation. Nevertheless, the majority of those engineering students who discussed the stressful nature of engineering programs also noted their satisfaction with engineering as a program of study. One student noted:

“The past few years as an engineering student have been stressful and consisted of making many sacrifices and spending countless hours on homework and projects to meet frequent deadlines. However, as hard as it was, I am thankful for the problem-solving skills and the work ethic I got out of it. If I had to do it again, I would pursue engineering.” (Sidonie, 4th year Mechanical Engineering)

Others reported that the challenges, stresses, and intense workloads did not undermine their enthusiasm for their respective engineering programs. One reflective female student noted that persevering through the difficulties of her engineering program helped her to develop more self-confidence:

Le programme d'ingénierie est plus stressant que je me serais attendu. Ces défis très souvent testent ma confiance en moi, mais j'apprends toujours comment les contourner et je suis une personne plus forte à présent.

(The engineering program is more stressful than I would have expected. The challenges often test my faith in myself, but I always learn how to work through it and am a stronger person now, Virginie, Second Year Student)

Although similar statements could have been made by male students, the above examples, show females students' positive development of their self-efficacy beliefs, which are a source of internal encouragement and confidence when they perform difficult academic tasks. In spite of the fact that ENSP does not provide students with the most up-to-date technologies and interactive teaching environments, they still find ways to circumvent the rote learning methods. A typical class at ENSP involves teacher lecture and writing formulaic expressions on the board. In class, students seat in rows facing the teacher who is always stationed in front of the class. Neither the teaching style nor the class seating arrangement promotes interactive learning. In the words of one student:

“Teachers mostly engage in lecture, using use chalk and the board. At this point of our studies we should be completing all our assignments in the lab. Instead we perform high level tasks like computer programming using pen and paper and have no way of testing if our codes work.” (Marceline 3rd year Computer Engineering)

How do students overcome learning challenges? By working in groups and sharing resources. Students purchase laptops for individual use and download available free software programs in their various disciplines. They also pay for Internet services to access information online which they share with fellow students. Additionally, students who pursue internship opportunities during various periods in the year, bring back the latest field knowledge and experiences to share with peers in various group settings. It should also be noted that students take the initiative to arrange for internship opportunities through their various networks since ENSP does not facilitate such processes. Both men and women noted that they benefitted from group work to cope with their respective academically challenging and stressful engineering programs. One student especially noted how her collaboration with peers has improved her work ethic and communication skills, and provided opportunities for personal development.

Mes habitudes de travail et la confiance en soi se sont nettement améliorées à la suite de mes différents rôles en travaux de groupe. J'ai aussi appris beaucoup de mes camarades de classe (Juliette, quatrième année en génie civil)

My work habits and self-confidence has greatly improved as result of my different roles in group work. I have also learned a lot from my classmates.” (Juliette, Fourth Year Civil Engineering)

Analysis of the excerpt above shows Juliette ventriloquizing a typical Anglo pedagogic discourse through her use of use of nouns such as “work habits”, “self-confidence”. Her reference to group work and learning from classmates shows proactive students involved in their learning while her use of adjectives (greatly improved, different (roles)), verbs, (learned) stand in stark contrast to male constructions of women as incapable. When students succeed ENSP, it therefore comes as no surprise that they set their sights on higher heights. While some have planned on furthering their academic and professional goals upon completion of ENSP, others marvel at their individual academic achievement and highlight how much they have grown as scholars. One student commented:

“As I look to the future and I am amazed at myself at how far I have come. My interests and circle of friends are now so different. I remember before coming to ENSP, all my conversations with friends were petty gossip. Now such conversations don’t really interest me anymore. With my group of friends, we talk about projects and concepts in emerging science and engineering. My great passion is Physics and I hope to continue to the United States and study Astrophysics.” (Brigitte 5th Year Student)

Such intellectual insight into ENSP includes students’ understanding of the necessary knowledge base, the driving questions, and the operating practices of the field that will nurture and support their intellectual and social identities. The students have developed and maintained multiple identities as strategic and navigational tools to persist through their various engineering programs. These interactions between academic, intellectual, and social identities jointly influence their educational experiences and career aspirations. The different identities that students enact are very dependent on their lived experiences in different contexts and environment. In the academic environment in ENSP, these female students possess strong academic identities. They are fully engaged in their academic coursework and are on track to complete their engineering programs. While they might be sometimes plagued with feelings of

inadequacy, difference, and a sense of not belonging, these female students draw on their networks and peer support system to overcome challenges and succeed at what they are doing. In their continuous efforts to develop their intellectual abilities and identities, students successfully participate in extra-curricular activities outside of the classroom. While their career choices are still in the developmental stages during their early years at ENSP, a sophisticated intellectual identity around engineering begins to emerge as they move on to their various areas of specialization. In reflecting, asking, or understanding specific questions in the field of engineering, these students also develop their social identities in various engineering learning contexts and work environments. In these processes, they interact with professors, peers and professionals in the field and take on multiple identities-social, academic, intellectual and gendered- which intersect, align and conflict with each other at various points.

Interestingly enough, they do not seek necessarily to be successful in Cameroon, but on a global scale. Together with the field of engineering itself, it is these global opportunities that make the gender dichotomies irrelevant for these women. And this has been made possible through an education that is fundamentally French but with a neoliberal twist that is Anglo in origin and is permeated with Cameroonian potential. In this manner, female students grow into an identity that is not necessarily masculine or of a male-dominated Cameroonian society, but that of confident, professional, global engineers.

5.2.1. Gendered Contestations in Engineering Students

In the course of examining the discursive practices of these engineering students, it becomes clear that the women display behaviors that transcend easy boundaries; they are assertive, forceful, facilitative, competitive and accommodating. Sometimes the multiple roles and identities that these female students enact puts them in a double-bind, no win situation: when women such as Jeannine are competitive, they are resisted by peers; when they accept subordinate roles such as note takers and secretarial positions they are taken for granted. Contrary to how some sexist male class classmates and professors portray women as intellectually inferior, these women frequently participate in some classroom discussions and lead many small groups. They are also leaders who are visible within the classroom and in the larger ENSP setting. Yet, at other times these same women remain silent or are silenced in academic discourse. Sometimes their contributions may be seen as facilitative or secretarial rather than substantive or data-oriented. And when they attempt to act in the masculine ways dictated by the engineering profession, they may either be strongly resisted or altogether disregarded for displaying ‘inappropriate’ gender behaviors. Consider the Ping-Pong match between Agnes and Gilles with audience members comprising of mostly males. When Agnes beats Gilles, audience members shame and chastise Gilles for losing to a female. Pierre, a member of the audience later comments:

“Comment peut-t-il se laisser battre par une femme?” (How can he let a women beat him?). He also remarks to Agnes *“Tu n’es pas gentille* (You are not nice).

In this scenario Agnes accommodates various conflicting and shifting demands. Her competitive streak aligns with traditional masculine stereotypes. In her determination to beat Gilles in the ping-pong match, she operates outside the limiting norms that would define her as a

weak female. She also challenges such predetermined, binary, oppositional categories as male/female.

Interestingly enough all the subjects who took part in this study did not hesitate to describe themselves as female or male on the questionnaire which required them to state their gender. This can be attributed to the structure and reinforcement of Cameroon society where the structure of the two official languages English and French language contribute to the perception of a binary opposition of gendered categories. Additionally at ENSP, 15 out of the 30 female subjects in the study participated in the construction of binary oppositional gender roles by their own responses to the social demands of life as they prioritize marriage, motherhood, and their roles as caregivers over their academic and career goals. Almost all of the female students who took part in the study expressed desires to find marriage partners and have children upon completion of their studies. Herein lays another tension. While being a spouse and mother is highly encouraged in the society, it is incompatible with being an engineer. Madame Ngabireng, the director of research at ENSP maintains that lack of females in post graduate research can be attributed to the fact that girls marry off and start families upon graduation. Their subsequent care giving role prevents them from spending long hours in research which in turn prevents them from progressing in their careers. Thus the social forces that lie behind many women's subordination of their own career progression and goals is reinforced by what Bem (1993) would call "gender polarization" which she defines as "the ubiquitous organization of social life around the distinction between male and female" According to Bem (1993:80-1)

Gender polarization....defines mutually exclusive scripts for being male and female...It defines any person or behavior that deviates from these scripts as problematic.

When asked if students knew of any females who had dropped out of school, Agnes, the President of the Association of Female Students recounted three incidents where girls dropped out of ENSP because of marriage and pregnancy. She particularly bemoaned the fact one of the drop-outs was also one of the smartest students in her class.

The above example demonstrates how the care giving roles which some student take on in the course of their studies hampers their engineering careers. Although authority figures at ENSP may claim that the institution is gender neutral by virtue of the fact that it caters not to male/female students but to engineering students, female students who straddle roles as mother and wives sometimes have to pick the caregiver script over that of the engineer.

5.3. In and Out of School Conflicts in the Identity Construction Processes.

At ENSP, Math and Physics are the core subjects. As a result, the prevailing model for engineering education includes large competitive courses in Mathematics and Science in which students have to excel in order to gain acceptance into the specialized engineering classes that begin in their third year of study. The majority of the prerequisite science and math classes in the first two years are held in large lecture halls and amphitheatres, a class format that is more conducive to competition and display of knowledge than to cooperation and interaction. In addition, the large classroom size teaching not only limits interpersonal connections but

foregrounds a hierarchical relationship between the professor and the students with a one-way-transfer of knowledge from “master’ to apprentice”. In the third year of study, students collect in smaller classes according to their areas of specialization and continue in the same cohort until the completion of their program. Even in these smaller classes where there is more opportunity for interaction, the resulting discourse reflects prevailing cultural values. In order therefore to succeed at this institution, the women not only adopt multiple, fluid identities, but especially engage in social interactions that demand a more complex notion of socially constructed and manipulated gender roles.

Many campus activities and expectations also revolve around traditional masculine norms and stereotypes. There is an implicit assumption that students have to spend many hours and long nights completing projects, homework assignments, or preparing for exams-with no familial or relationship responsibilities to pull them away. For female students with additional roles and responsibilities at home, this presents a real conflict and challenge. Joy, a fourth year student recounted conflicts that arose in her family because of the long hours and late nights spent working and studying with her friends. Her uncle, with whom she lived, was particularly intolerant of the long periods she spent at school or at the homes of other classmates. He would remark:

“Why do you always come home late? What kind of studies do you engage in that take such long hours? Even Ph.D.’s don’t spend that much time studying. What exactly are you working on that demands so much time?”

Tatiana and Joelle also underscored how their academic work and study schedule conflicts with responsibilities at home. They are expected to take care of the home, participate in preparing meals, clean the house, and take care of the family laundry. Any attempts to excuse themselves or postpone chores to work on group projects would draw sharp rebuke from their guardians.

Yet female students who surmount such challenges to succeed at ENSP are widely perceived as getting preferential treatment because of their gender. Male subjects who were interviewed while acknowledging that female counterparts are capable of succeeding at ENSP also reported that females receive preferential treatment from professors. According to Francois, a third year Mechanical Engineering student, “Some females are picked as ‘*Chef de Classe*’ (classroom head) not because of their ability to lead but because of the fact that they are girls”. Justin, a second year Electrical Engineering student is of the same opinion. According to him, “the professors try to make women more visible and proactive by assigning them positions as ‘*Chef de Classe*’ ”.

Underlying these two utterances is the assumption that women could not be as successful as men without special treatment. On the other hand, girls who defy the odds by studying hard and getting top grades in their classes draw the ire of their male counterparts. They are called names like “ Mary Book” because they spend long hours studying leaving little time for socializing with their male counterparts. These female students are also taunted and teased that their strict study habits and competitive spirit is a turn off and will earn them no partners or husbands in the future.

On one hand, the ENSP environment rewards those women who adopt the prevailing norms and accommodate to the system without challenging the pervading androcentric culture. On the other hand, females are not always valued for acting just like the guys. This social

struggle might seem irrelevant to what happens within the classroom, since, once in class, students would seem to share the similar gender neutral goals of getting a good education. However it is not that easy to leave gender at the door. Students and their teachers are products of years of enculturation in a system that does not treat males and females as equals. In class, students still evaluate each other as potential dates and future partners even while competing for the same good grades. Thus ENSP is a schooling environment in which gender is a highly salient category. Nevertheless, when they are asked if their lives in the classroom are affected by whether they are male or female, masculine or feminine, many students deny the significance of gender. In this case, they are intoning the ENSP discourse of gender-neutrality. This could also be an example of layered simultaneity (Blommaert, 2005, p126) where students discursive practices become meaningful through the simultaneous occurrence in the discourses of ENSP, the World Bank, and the female students all speaking from different places in history while at the same time articulating similar and conflicting perspectives.

The conversations reported in the following section come from various classrooms and gatherings at ENSP. These conversations are fractals of the discourses of the larger ENSP environment and Cameroon society. The first excerpt is taken from an English Composition and Tutorial class. While the official languages of Cameroon are French and English, institutions offer supplementary courses in the minority language. Since French is the dominant language at ENSP, English courses are offered to enable students to meet the language requirement. This class meets weekly for one hour from 1:30 -2:30 p.m. Drawing on my analysis, the conversation in this classroom reveals that many female students challenge the previous research which found systematic women's silence in public settings (e.g. Holmes 1992, Lakoff 1992). In my observations of several groups, women were as talkative and assertive as their male counterparts. In the typical meeting of the classroom under analysis here, although outnumbered as students by 5 to 1 by males in the class (which had a male teacher), the women equally took turns talking in participating. Thus at least some of the women are not silent passive listeners in class as the patriarchal society would construct them to be. However, it is also true that not every woman is assertive in the classroom. Only one girl volunteered to speak and contribute while the five others remained silent. And while she volunteered her answer, she did not speak loudly enough during classroom discussions for the entire class to hear. Therefore, though she tried to hold the conversational floor, she did not always command the full attention of other students. In the excerpt below, she did hold the floor twice and participated in turn taking just like her male counterparts.

Teacher (male), Pierre (male), Jean (male), David (male), Students (males), Gaelle (female)

- 1 Teacher: (Writes the following on the board, "Mini Computer", "Micro Computer")
- 2 Teacher: (Sits down facing the class) What is the difference between a mini computer
- 3 and a micro computer? (gestures towards a male with raised hands)...yes
- 4 Pierre: (Stands up) There is a difference in size (sits down again)
5. Teacher: uhm hmm..(.) What else?
6. Jean: (Stands) One has more capacity..(1.5).. Micro computers are small
- 7 personal computers that we use eh eh..in the home..they are single user
- 8 (.)operated system that ...people have for ..(.)..for personal use
- 9 Gaelle: (Stands up) Another difference is the price. Microcomputers.... are

10 Students (inaudible comments)
 11 Teacher you have to
 12 speak louder (.) see the boys chatting there?...(1.6) They can't hear you.
 13 Gaelle ...are cheap and minicomputers are more pricey because minicomputers
 14 are used for more complex operations while microcomputers are used by
 15 individuals.....
 16 Teacher True.....but microcomputers can also be used to for complex tasks
 17 like controlling space shuttle and rockets (2.0).okay any other additions?
 18 Let's read the text on the differences in computers.(1.4) Here pass out the
 19 the papers to your friends (Hands stack of papers to student sitting in
 20 front row) Who wants to read? Pay attention to the grammar as you read.
 21 David I can read...(Reads out the entire text)

The above is a demonstration of the power differentials that exist in the classroom. No matter how engaged the students are, rarely are they equal partners in the construction of the classroom discourse. The classroom agenda is established by the (male) teacher, who has institutional power and duty to select texts, schedule topics, evaluate students verbally, managing the discussions by initiating topics and questions and orchestrating student interactions. The teacher also has the authority to open up the floor for students to participate. In the above transcript, although the teacher controls the floor during this classroom discussion, Gaelle, a female student holds the conversation for a significant amount of time (lines 9, 12-14). But looking at the interactions more carefully, we see that some of males held the floor not by politely taking turns but by having inaudible task- divergent talk-more asides that are audible to the rest of the class. During Gaelle's turn to contribute (line 9), the teacher interrupts and asks her to project her voice louder in order to gain the attention of the boys who were having side conversations and not actively listening to Gaelle's contribution. Gaelle's control of the floor is thus enabled and at the same time interrupted by the teacher. Because the boys did not mute their voices, they had a presence even when Gaelle ostensibly held the floor. To enable Gaelle's control of the floor, the teacher had to interrupt her and draw attention to these male students who were not participating in the classroom discussion. In the process, he creates a space for Gaelle's contribution. At the same time he inadvertently highlights Gaelle's shortcoming; her low pitch voice which fails to reach the entire class and engage the boys in the conversation. Gaelle's full control of the class is thus enabled when the teacher interrupts her contribution and draws attention to the boys who are not paying attention. In this instance, these subjects are implicated in negotiating meaning according to the way they position themselves or are positioned by the discursive context. While Gaelle, the only female participating in this discussion, complies to the male authority figure in this setting, other female subjects elsewhere interrogate and challenge the restrictive authority and in the process open up new spaces for inquiry and identity construction.

5.4. Patterns of Behavior in Cooperative Classroom Tasks

5.4.1. Electrical Engineering Lab Work

In the Electrical Engineering Lab, students meet once a week to complete practical assignments under the direction of the teacher. Students come to class dressed in blue overalls, with pen and paper in hand ready to take down notes as the teacher explains the procedures and experiments. During this particular lab session, students are working with different transformers to measure electricity voltage levels. They all stand around a table with a heavy machinery. Because of lack of space, some students are seated away from the main table and would take

notes as the professor explains. In this session, the professor usually engages only with the students standing around the table. Before the lab assignment, students had been acquainted with the various uses of transformers to enable transfer of energy from one circuit to another. The teacher had also demonstrated magnetic coupling by joining together two different cables to generate different levels of voltage and had asked the students to pay attention to the changes in magnitudes of voltage and current in the process of electricity transformation. For the subsequent class assignment, the teacher asks students to measure the different levels of voltage when different combinations of cables are paired together. But before the class proceeds with the activity, the teacher interrogates them orally to test their knowledge and understanding of the different parts of the transformer.

Line	Speaker	Utterance	Translation
1	Teacher	<i>Quel est le nom de (1.2) de ce module ?</i>	(To female student) What is the name of (1.2) of this part?
2			
3	Adele	<i>Je pense (1.7) c'est la substance fondamentale de la machine.</i>	I (1.7) think... that is the core of the machine.
4			
5	Teacher	<i>Quel est le rôle ?</i>	What is the role?
6	Adele	<i>Elle fournit une voie pour les lignes de champ magnétique et permet le transfert de l'électricité</i>	It provides a path for the magnetic lines and makes electricity transfer possible
7			
8	Teacher	<i>Quel est le nom et la fonction de ce module ?</i>	What the name and function of this part?
9	Adele	<i>Les enroulement primaire ..(1.8).. Il reçoit eh (.) eh l'alimentation de la source</i>	The primary winding (1.8) It receives eh (.) eh power from the source
10			
11	Teacher		(Gesturing towards another students and pointing to another part) What is this?
12		<i>C'est quoi ceci ?</i>	
13	Claude	<i>Je pense, (.) je pense que c'est l'enroulement secondaire</i>	I think, (.) I think that it is the secondary winding...
14			
15	Teacher	<i>Et quel est son rôle?</i>	And what is its role?
16	Claude	<i>Eh (.)eh (1.2) Je ne suis pas sûr</i>	Eh(.) eh (1.2) I am not too sure
17	Max	<i>Ce devrait être la partie qui reçoit de l'énergie de l'enroulement primaire (.) n'est-ce pas?</i>	It should be the part that receives energy from the primary winding (.) right?
18			
19	Teacher	<i>C'est exact, nous avons discuté ces modules en classe et vous devez tous connaître les réponses (2.2) c'est quoi ceci (.) Vous devez le savoir si vous veniez en classe régulièrement ...</i>	That is correct, we discussed the parts in class and you should all know the answers (2.2)(Pointing to another part and looking at another student) What is this? (.) You should know that if you have been coming to class...
20			
21			
22			
23			
24	Pierre	<i>Eh (.) eh....</i>	Eh (.) Eh....
25	Teacher	<i>Eh (.)ce n'est pas une réponse... Je ne comprends pas comment vous ne pouvez pas répondre aux questions simples</i>	Eh (.) is not an answer. ..I don't understand how you can't answer simple questions
26			
27			
28	Male S		(Chuckles)
29	Teacher	<i>...Nous avons parlé de cela en classe la semaine dernière. Peut-être que je devrais passer à autre chose si la classe ne peut pas répondre à des questions simples. Où est le Chef de classe ?</i>	We talked about this in class last week. (2.1) Maybe I should move on to on to something else if the class can't respond to simple questions...(1.2) Where is the head of the class?.....
30			
31			
32			
33	Felix	<i>Mais (.)Professeur, ..Est-ce que nous avons couvert toutes les sections du transformateur? (1.2) Je ne pense pas...</i>	But (.)..Professor did we cover all the sections of the transformer? (1.2) I don't think so
34			
35			
36	Teacher	<i>Je n'aime pas qu'on me pose des questions ..(.) C'est moi qui doit poser les questions ici. (1.2) Si vous ne pouvez pas répondre aux simple questions, je vais procéder à autre chose</i>	I don't like being asked questions..(.) I am the one who should be asking questions around here. (1.2) If you can't answer simple questions I will proceed to something else....
37			
38			
39			
40	Jeanne	<i>Mais pourquoi etes vous si fâché?</i>	(to Professor) Why are you so short tempered?
41	Teacher	<i>Je suis fâché ? (.) Non, je ne pense pas .. Si si j'étais fâché j'aurais demandé à vous tous de quitter la classe</i>	Am I short-tempered? (.) No, I don't think so.. If..... if I was short-tempered I would have asked all of you to leave
42			
43			
44	Ss		((One or two students mumble inaudible words and laugh))
45			

46	Marie	<i>Ce mec a une telle attitude aigre. (2.0) Il</i>	(Muttering under her breathe) This guy has such a
47		<i>s'enclenche trop souvent aux étudiants</i>	sour attitude. (2.0) He snaps too often at students
48			(She moves away from the crowd to the back of the
49			class)
50	Felix	<i>Mais (.)Professeur, comment pouvons-nous</i>	But(.)Professor, how do we learn if we don't ask
51		<i>apprendre si nous ne posons pas de questions ?</i>	questions?
52	Ss		[((chuckles and laughter))]

A closer examination of the context of the conversation above reveals complex interactions of power and resistance on the conversational floor as students engage in a variety of behaviors. In interpreting the data we see gender as a particular significant factor because of the historical and contemporary male dominance at this institution. Here females appear to fare quite well at taking their share of conversational time. By simple counts at talk or words, the females are the most active speakers in this class. While in lines 3, 6 and 9 Adele engages with the material at hand and contributes to the conversation by responding correctly to the teacher's questions, Jeanne (line 40) does not hesitate to call the teacher out on his short temper. In this case, both students might be considered proactive. In terms of gender roles, these female students appear to be comfortable enacting the assertive role usually regarded as masculine. Jeanne engages in a divergent behavior when she questions an authority figure, and in the process establishes a topic that is very different from the one set by the teacher. By challenging the teacher's restrictive authority in the classroom, Jeanne opens up a new space and offers herself and other students a powerful critical moment to interrogate the conversation. As a result, Marie (line 46) is able to comment on the teacher's sour attitude while Felix (line 50) later overtly challenges the teacher's resistance to being questioned. Notice how Felix's earlier question (lines 33-35) is couched in politeness in sharp contrast to his overt challenge (line 50) after Jeanne's comment (line 40) on the teacher's sour attitude. Jeanne's utterance thus interrupts the dominant discourse and authority figure. Her utterance not only questions who may speak and what might be said but also makes the subsequent contributions from her classmates possible. Her actions therefore empowers speakers because they give space to new voices and raise significant new actions for consideration. By challenging the control of the floor Jeanne thus refuses passive acceptance of interpretations of knowledge through the teacher's abrasive teaching style and attitude.

Other students also find ways to enter the conversation in divergent ways. When the teacher berates a student for not knowing the correct response (lines 25-27), a male student chuckles (line 28). Later when the teacher responds that he has the power and authority to end the class because of students' failure to provide correct answers to his questions (lines 29-30), three male students chuckle and laugh (line 30). Marie complaining about the teacher's short temperedness (line 46) also inserts herself into the conversation. These behaviors are resistant in that they diverge from the task at hand by focusing attention away from the teacher who holds the main floor. Of course the classroom is not democratic but these behaviors from students disrupts the agenda set by the teacher. The students in challenging authority and interrupting the teacher's dominance of the floor, take on conflicting, subversive identities.

In line 48, Marie also challenges authority by taking herself away from the group and keeping a safe distance from the teacher's ill temper. She asserts personal power and autonomy and in the process undermines the authority of the teacher by locally refocusing on herself and diverting her attention away from the teacher. As such, she establishes individual power and opens up a limited second floor with herself as the main actor. In this process, she resists the

norms of cooperation in the classroom and disengages from the confrontation by refusing to accommodate the actions of the teacher. The manner in which students contest the authority of the teacher is particularly interesting in this society where male authority figures are revered. At the same time, forms of politeness differ across regions. The Beti tribe from which Marie hails is particularly known for their abrasive style and confrontational tendencies. So it comes as no surprise that she takes the teacher to task for displaying impolite behaviors. Such brutal honesty in exchanges and banter co-occur alongside the dominant discourses that revere authority figures with students and teachers participating in these discursive practices.

5.4.2. Conflicting Genders in Computer Programing Class

While female students like Marie might not hesitate to challenge authority figures, not every woman is assertive in the classroom. In the excerpt below note how laughter from classmates has the unintended consequence of demotivating a female student. This particular class is a Computer Programming class where students are required to work on codes and programming language using the tool called Eclipse which allows JAVA programming. The final project will be completed individually by students on their personal computers outside of class time. The teacher uses this class session to give out instructions and jumpstart the assignment. In addition to writing programming language, the students will design a tool which will enable service providers such as mobile phone companies to record and store clients' information. The tool will also enable the company to keep a log of the services rendered to clients. Additionally, specific information on customers such as services requested/rendered, payment information and outstanding billing could be retrieved by running a query.

To begin the task, the teacher asks a volunteer to draw an interface on the board listing all the components and categories that will help in designing and customizing the tool. Information that will be stored by this interface includes customer first name, last name, age, address etc. Sidonie who considers herself as one of the best students volunteers to go to board. After she draws diagram below, a conversation ensues.



Line	Speaker	Utterance	Translation
1	Teacher	<i>Vos camarades connaissent 'ils ce que vous venez de dessiner ?</i>	Do your classmates know what you just drew?
2			
3	Sidonie	<i>..... J'ai dessiné une interface</i>	I drew an interface
4	Teacher	<i>Dites-leur ce que vous venez de dessiner sur le tableau</i>	Tell them what you just drew on the board
5			
6	Sidonie	<i>.... J'ai dessiné une interface qui est un point d'interaction entre composants depuis(.)</i>	...I drew an interface which is a point of interaction between components.....since
7		<i>que je ... le programme devrait communiquer</i>	(.)the program has to communicate with
8		<i>avec les autres composantes au moyen d'un</i>	other components through an input/output
9		<i>système d'entrée / sortie</i>	system....
10			
11	Teacher	<i>Pourquoi donner des réponses compliquées ?</i>	Why do you give complicated answers? (looks

12		(il regarde vers la classe) Encore une fois , j'ai	towards the class) Again I asked what did you
13		demandé qu'est-ce que vous dessinez ?	draw?
14	Class		(Extended laugh with several bouts of laughter
15			by different people)
16	Male S	Un rectangle...	...A rectangle..
17	Teacher	Exactement un rectangle.. Maintenant,	Exactly....a rectangle.. Now what did she draw
18		qu'est-ce qu'elle a dessiné dans le rectangle?	in the rectangle?
19	Sidonie	Peut-être que je n'ai pas compris la question,	(inaudible aside) Maybe I did not understand
20		mais j'ai pensé que je devais utiliser un	the question but... I thought I had to use
21		langage scientifique à	scientific language to....
22	Teacher	J'ai toujours insisté sur	I have always insisted about
23		la simplicité..... Vous devez ...expliquer chaque	simplicity..You have... to explain each step as
24		étape en progressant...	you go...
25	Male S	Elle est une vraie Mary Book trop de	She is a real Mary Book....too much
26		connaissances	knowledge....
27	Male Ss		(laughter...chuckle)(Inaudible aside)
28	Teacher	Peut-on avoir un autre volontaire ?...	(Addressing class) Let's have another
29			volunteer...
30	Male S		(Raises hand)
31	Teacher	Paul ... prends le relais	Paul...Take over
32	Sidonie		(Hands the over marker to Paul, mutters
33			inaudibly under her breath goes to the back of
34			the room where she sits and works quietly by
			herself)

Paul takes over the discussion not before the class's attention is drawn to his outfit. He is impeccably dressed in blue suit, white shirt and polka dotted navy blue bow tie. As he makes his way to the front of the class, some members of the class call out “ Branché!!²⁴” Paul gets to the front of the class, takes the marker from Marie, and takes a bow to acknowledge the side comments from the class. The class erupts into laughter. Others cheer and make side comments.

Line	Speaker	Utterance	Translation
35	Teacher	<i>Les gars, vous ne vous prenez pas à la légère</i>	You guys don't take yourselves lightly
36	Paul	<i>(Souriant) Mais monsieur, on nous a dit de</i>	(Smiling) But sir, we were told to dress and act
37		<i>s'habiller et de se comporter comme des</i>	like professionals
38		<i>professionnels</i>	
39	Teacher	<i>Ah...D'accord ... retournons au le dessin sur</i>	I see...okay back to the drawing on the
40		<i>le tableau Expliquez à vos camarades de</i>	board....Explain to your classmates....
41		<i>classe</i>	
42	Paul	<i>Okay, nous avons ici une boîte rectangulaire</i>	Okay, here we have a rectangular box with the
43		<i>avec les informations nécessaires pour</i>	information needed...to build an interface to
44		<i>construire une interface pour gérer des</i>	manage data...
45		<i>données ...</i>	
46	Male S	<i>Nous savons dis-nous comment cela</i>	We know that....tell us how it works...
47		<i>fonctionne ...</i>	
48	Paul	<i>De patience, je venais à cela Disons que</i>	Have some patience, I was coming to
49		<i>nous concevons ceci pour la MTN ...</i>	that....Let's say we are designing this for the
50			MTN...
51	Male S	<i>Qu'est-ce que MTN ?</i>	What is MTN?
52	Paul	<i>Vivez-vous sous une roche ? Qui d'autre ne</i>	Have you been living under a rock? Who else
53		<i>sait pas MTN est la compagnie de téléphone</i>	does not know MTN
54		<i>mobile?</i>	
55	Class	<i>(rires , commentaires inaudibles)</i>	(Chuckles, inaudible comments)
56	Paul	<i>Bon comme je l'expliquais ... maintenant que</i>	Okay as I was explaining...now that we know
57		<i>nous savons ce que le rectangle veut dire, la</i>	what the rectangle means, the next step....the

²⁴ A Cameroon French slang depicting someone who is stylish and well dressed

58		<i>prochaine étape la prochaine étape sera</i>	next step will be the contents...from this
59		<i>le contenu ...a partir de ce dessin, nous avons</i>	drawing, we have three categories....name of
60		<i>trois catégories nom du client, numéro du</i>	customer, phone number and address...
61		<i>telephone et adresse ... Ensuite, nous ...</i>	Next we...have to write codes that will
62		<i>devrons écrire des codes qui devront génères</i>	turn out specific information..when we run a
63		<i>des informations spécifiques .. quand on</i>	query...okay.....
64		<i>exécutera une requête ... ok .. (il hesite) par</i>	(hesitates) then we program the codes to the
65		<i>la suite nous programmerons les codes a</i>	interface....by programming to the interface
66		<i>l'interface en programmant à l'interface</i>	reduces we dependency and can use the
67		<i>on réduit la dépendance et on peut utiliser</i>	codes....for example...if you look at this
68		<i>les codes par exemple ... si vous regardez</i>	interface, we have three categories...these can
69		<i>cette interface, nous avons trois catégories ...</i>	be duplicated simply by tweaking the
70		<i>celles-ci peuvent être reproduites simplement</i>	existing codes to add new
71		<i>en ajustant les codes existants pour ajouter</i>	categories...(gesturing to class)...Have you all
72		<i>de nouvelles catégories ... (gestant a la</i>	understood...Any questions.....
73		<i>classe) ...Avez-vous tout compris ... Vous</i>	
74		<i>avez des questions</i>	
75	Teacher	<i>Eh bien ... veut-il dire que vous comprenez</i>	Okay..do you now know what is required of
76		<i>tout ce qui est exigé de vous ..</i>	you?
77	Class	<i>(Commentaires inaudibles)</i>	(Inaudible comments)
78	Teacher	<i>(à Paul) Tu peut maintenant prendre ta</i>	(To Paul) You can now take your seat...
79		<i>place</i>	
80	Paul		(Hands marker to teacher, turns towards the
81			class and takes another bow before heading
82			back to his seat)
83	Class		(Laughter, cat whistles, inaudible comments)

In the above transcript, although Sidonie is one of the most confident students in class, her efforts at controlling the floor are derailed first by the teacher's questioning techniques in lines 1-2 and 11-13. Her efforts are also interrupted by her classmate's side comments, chuckles and laughter in lines 14, 15, and 27. Sidonie started off very strongly using technical language reflecting her understanding of computer design and programming to describe the object she drew on the board. But the teacher's question in line 1 interrupts her efforts to engage in the discourses of a budding engineer.

Sidonie's efforts to engage in the complex discourse of engineering are met with resistance. She is derailed by the derisive asides and classmates' laughter. Meanwhile the teacher's request to have another volunteer on line 28 leads to her complete loss of the floor and subsequent non participation in the classroom discussions. After walking back to her seat, she works quietly by herself for the duration of the class. Sidonie is not only silenced in the classroom, but the negative reaction from her classmates and teacher towards her attempts at enacting the identity of a smart engineering student opens up space for her to nurture self-doubts and eventually lose control of the floor. In a follow up interview, Sidonie explained that she felt confused about the teacher's remarks because as a fourth year engineering student, the teacher's line of questioning (line 1, 4, 11-13) was not reflective of her level and aptitude. In her words the teacher "took us back to elementary school level by asking me to describe my object as a rectangle" While Sidonie takes pride in her efforts to grasp and understand complicated notions of engineering, the teacher's questions might have been an attempt of a powerful person trying to mute or mitigate her power and intelligence.

The negative response and comments from some classmates (lines 25-26) also contribute to her disempowerment. Compare Sidonie's reaction to her classmate's deprecating remarks with

the situation with Paul in line 36. Paul is undeterred by the class laughter and comments directed at him. Instead he plays this to his advantage. His sharp dressing elicits comments such as “branché. This not only objectifies him but takes the focus away from the intellectual discussion at hand. Paul takes the comments and reactions to his physical appearance in stride. Regarding it as a sign of support rather than attempts to silence him, he acknowledges the class comments and reactions in line 36-38 by explaining the reason why he is sharply dressed and brings the discussion back to the classroom project.

Sharply dressed students are common sightings in professional schools in Cameroon. In 1997, the University of Yaounde 1 circulated a memo outlining a new dress code for all students in professional schools such as ENSP. While males were required to wear shirt/suit and tie, recommendations for women included traditional African outfit or business suits. In adhering to the dress code, some boys tend to become flamboyant and go overboard to dress in the latest fashions. Such flamboyance can be traced to “*Sapeur*” a subculture of high fashion in the neighboring Democratic Republic of Congo and Republic of Congo. *Sapeur* comes from la SAPE, short for *Société des Ambianceurs et des Personnes Élégantes*, or the Society of Tastemakers and Elegant People. The roots of the movement can be traced back to 1920s and 30s when the first privileged Congolese who had spent time in France returned with wardrobes of dapper suits. The capitals of Kinshasa and Brazzaville on opposing sides of the Congo River became centers for a new African francophone elite, flying to Paris and returning to show off sophisticated garments. When Mumbutu Sese Seko²⁵ assumed power, he renamed The Democratic Republic of Congo, Zaire and implemented a strict non-Western dress code. Papa Wemba, a Congolese rumba musician and one of Africa's most popular musicians, wanted to challenge the status quo-not vocally, but visually. So he devised the acronym SAPE. By dressing up his band in the SAPE style, the adoring Congolese crowds soon followed suit-literally. Since then, *Sapeur* swagger and the freedom of expression it represents have attracted legions of followers in central Africa and beyond. It is thus not uncommon to see sharply dressed males on professional school campuses and in the larger society. In this scenario, Paul thus uses the attention brought to him by his attire to segue into the discussion at hand.

While the class wields the verbal and non- verbal sanctions in their derogatory sides and laughter to disempower Sidonie, Paul uses the same sanctions to gain control of the floor. He is quick to cut off a student who doubts his abilities in line 46-47 before seriously engaging with the material at hand. In terms of gender roles, Sidonie is comfortable enacting the assertive role usually regarded as masculine by volunteering to take the floor and kick off the discussion. However, her success at that is called to question by the actions of her teacher and her peers. While Paul is empowered by the class comments and laughter, Sidonie is disempowered by it. Derisive asides, paired with laughter, derails her while laughter seems to encourage and support Paul. Sidonie's assertive and active engagement in class is thus negatively assessed by her peers. Additionally in disengaging from the class and working by herself in reaction to the derisive comments, she becomes also complicit in her silencing. Although Sidonie fulfills the overtly androgynous goals of excellence in participation, her peers and teacher react strongly against this assertive behavior. In volunteering to lead the class, she fails to enact the traditional supportive female role and is negatively sanctioned and silenced by the gender-normative activities of the

²⁵ CNN:Inside Africa,The fashion cult cut from a different cloth, 2012

class. As such, her actions, opens up a space for complex performance of, resistance to, and enforcement of gendered roles.

In lines 25-26, the “Mary Book” comment has a negative connotation. Coined by males, the term references females who do not socialize because of the long hours spent studying. According to these males, such girls run the risk of having no boyfriends and husbands later in life. A Professor had even taken this discourse further by cautioning male students against dating and eventually marrying “Mary Books” like Sidonie. To him, while such girls would make good engineers, they would be too involved with their jobs to have the time to devote to the care of their family. Additionally he reasoned that such girls will use their critical thinking skills learned in engineering to outtalk their husbands at home. This in his opinion could be disastrous.

Meanwhile the term “*branché*” a term that positively connotes someone who is stylish and conversant with the latest fashions is ascribed to Paul. The corresponding connotations to “Mary Book” and “*branché*” signal opposition to engineering female and male identities at ENSP. In the natural order of things, Sidonie should have been the stylish one while Paul should have been endowed with complicated understandings of programming language. Instead both individual enact identity in new ways with Sidonie facing opposition in her attempts to enact the identity of a smart engineer while Paul embraces and laps up the attention his classmates give to his physical appearance.

There is thus resistance and compliance as individuals take on new gender identities that interrupt the dominant discourses on how females and males should be act and behave. In this institutional space, gender and social category are not constructed independently of each other. They neither exist independently of practice; rather, they are continually co-constructed in the course of day-to-day practice. In this fashion, labels such as Mary Book and *branché* do not exist independently of the social practice in which categories are constructed. Rather, labels arise in use in relation to real people, in real situations, where students label each other as they interact in class, make observations and judgments about fellow students, point out behaviors to others and challenge each other. It is through such activities that identities are enacted, created, challenged, and resisted.

5.5. New Meanings and Patterns of Being: Association of Female Students

The Association of Female Students, organized and led by students, is a community in which female students are invited to participate. The Association which is extracted from the larger ENSP community, is designed especially for and in the interests of female students. Females are expected to connect their academic lives with the Association which meets weekly to brainstorm solutions to facilitate female students’ academic and social efforts at ENSP. In discussions with students, a prevalent theme reported by females concerns their desire for peer, familial, and institutional support. While institutional support at ENSP leaves much to be desired, students noted that peers and senior students of the Association give them much needed moral and academic support. In subtle ways, students made the link between the sisterly support received in the Association and familial support received from parents and siblings. They were quick to point out how family members’ encouragement to excel in Mathematics in their early years of schooling led to their choice of engineering as discipline of study. One female student commented:

“My mother encouraged me throughout my life at whatever I studied—and she especially helped me to excel at math. Without her encouragement I do not think I could have picked this academic path. My mother is the positive role model. I look up to her a lot. I feel the same sisterly support when I am with the girls.” (Joy Forth Year Student)

In the case of this student and that of others, her mother’s positive verbal persuasions became a source of emotional support and encouragement for her to excel in mathematics and engineering. Her mother’s support seems to have affected the development of her strong self-efficacy perceptions, which may have provided her with the resiliency to persevere through her engineering program. Some female students also emphasized how both maternal, paternal and sibling support positively impacted their lives as engineering students. One student stated:

“Ma mère et mon père sont tous les deux ingénieurs, ils ont été très impliqués dans ma décision de m'engager à mes études en ingénierie. Je suis par la suite vraiment chanceuse d'avoir leur support. Je rentre à la maison aussi souvent que possible pour me redonner de l'énergie émotionnellement. Quand je suis à la maison, mon père aime passer du temps à discuter de concepts de l'école d'ingénierie avec moi. Nous allons faire de longues promenades et nous nous engageons dans de grandes discussions. Je comprends que tout élève n'a pas ce type de soutien et je suis extrêmement reconnaissante. Ma sœur est vraiment heureuse quand Je rentre chez nous. Je suis pour elle un modèle. J'espère que je ne la décevrais pas.”

(My mom and dad are both engineers- they were very involved in helping me decide to study engineering. I am so fortunate to have their support. I go home as often as possible to reenergize myself emotionally. When I am home, my dad loves to spend time discussing school and engineering concepts with me. We go for long walks and engage in great discussions. I understand not every student has this kind of support and I am extremely grateful. My sister is so happy when I go home. She looks up to me as a role model. I hope I don’t disappoint her” (Gabrielle, First Year Student)

It is not surprising that some female engineering students see the Association of Female Students as an extended family since the group support and friendships helps ameliorate the effects of negative verbal persuasions and strengthens their self-efficacy perceptions. It is important to emphasize that while participation in the extracurricular activities of the Associations is optional, it is also expected. The Association’s activities are viewed as integral to female students’ success at ENSP and indeed, constitute an important part of their entrance into the professional world. The Association periodically invites working professionals to share information about job search, professional life, and how to navigate through work-related challenges. It also seeks to connect students with professional engineers through mentorship programs. Student leaders are also expected to compete for leadership positions. Such leadership positions not only gives them visibility within this campus environment but affords them power, which in turn allows them control of roles and resources in the production of extracurricular activities. Student leaders also base their identities and alliances in this production. As a result, it leads to a tight student hierarchy, a hierarchy based on control of aspects of the institutional environment, and on the freedoms and privileges associated with this control. Before I gained access to female subjects, I had to seek the assistance of the student leaders of the Association.

My access to female students at ENSP also allowed the Association to benefit from financial donations, the terms of which were determined by the Association leaders. Consequently, the Association leaders put themselves at my disposal and went to great lengths to facilitate my navigation of the ENSP environment. Those who thus participate in this hierarchy of leadership are not simply participating in individual interesting activities; they are building networks and engaging in practices that has as much to do with visibility and control over the school environment and the Association's resources, as with the content of the individual activities that constitute their roles as leaders of the Association. The transcript below is from a job talk meeting organized by the Association. The session which occurred during student's lunch hour, had been widely publicized on campus with invitations extended to both male and female students. In preparation for the meeting, female student leaders were highly involved in the planning and set up. Prior to the event, they organized the room, prepared the appropriate media, (powerpoint, overhead projector) and seating arranging for the guest speaker who was a professional engineer. Additionally, they provided light refreshment for the guest speaker as well as audience members for the social mixer that followed. Additionally these females had coordinated fund raising activities to make this event a reality. Such activities not only expand women's leadership sphere at ENSP but helps to cultivate a positive campus climate where both genders are equally represented. Below is an excerpt from the discussion:

Line	Speaker	Utterance	Translation
1	Estelle	<i>Devons-nous..(1.2) envoyer notre certification</i>	Do we..(1.2) send our send our certification
2		<i>attestant de notre achèvement du stage quand</i>	attesting to our completion Internship when we
3		<i>nous envoyons notre CV.. à des (1.2)</i>	send our resume.. to (1.2) prospective
4		<i>employeurs potentiels?</i>	employers?
5	PE ²⁶	<i>Non. (.) je (1.5)vous conseille d'envoyer le</i>	No..I will(1.5) advise you to send the
6		<i>minimum (.) votre CV en premier ce que</i>	minimum...your CV first....what ...what you
7		<i>(1.3) Ce que vous pourriez donc est ... clarifiez</i>	could so is...state your internship experience on
8		<i>votre expérience de stage sur votre CV (2.0)</i>	your CV (2.0) Mention in your CV that you
9		<i>Mentionner dans votre CV que vous avez effectué</i>	have completed an internship with such and
10		<i>un stage avec telle ou telle entreprise ... dans le</i>	such company ...in the area of your
11		<i>domaine de votre spécialité ...</i>	specialization...
12	Pierre	<i>Vous avez mentionné que (.)que les employeurs</i>	You mentioned that (.) that employers look at
13		<i>recherchent d'autres aspects pour (.) déterminer</i>	other aspects to..to determine a good candidate .
14		<i>un bon candidat potentiel. Pouvez vous eh ..(.)</i>	Can you eh (.) explain?.....
15		<i>expliquer ?</i>	
16	PE	<i>Ce que je veux dire, c'est (1.7) votre CV n'est</i>	What I mean is (1.7) your CV is just one aspect
17		<i>qu'un aspect de vous .. ils regardent aussi les</i>	of you....they also look at behaviors such as eh
18		<i>comportements tels que eh eh (.) la</i>	eh (.) punctuality..... Are you on time for the
19		<i>ponctualité..... Êtes-vous ponctuel pour l'</i>	interview? If you are late for the interview, it
20		<i>interview? Si vous êtes en retard pour l'entrevue,</i>	could tell the kind of worker that you will
21		<i>cela pourrait signifier le genre de</i>	be..How are you dressed?... (.)What does your
22		<i>travailleur que vous serez .. (.) Comment es-tu</i>	clothes say about you?...(.) Do you look
23		<i>habillé ? (.) Que disent vos vêtements de vous ?</i>	professional or do you look like you are ready
24		<i>(.)Avez-vous l' apparence professionnelle ou</i>	to go have a night out in town?
25		<i>êtes-vous comme si vous êtes prêt à a faire une</i>	
26		<i>sortie la nuit?</i>	
27	Crowd		(Chuckles, some laughter, inaudible words)
28	PE	<i>..... c'est ce que je veux dire..</i>	that is what I mean....
29	Crowd		(Some hands are raised to ask questions)
30	PE	<i>Je vais prendre votre question ... ensuite je</i>	(Pointing to a female student) I will take your
31		<i>répondrais à la question de la prochaine dame</i>	question...then I answer the next lady's

²⁶ PE: Professional Engineer

32		 Je prends des questions de femmes pour les	question.....I am taking questions from women
33		encourager par-ce qu'elles ont été activement	to encourage them because they have been
34		participantes ... Depuis que nous sommes à court	actively
35		de temps Je comprends que votre heure du	participating ...Since we are running out of
36		déjeuner est presque terminée ... Si je ne peux	time....I understand your lunch time is almost
37		pas accéder à toutes vos questions, Je vais	over...If I can't get to all your questions (1.7),I
38		laisser quelques informations ... avec votre	will leave some information...(.)with your
39		président (1.5) pour vous a consulter à votre	President (1.5)for you to consult at your
40		guise.. (.) Peut-être que je vais voir certains	leisure....(.)Maybe I will see some of you
41		d'entre vous au cours de votre stage Je crois	during
42		que votre président est en charge ? ...	your internship....I believe your President is
43			coordinating this?...
44			
45	Agnes	Oui,(1.6) nous travaillons avec l'administration	Yes, (1.6) we are working with the school
46		scolaire pour planifier le stage ... et euh	administration to schedule internship...and uhm
47		aussi s'assurer que les membres de l'Association	also to ensure that members the Association
48		ont la priorité en placement	get first priority....in placement.....
49	PE	D'accord ... alors peut-être je vais voir certains	I see (addressing crowd) ...so maybe I will see
50		d'entre vous pendant votre stage?	some of you during your internship?.....

For students such as Agnes who participate fully in extracurricular activities as leaders, their various identities are constructed depending on the institution. In addition to pursuing her studies to become an engineer, Agnes serves as President of the Association of Female Students. She works in collaboration with the ENSP to organize meetings and seminars. Through the Association, she also has established networks with companies and individuals to provide mentorship and internship opportunities for female students. She not only is the contact person for all of the Association's activities but her engagement is actively sought in all matters concerning the Association. In this case, her personal identities as a female, engineering student are intertwined with institutional identities as President and gatekeeper of the institutional resources of the Association. Lines 40-45 reveal how much power and control she wields as a President of the organization. To serve as president of the Association, interested students have to declare their candidacy and convince the Association members why they would be ideal candidates. While female students pride themselves in belonging to this supportive organization, they also vie and compete for positions of power with each other.

Students' identities are thus embedded in a mobile hierarchy with individuals seeking to occupy leadership positions that will grant them social and institutional power. In this case, social relations among the female students are competitive, and change with institutional responsibilities, alliances, and status. At the same time, students focus their interactions and seek endorsement from their network of peers and the administration at ENSP. Participating in this leadership hierarchy requires a certain acceptance of the institution's rules and values as articulated by the ultimate institutional authorities, the adults who occupy official positions in the school. In this way, the school offers these students introductory lessons on how to navigate through leadership spheres. Such activities also endow students with skills that will serve them later in their careers as engineers, project managers, and community leaders.

5.6. Gender Challenge and Change

Complex struggles over gender identity are enacted when women attempt to enter historically androcentric domains of engineering and science at ENSP. The resulting destabilization of gender roles arises from a two-fold resistance; first many women resist the

confines imposed by roles traditionally constructed as binary and polarized: male/masculine/public vs. female/feminine/private. Second these women are in turn resisted by other peers and individuals who implicitly support traditional roles and stereotypes that maintain the status quo. Gender on this campus is enacted in response to multiple, shifting social demands and linguistic situations performed through discourse. At this institution, gender is both salient and contested. Most students are aware of the ratio of women to men and the strains that ratio places on social relationships. They generally believe that the classroom and other academic settings are not gender neutral and are influenced by gender struggles. Neither is the academic discourse gender neutral. As the evidence from discourse analysis shows, gender roles continue to be reified and challenged through their various actions. But these female students possess the critical understanding that they are particularly vulnerable to attack when they attempt to enact identities that align with masculine engineering behaviors. In addition to their understandings of the resulting retaliatory acts that ensue from their attempts to succeed, they have a clear awareness of the systematic constraints of that engineering identity. As a result they seek ways as individuals and groups to circumvent the challenges of that culture.

My data analysis has demonstrated the following complexities in gendered identities and role relations at ENSP: 1) a French-type engineering school, with its traditional Republican gender-blind claims 2) sexist male teachers and students who put down women 3) an extremely gender-conscious society, and 4) a fundamentally flirtatious, playful, sexually-marked relationship between students and between students and teachers. While I sought to look at the construction of gendered identities at ENSP, ‘a male- dominated school’ data from conversations with students, teachers and notes from classroom observations points to a much more complex landscape. It throws a different light on the stereotypical male behaviors and remarks made by teachers and students alike. The lines between stereotypical marginalization and objectification of women are sometimes blurred. When a male student comments on a female teacher’s appearance “she looks good enough to eat” or tells his classmate that as an engineer she will eventually only end up ‘conceiving children not projects’, the female recipients are not outraged by such sexist remarks. They neither complain to authorities nor seek to curtail such behaviors from male students. Instead they take it in stride and view such behaviors as a challenge to prove to the males that they are equally capable intellectually. Couched in these playful remarks and flirtatious banter are patriarchal behaviors that objectify women. Although articulated in jest, such playful banter serves also to remind women of their place in society.

To counteract the above narrative, females seek to enact and possess positive academic identities. They also desire structured academic programs to sustain this identity. Their social and intellectual identities shape their experiences individually and collectively. At the same time, they build in emotional and psychological supports that enable the enactment of their various roles and identities. The students’ attempts to blur traditional gender roles by enacting multiple, conflicting identities are symptoms of a system in flux. Their shifting construction and performance of multiple gender roles in open discussions and classroom settings in a formal schooling environment steeped in traditional patriarchy, raises complexities that requires continuous investigation of the ways in which gender theory can help contest the gender-role stereotypes that limit human potential.

Chapter 6: Returning to the Research Problematic and Questions

I was initially drawn to women in Math, Science, and Technology at a higher institution of learning in Cameroon to better understand how images of women are discursively constituted at École Nationale Supérieure Polytechnique, Yaounde, (ENSP), the school of engineering at the University of Yaounde, Cameroon tasked with training scientists and engineers to participate in the development of the nation. While global, national, and local interests shape and structure students' experiences at ENSP, the process of becoming an engineer in Cameroon is full of contradictions, tensions, and struggles and constitutes new identity formations mediated through the practices of a local site. As Lave and Holland have argued, this identity making process is never only a matter of local practice, local institutions, and local history. Local struggles are also always part of a larger historical, cultural, and political-economic struggles. These larger struggles, which Lave and Holland refer to as "enduring struggles," do not exist separate from local practice, but rather are worked out and mediated in "contentious local practice, in particular local [contentious] ways (Holland & Lave, 2009, p. 3).

In Cameroon, son preference, where boys' social, intellectual and physical development are favored over girls', has translated into more formal schooling opportunities for boys and exclusion of females in leadership positions in both public and private sectors. Women in Cameroon are responsible for growing all of the crops to feed the family, raising the children, doing all of the housework, and often engage in petty trade to supplement the family income. While women have their place in the home, the man is in charge of making big decisions, earning the income, and being the "chef de la maison"²⁷. The woman, meanwhile, has more responsibility and is thus more important in the home, but she was still to respect the power and authority of her husband. Customary law ostensibly provides for equal rights and status; however, men may limit women's rights regarding inheritance and employment, and some traditional legal systems treat wives as the legal property of their husbands. Although many women in Cameroon are economically empowered and active in civil society, they often lack the opportunity to enter politics and participate in their country's male-dominated political sector. The 2009 Human Rights Report states that the Cameroonian law does not explicitly forbid discrimination based on race, language, or social status, but does prohibit discrimination based on gender and mandates that "everyone has equal rights and obligations." The government, however, does not enforce these provisions effectively. Violence and discrimination against women, and discrimination against ethnic minorities and homosexuals continue to be problems. A 2010 report from the UN Human Rights Committee states:

"...women are discriminated against under articles 1421 and 1428 of the Civil Code concerning the right of spouses to administer communal property, article 229 of the Civil Code regulating divorce, and article 361 of the Penal Code that defines the crime of adultery in terms more favorable to men than women. The law allows a husband to oppose his wife's right to work in a separate profession if the protest is made in the interest of the household and the family; a husband may also end his wife's commercial activity by notifying the clerk of the commerce tribunal of his opposition based upon the family's interest. Customary law is far more discriminatory against women, since in many regions a woman traditionally was regarded as the

²⁷ Head of the household

property of her husband. Because of the importance attached to customs and traditions, civil laws protecting women often are not respected."

Gender thus continues to be an element of social relationships that operates at multiple levels, affecting everyday interactions, public institutions, work, and the household. The consequences of gender distinctions are reflected in political, economic, and cultural spheres. Within the cultural sphere, gender asymmetries are expressed and reproduced through definitions of femininity and masculinity supported by such mechanisms as ideology, sexuality, language, and schooling, among many others. Female subjects at ENSP who have gained entrance into a male-dominated terrain have to respond simultaneously to the traditional masculine norms of science and engineering and to the conflicting, traditional feminine role expectations arising from the gendered social imperative. The cultural context in which students learn to become engineers is thus both androcentric and gender-polarized.

ENSP thus served as an ideal site to examine how social and environmental factors shape girls' achievements and participations in Math and Science and how the climate of university science and engineering is in turn, shaped by different social actors. ENSP thus becomes a cultural space carved out by words and actions of various social actors. It is an eminently heterogeneous, indeed contradictory and ambivalent space in which third perspectives could grow in the margins of dominant ways of seeing (Bhabha, 1994). Using ENSP as a space where the discourses of participation and gendered education come to be defined and practiced, I anchored and investigated the existing individual and institutional discourse and the local interactions and practices in relation to the contexts in which the discourses take shape. I also situated the social actors in this tension filled, multi-voiced, heterogeneous, space to examine the conflicts that ensue. In addition, I paid close attention to the various identity acts and individuals' struggle with these tensions as they developed their own ideologies and came to new understandings of self. Furthermore, I examined how these interlocutors negotiated linguistic and discursive differences; learned, reshaped, and resisted gendered constructions, and how female subjects remade themselves using and redeploying the available technologies, discursive tools and school practices. I asked the following questions:

- 1) How have the French and Anglo-Saxon discourses past and present constructed and represented gender in education in Cameroon?
 - i) How are the formal learning spaces constructed?
 - ii) How is gender expressed and constructed discursively?
 - iii) What are some of the tensions and conflicts in the various constructions?
- 2) How do subjects in an institution of higher learning representing the different social and economic class and linguistic backgrounds take on different roles identities in response to the various gender positionings at ENSP?
- 3) How do the discourses an institution of higher learning confirm existing social relationship and behaviors while at the same introducing new meanings and patterns of behavior?
 - i) What are the discourses on engineering education?
 - ii) How do subjects in a higher institution of learning enable the identity construction processes?

Drawing from theories of literature and from critical discourse theories, I considered these contexts, not as innocent backgrounds through which to better understand my data, but as

powerful discourses, which construct gender in particular ways. But in seeking to complicate notions of gendered constructions, I emphasized the contradictions and unpredictability of discourses and practices. I also explored the ways in which social actors were implicated in the business of negotiating meanings and identities according to the ways they positioned themselves and were positioned in various discursive contexts.

6.1.The French and Anglo-Saxon Discourses on Education

The educational practices at ENSP are confluences of the French and the Anglo Saxon traditions. While France was heavily involved in the initial design and set up of ENSP, the institution, which now serves students from both Francophone and Anglophone Cameroon, has also had some Anglo Saxon influences. Present day reforms in Cameroon have introduced the BMP (Bachelors, Masters, and Ph.D.) system in a bid to align the Cameroon's historically French systems of Education to the global model. In addition to training engineers and cadres of professionals for community development and civil service, students also have the opportunity to pursue research and doctoral degrees. The discourses and practices of ENSP, thus reflect the diverse and often oppositional perspectives and histories of the French, Anglo Saxon, and Cameroon social actors; at any given moment, there are plural and competing discourses constituting gendered positionings. In addition to the dominant discourses constructing stereotypical assumptions about masculinity, femininity and binary gender differences, there are also resistant or oppositional discourses, which operate not in discrete isolation from each other, but through intertextual linkages, whereby each discourse is interconnected and fused by the traces of others.

As discussed in chapter 2, the history of formal education is about power and knowledge (Luke 1996): power in terms of which texts and practices will “count” and which groups will have or not have access to which literacy practices. Luke (1996) further posits that literacy education has been tied directly with the distribution and consecration of capital and knowledge as a way of monopolizing access to principal means of production and modes of representation. Chapter 2 presented the historical origins of formal schooling in Cameroon allowing for an understanding of the forms of gendered education offered during various historical time periods. It also highlighted the ways in which schooling and literacy have been used to regulate and broker access to material wealth and the means of producing that wealth (Luke,1996). Prof. Bolanle Awe, historian and former Director of the Institute of African Studies, University of Ibadan (UI), in her presentation at the Symposium on Women and Education in Africa sponsored by the University of Wisconsin-Madison in 1988 outlined three stages of women's education in Africa: the pre-colonial stage which stressed the complementarities of men and women; the colonial stage, which was set up to consolidate imperialist aims and reflected the ideals of female domesticity; and the post colonial stage, which has yet to make school attractive and accessible to girls.

In British colonial Cameroon, formal schooling consisted of domestic science education to create good wives and mothers. Education for girls thus consisted of primary school and domestic science. The 1950 colonial report notes for example that “development of education, notably for girls, will lead them to resist the requirements and usages of old and harmful

customs”²⁸ From this perspective exposure to Western norms and values disseminated through schools and centers would lead Cameroonians to choose European values over African practices. In French colonial Cameroon, education of males was critical to the political control of the colony and to the ideological goals of assimilation (Barthel, 1985). The French ideology of the woman with its emphasis on *la femme au foyer* and the Cameroonian conception of the woman so embedded within familial and patriarchal expectations could only reinforce education French education policies. The educated male elite served a key role in the colonial economy, functioning as privileged buffers between the colonial administrators and the masses. By educating this male elite, the colonialists were laying the groundwork when females would be educated more broadly to solidify colonial control by transmitting knowledge and appreciation of Western cultural forms. (Barthel, 1985). The typical girls school centered on teaching European notions of hygiene and childcare to future mothers and on the second level, selection and training of indigenous women as midwives, nurses, and teachers (Barthel 1985). In French and British colonial education practices, women were highly excluded from access to the knowledge, contacts and skills that could enable an upward social mobility. While activities such as sewing, knitting, embroidery and cookery, were clearly socially important activities, women were not taught new cultivation and management techniques that would improve their social and economic status. Yet, even within this restricted framework, some women were able to use the skills learned in these domestic science courses to enter the public sphere as entrepreneurs, teachers, and leaders of women’s groups. The schools in this case, served more than just “instructional sites”. Rather they produced knowledge and provided females a place for identity construction. In so doing, they offered women selected representations, skills, and values that allowed them to transgress borders and adopt new ways of being in the world. As such, some women were able to subvert the patriarchal practices by creating new identities using formal schooling practices to cross boundaries and seek opportunities out of their prescribed gendered traditional roles.

When Cameroon gained independence from its colonial masters, formal schools increasingly acted to reproduce social inequality for women rather than offer opportunities for mobility. There was a reluctance to send girls to school beyond the elementary level (Women and Education, 1985). Fears of their getting married before they can plough significant amounts of money back into the family purse played prominent roles in the suppression of female academic talent. Meanwhile some aid and development projects also contributed to the marginalization of women through the kinds of jobs and training offered them (Hall & Percy, 1986; “Women and Education” 1985; Woods, 1990). Such educational practices thus served more to close off girls than to promote their interests and opportunities. Social dislocations caused by the imbalance in the educational system ensued, causing tensions in the social and community life and a consequent stifling of women’s potential contribution to the development process.

The government of Cameroon soon engaged in reforms aimed at restructuring primary, secondary, and tertiary education, in order to redefine educational policies to meet the challenges of the rapidly changing nation (Tchombe, 1994). Higher institutions and training colleges like ENSP were created to respond to the needs of the newly birthed nation by training capacity for both public and private sectors. The institution’s brochure references the 2000 high level professionals who have gone on to serve as leaders in private industry and in top government

²⁸ Great Britain 1951, 115

positions. While ENSP participates in the discourses of developmentalism through its promotion of scientific research and training of high-level engineers and scientists, the institution does not reflect the discourses of access that seek to mainstream women into higher institutions of learning to allow their economic and social mobility. In their recruitment of candidates, ENSP does not take into consideration the challenges women face in terms of access to formal. Neither are the constraints that prohibit women from pursuing Math and Science academic trajectories considered. Instead, ENSP bases its principles on the strict French intellectual tradition of merit with entrance exams and focus on the core sciences. Conflicts thus obtain in the practices of ENSP and in discourses of access as promoted by the local government and international aid institutions. In recent years, the need to promote women's participation in higher education and industry have been rearticulated in both local and international circles, while corresponding efforts have been made to increase investment in technology education and expand access to them (Huyer et al., 2005; Turley, 2002). As a result ENSP in 1995 began opening its doors to female candidates allowing them new spaces for the construction of gendered identities.

Conflicting Roles, Identities, and Gender Positionings

My data revealed dominant discourses constructing stereotypical assumptions about masculinity, femininity, and binary gendered differences, but also resistant and oppositional discourses advocating for gender diversity, inclusion and separatism. Competing discourses also include women as change agents and proactive beings taking steps to ensure individual and group success at ENSP. In the process of becoming engineers, female students transcend boundaries by taking on new roles and behaviors that are deemed masculine. They also develop and maintain multiple identities as strategic and navigational tools to persist through their various engineering programs. The interactions between their academic, intellectual, and social identities not only influence their educational experiences and career aspirations, but create contradictions, tensions, and struggles. First many women resist the confines imposed by roles traditionally ascribed and constructed as binary and polarized: male/masculine/public vs. female/feminine/private. Second these women are in turn resisted by some male peers and authority figures who implicitly support traditional role stereotypes that maintain the statusquo. Gender on this campus is both salient and suppressed, enacted in response to multiple, shifting social demands and linguistic situations performed through discourse.

While present-day Cameroon government, through the Ministry of Women's Affairs, has highlighted the need to provide women with the education and training skills to enable them participate in the development of their communities and take seat at the leadership table, the idea of women as leaders is still to a large extent being resisted in this patriarchal society. In Cameroon, men dominate the political sphere. According to Henriette Ekwe Ebongo, a journalist, publisher of *Bebela* - a weekly independent newspaper - and founding member of Transparency International, Cameroon, many men don't want women to hold leadership positions because it chips at their masculinity. As a result, many Cameroonian women have concentrated their leadership efforts in civil society, creating nongovernmental organizations and working in partnership with such organizations as the World Bank or the International Monetary Fund. Examples include the Bali Nyonga Sisters, *Kumu Nfed Nfed* who have partnered with such international organizations as Vital Voices to address various women's issues in health and education. The conspicuous absence of women from public spaces and leadership spheres thus speaks to the reluctance of male leaders in the government to welcome women as equals because

educated women capable of making contributions to the scientific development of the country contravene their (women) traditional roles. While the Cameroon government has made various declarations about the importance of women in Science and development (Biya 1986, p 131; “Effective Promotion” 1987, pp 36-37; “Key Activities,” 1987, p.42), strong internal opposition to such reforms thus exists within Cameroon’s own economic and political allies. On one hand, the call to enable women’s full participation in national development has led to the opening up of spaces in male dominated institutions like ENSP. On the other there is still some resistance from some members of the society who still see the woman’s place as the home.

ENSP thus operates in a subculture that is steeped in a traditional patriarchal system. Females who are still considered subject to male authority-with male characteristics being considered central to decision-making process at family, community and national levels - are excluded from positions of leadership (Ajaga Nji, 2000). Women who have pursued secondary and tertiary education are usually encouraged to prepare for care giving and support occupations like nursing, teaching, clerical services and lower administrative services. In this regard, formal institutions of learning in Cameroon are invested consciously and unconsciously with authority to reproduce dominant ideologies, hierarchies, and gendered culture and thus serve as sites for gender construction and reproduction.

As earlier mentioned, Cameroon government has declared itself strongly in favor of women in Science and development with several policy documents declaring this as an important aim of the Cameroon state (Biya 1986, p 131; “Effective Promotion” 1987, pp 36-37; “Key Activities,” 1987, p.42). Yet according to the females in the study, at no time in their academic pursuit did they feel strong institutional support. From conversations with male officials at the University of Yaoundé, another narrative emerges. As explained in chapter 4, authority figures at ENSP highlight women as lacking in qualifications and skills necessary to assume positions of leadership within ENSP and beyond. Female underrepresentation is framed not on issues of access but on the “problem” of women not having the necessary qualifications for particular positions. In this way, the discourse constructs the ‘problem’ as a lack/deficiency located in women themselves. The lack of women’s access to education, probable career possibilities, and leadership positions is thus framed as women’s problem alone. Yet data analysis in chapter 4 reveals that women are not deficient or lacking in leadership skills. Rather the lack of women who are adequately prepared to assume the leader position subject is shaped by the dominant discourses in this patriarchal society which position women only in domestic spheres. Within this discursive constellation, women are viewed as lacking leadership potential while men are not, further reinforcing power differentials between the genders and shaping women’s status accordingly. Chapter 4 data analysis also reveals women as outsiders of a desirable location, situating them on the margins and peripheries of leadership, decision-making committees, and in various activities traditionally dominated by men. Similarly, the chapter reveals women’s desire and yearnings for full participation in leadership spheres as students, teachers, and scholars in science and technology and their efforts at deconstructing notions of themselves as incapable and inept.

6.3. Confirming existing Relationships, Introducing New Meanings and Patterns of Behavior

Even while discourse theory maintains that subjectivity is discursively constituted, it simply does not mean that individuals at ENSP are passive in the process. As Dorothy Smith (1990b) argues, we all participate as subjects and agents in the social relations of discourse. At ENSP, women and men actively participate in the construction of subject positions and subjectivity by choosing to subvert or reinforce various discourses. In contrast with femininity discourses that shape images of women as vulnerable at ENSP, a feminist discourse exists and highlights women enacting masculine identities. Analysis of the data provides evidence that female are caught in the tension between conflicting gender demands. In their academic exchanges, women display a variety of discursive practices that defy gender stereotypes and exhibit behaviors that range from those traditionally masculine (competitive, assertive, status seeking) to those traditionally considered feminine (cooperative, accommodating, nurturing). The fluid identities of female subjects not only reflect a range of relational subject positions, but they also reveal a range of identities and identifications.

As data analysis in chapter 5 reveals, female students at ENSP display the same overt competitiveness as their male peers. Beyond ENSP, these women draw strength from female family members, mothers and grandmothers who find ways to circumvent the powerful institutions within their various communities. Women who are the backbone of rural communities form microfinance and support groups to pool resources, grow individual small businesses, and support and sustain their families. So while the patriarchal discourses frame women as vulnerable, women's actions in their various communities indicate self-reliant, independent individuals who do not have to lean on their husbands for support. From interviews and conversations with female students, I further deduced that their actions are also intended to interrupt the dominant discourses which posit women as incapable and intellectually inferior. As they adopt new identities in their quest to succeed in a male-dominated institution of learning, they may be attempting to contradict the representations of females by the Cameroonian patriarchal community. While the dominant gender discourses present female subjects as weak and in need of institutional and male protection, female subjects at ENSP take on new ways of being that circulates and shapes the change –agent subject position. Interrupting the dominant stereotypical discourses these women introduce resistant, oppositional discourses that deconstruct gendered identities as fixed. Such examples abound in chapter 4 revealing the plural and competing discourses that constitute power relations at ENSP.

The discourses taken up by the social actors at ENSP thus do not stand alone in constructing the subject positions. Female students take on new roles to cope with the social order at ENSP. These female students see in education a key, if not the key to a new social order. They become actors in their own right by looking beyond their academic, personal, and social challenges at ENSP to find role models and additional resources that enable and ensure their success. At home they are encouraged by the female strength and power in this society-their mothers, grandmothers, and female relatives. While their mothers and grandmothers did not have as much access to formal educational opportunities, they have still found ways to be central figures within their various households through subsistence farming, petty business, and microfinance projects which have served as income sources for their families. Female students at

ENSP thus draw inspiration and strength from such matriarchal counter discourses. As such their academic expectations of becoming future engineers shoot past societal gendered constructions of them. In this regard, they make themselves part of the solution, not part of the problem. Similarly, their actions highlight a change-agent subject position and avoid subtle yet powerful blaming of women for problems related to inequity (i.e. women's underrepresentation is a consequence of lack of training and experience; women's feelings of invisibility are reflective of their failure to be sufficiently assertive).

In chapter 5, analysis of data suggests that students do not share society's low opinion of their abilities and possible achievements. Females in the study repeatedly describe themselves as "determined, disciplined, self-confident, enjoying the challenges of Math and Science, and relishing the inevitable competition with boys." And while they acknowledged being outnumbered by male students, they also overwhelmingly acknowledged constant attempts by male peers and authority figures to push them to the sidelines. While students do not feel strong institutional support, they have managed to carve out a space for themselves as females, seeking and sharing resources to enable their success. They gather formally and informally on campus and in student's homes to discuss personal experiences and connect those experiences with understandings of inclusion and exclusion. In this manner, they have created a supportive and enthusiastic peer culture through extra-curricular peer groups and connections with other female engineering role models who have made progress in their field. Women thus position themselves as change agents working to influence the cultures of the institution. While they recognize the constraints of institutional discrimination at ENSP, they also refuse to accept them as inevitable.

As young girls, students were taught largely by male Science and Math teachers in disciplines where male students outnumbered them and where the teaching methods used were didactic and lecture-based. They have come to understand that such methods precluded them from asking questions, from relating to what was taught in their own experience and from pursuing independent learning. Science teaching was the presentation of chunks of knowledge, apparently unrelated to the daily lives of the students, to be memorized and regurgitated at predetermined times during examinations. While they did not use this term, this conception is what Paulo Freire would call the banking concept of education (1970, pp67-68). There was thus an insensitivity to the ways in which Science could be accommodated to the needs of their communities as girls were prevented from understanding science as a cultural and historical artifact. By its presentation in school as a finished product, neither to be questioned nor critically examined, girls in particular found it hard to fathom science in their individual lives. The girls in this study believed that this was one of the key factors leading to higher failure rate for girls in secondary schools. Implicit in this critique of the dominant methods of teaching are the seeds of an emancipatory pedagogy that would enable girls and boys understand learning as an activity that is open to criticism.

At ENSP, the testimony of female students consist of various comments about the need for the inquiry method, independent learning, and practical laboratory work. To make up for the lack of practical learning at ENSP, students through their various networks, seek internship opportunities with companies allowing them access to practical knowledge and hands on application. They not only learn the practical side of engineering, but bring back new knowledge to ENSP which they share with fellow students during group work and club meetings. Students

thus recognize first hand the meaning of education as a way of knowing the world and creating opportunities to engage in real learning. In this manner, they recognize the institutional gender biases in teaching. Yet they do not resign themselves to failure. Instead they seek solutions and ways to circumvent the rote learning methods characteristic of the teaching at ENSP.

Interestingly enough, most of them were unwilling to advocate for any form of reform that might mandate gender-sensitive ways of teaching and learning. They felt engendering learning spaces might only confirm views of them as weak and in need of hand holding. In the competition for high grades with male students, they see themselves as capable, if not more capable. In their struggle against teacher bias and their efforts at overcoming didactic teaching methods, they see their success as a matter of determination in the face of pure individual barriers placed in their way. In their own eyes, at least, they have attained a new social class through their belonging to an exclusive institution by means of individual effort.

Female students at this institution have achieved a level of equality with males denied to most Cameroonian women. This equality is based on two main factors: their access to education and their seamless incorporation into the labor force in the future. (Carnoy & Samoff 1990) Their reluctance to advocate for reforms for fear of being viewed as less capable is thus understandable because any efforts aimed at accommodating females might undermine their very successes at this institution which they have worked hard to gain access and claim membership. After all, their own success at ENSP is a clear indication that individual women could be successful within the system by the right combination of talent, effort, and family support.

The females in the study came from a varied socio-economic background. Several came from humbled backgrounds, often with illiterate parents, one or both whom who worked the land. The kinds of occupations that these parents held included farmers, small-scale traders, unskilled workers and low-level civil servants and engineers. Until recently at least, schooling was still a means of social mobility for students of lower socio-economic backgrounds largely because of the opening of access to formal education that followed political independence in the 1960's. What is unusual about the women in the study is that several of them from lower economic backgrounds succeeded in Math and Science and gained acceptance into ENSP. Such acts not only reinforce the claim that higher education plays a critical role in development but accord them new social identities. Their new status is derived from the education received at this institution, the contacts they make in the local and global scientific community, their access to knowledge, future job and travel opportunities, and their resultant acceptance among the intellectual and social elites of Cameroon placed to succeed in their respective fields. By virtue of their training and access to science and technology, students acquire new sets of skills, generate and translate knowledge into new applications and products for their communities. Such interactions with powerful technological tools and texts as well as the learned skills and abilities accord them symbolic power (Bourdieu, 1991) as embodied in the knowledge, opportunities, and status that comes with being engineers.

Foucault (1972:49) would describe the discourses at ENSP as 'practices that systematically form the object of which they speak'. The subjects at ENSP employ systematic ways of making sense of the world by inscribing and shaping power relations within all texts, including spoken interactions. As individuals at ENSP assume or inhabit, multiple, contradictory, and shifting positions, with their conscious and unconscious ways in which they situate themselves in relation to the social world, they also constitute their subjectivities (Weedon,

1997). In this regard, they construct a multitude of identities because of the range of tools available. Thus, discourses at ENSP and the larger Cameroon society would be forms of knowledge or powerful sets of assumptions that govern the social and cultural practices of this environment. A Foucauldian understanding of power was thus important to the conceptual framework of discourse analysis for this study. First, it reinforced the important role of discourse in shaping power relations in society. Further, it moved away from the dualistic and overly simplistic understandings of gendered positionings in a patriarchal culture. Additionally, it allowed subjects at ENSP to interrupt the dominant discourses and gendered constructions on how men and women should act and be. While I did not explore the conditions of possibility in other discourses beyond the ENSP borders to determine what made it possible for these women to be assertive enough to interrupt the dominant discourses, the data from ENSP provides powerful vignettes and cogent examples of women drawing strength from various sources to enact multiple identities that veer away from reductionist categories. The discourse thus become dynamic and productive, introducing a range of subject positions and possibilities for individuals to occupy.

6.4. Limitations of the Study

In undertaking the research certain limitations were identified. These limitations, which were considered when reviewing the findings, should inform future research and work in the Cameroon the community.

Firstly, Cameroon has two different education systems in the Anglophone and Francophone regions. While the research touched on the two systems of education, the scope was limited to subjects at this Francophone engineering institute. It did not explore the regional, cultural, and traditional differences of being in this multi-ethnic society. Due to time constraints, the research was unable to expand beyond the ENSP the community. This meant that I could not interact with students in other math and science disciplines at the School of Medicine, The Faculty of Sciences and The School of Agriculture. Furthermore, I could not I gain access to institutions with traditional methods education to examine the nuances of gendered forms of schooling. The lack of repositories of institutional data also posed a challenged. While I was able to identify primary sources to mine data on traditional forms of schooling, such information, which could only be gotten by word of mouth, was always subject to interpretation. Secondly, access to information in Cameroon is poor due to the low capacity of organizations to collate and store data, let alone provide information. At the time of my research ENSP was in the process of implementing the software for data storage. Because the staff at ENSP had not been adequately trained on the new software, there were challenges in retrieving and interpreting such information as enrollment and graduation rates by gender, discipline and region. That notwithstanding, I was able to access data from other sources to fill in the gaps.

6.5. Suggestions for Future Research

The scale of the debate on gendered forms of schooling is therefore extensive and multifaceted even at the local level. There is need for more case studies in formal institutions in Cameroon to allow further assessment of how gendered constructions intersect with learning in specific environments. While this study has examined the centrality of cultural behaviors and traditions in ways in which gendered beings are framed in discursive contexts, it has also underscored the need for educational systems in Cameroon to interrogate current understandings, practices, and terminology that historically, presently, or potentially may inhibit equitable educational achievement of female learners. Further research could focus upon the identification of pedagogical practices that create, value, and support positive and inclusive classroom learning communities for such culturally marginalized groups. In this regard, classrooms would evidence responsiveness to the multiple learner identities present, and be aware of the importance and interconnectedness of culturally inclusive socio-cultural and cognitive practices. Research into the impact of multiple languages, experiences, ethnicities, identities, and achievement patterns of subjects the different formal learning environments remains a rich challenge for future research.

The area of teacher responsiveness to gendered learning processes/cycles also remains an ongoing context for further research and development. Teachers' knowledge and beliefs about learning, teaching, and subject matter, are critically important determinants of how they teach. Further investigation is required into the ways in which teacher responsiveness to the prior knowledge and experiences that diverse learner groups bring to the teaching and learning context influence the sufficiency and efficacy of student opportunities to learn.

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Appendices

Appendix A: Recruitment Letter for Research Study-English University of California, Berkeley Department of Education

What is the study about?

The proposed dissertation research project examines the intersection of gender, sciences and engineering, and higher education in Cameroon. I focus on Ecole Nationale Supérieure Polytechnique (ENSP) to discuss gendered representations in education. Of interest are female students in Cameroon who have overcome barriers in a traditional, patriarchal society to pursue careers as engineers and scientists tasked with developing their communities. While I am interesting in investigating how female students position themselves within the power structures of ENSP, I would also like to get the viewpoints perspectives from male students at ENSP.

Who is Eligible?

Students at ENSP between the ages 18 - 30

What will you be asked to do?

- 1.You will give your consent for me to observe you in class during lectures and classroom activities. I will conduct observations in classrooms twice a week, over a period of three months. These observations will be 45 minutes long. During the classroom observations, I will take down notes and/or will videotape classroom sessions.
- 2.You will also be interviewed individually. Interviews will take place in a designated room on campus. The interview will last a total of one hour. Interviews could be completed in two or three sessions.
- 3.You will be asked to complete a survey or questionnaires. This will be a set of ten open-ended questions. Questions will be given for you to complete at a time that is convenient for you. You will be requested to turn in completed questions within a period of two weeks.

Compensation: You will receive up to \$20.00 for your participation in this study.

If you have any questions or are interested in participating, please contact the investigator at:
patience@berkeley.edu

Appendix B: Recruitment Letter for Research Study-French

University of California, Berkeley Department of Education

Quel est le but de l'étude?

Le projet de recherche de thèse proposé examine l'intersection du genre, les sciences et l'ingénierie, et l'enseignement supérieur au Cameroun. Je me concentre sur Ecole Nationale Supérieure Polytechnique (ENSP) pour discuter de représentations genre dans l'éducation. D'intérêt sont les étudiantes au Cameroun qui ont réussi à surmonter les obstacles dans une société patriarcale traditionnelle à poursuivre des carrières d'ingénieurs et scientifiques chargées de l'élaboration de leurs communautés. Alors que je suis intéressée de découvrir comment les étudiantes se positionner dans les structures du pouvoir de l'ENSP, je tiens également à obtenir la perspective des points de vue des étudiants masculins à l'ENSP.

Qui est admissible ?

Les étudiants de l'ENSP entre l'âge de 18 – 30

Que vous serez demandé de faire?

1. Vous donnerez votre consentement pour moi de vous observer en classe pendant les cours et les activités de la classe. Je vais effectuer des observations dans les classes deux fois par semaine, sur une période de trois mois. Ces observations seront de 45 minutes. Pendant les observations en classe, je vais prendre des notes et / ou filmer la séance entière en classe.
2. Vous serez également interrogés individuellement. Les entrevues auront lieu dans une salle désignée sur le campus. L'entrevue durera un total d'une heure. Interviews pourraient être achevées dans un délai de deux ou trois séances.
3. Vous serez invité à remplir un sondage ou questionnaire. Ce sera une série de dix questions ouvertes. Les questions vous seront données pour la complétion à un moment qui est vous êtes favorable. Vous serez invité à retourner les questions achevées dans un délai de deux semaines.

Compensation: Vous recevrez a la limite \$20.00 pour votre participation à cette étude.

Si vous avez des questions ou êtes intéressés à participer, Prière de communiquer avec l'enquêteuse à l'adresse suivante: patience@berkeley.edu

Appendix C: CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Gendered Perspectives and Higher Education: Women in Sciences and Engineering in Cameroon

Introduction:

My name is Patience Fielding. I am a doctoral student at the University of California, Berkeley, working with my faculty advisor, Professor Claire Kramsch in the School of Education at the University of California. I am planning to conduct a research study, in which I invite you to take part. You are being invited to participate in this study because you are students at ENSP.

Purpose:

The purpose of this study is to investigate female students at ENSP to understand how they are described at ENSP. I will be interested in getting the perspectives of both male and female students. I plan to understand how female students fit in this historically institution. In this manner I will seek to understand the motivation to enroll at ENSP, the challenges faced as female students, and the ways in which the school supports their learning. I also want to understand how female students position themselves vis-à-vis their male counterparts. I will also seek male students' perspectives about their female counterparts. Through the viewpoints of both female and male subjects, I hope to capture a holistic picture of the hopes, challenges, and aspirations of female students as they pursue their studies at ENSP.

Procedures:

If you agree to be in this study, you will be asked to do the following:

1. You will be observed in class while participating in lecture and other classroom activities. I will conduct observations in classrooms twice a week, over a period of three months. These observations will be 45 minutes long. During the classroom observations, I will take down notes and/or will videotape classroom sessions.
2. You will also be interviewed individually. Interviews will take place in a designated room on campus. The interview will last a total of one hour. Interviews could be completed in two or three sessions.
3. You will be asked to complete a survey or questionnaires. This will be a combination of 20 close and open-ended questions. Questions will be given for you to complete at a time that is convenient for you. You will be requested to turn in completed questions within a period of two weeks.

Study location:

All study procedures will take place at the ENSP campus or a place agreed upon by the subject (student) and the student investigator (myself).

Benefits:

There is no direct benefit to students anticipated from participating in this study. However, it is hoped that the information gained from the study will inform education policy, initiatives and interventions in Cameroon.

Risks/Discomforts:

If any of the interview questions make you uncomfortable or upset, you are free to decline to

answer any questions you do not wish to. Please note that if you discontinue study participation you will receive compensation only for the hours of the study you complete. If you remain in the study but choose not to answer any questions you don't wish to, you will still receive the full amount of compensation.

Breach of Confidentiality:

As with all research, there is a chance that confidentiality could be compromised; however, we are taking precautions to minimize this risk.

Confidentiality:

Your study data will be handled as confidentially as possible. Data collected will be used exclusively for this study. If results of this study are published or presented, individual names and other personally identifiable information will not be used. To minimize the risks to confidentiality, you will not be identified by your names but codes. The codes used on protocols will not be linked to consent sheets signed by the subjects. Furthermore, data will be kept in secure data files accessible only to the principle investigator. No data will be transferred using the Internet.

Retaining Research Records:

When the research is completed and all reports, including dissertation are written, I will destroy the samples/ tapes and notes/ study records at the end of the study.

Compensation:

In return for your time/ effort/ travel expenses, you will receive a cash payment of \$20.00 for taking part in this study. You will receive \$10.00 when you sign the consent form at the beginning of the study. You will receive \$10.00 after you take part in the study by participating in classrooms I will be observing and responding to interview questions. You will receive the remainder of the funds \$10.00 within two weeks after I complete collecting my data. If you do not complete the study, you will not receive the remainder of the money.

Rights:

Participation in research is completely voluntary. Subjects will have the right to decline to participate or to withdraw at any point in this study without penalty or loss of benefits to which you are otherwise entitled.

Questions

If you have any questions or concerns about this study, you may contact me at patience@berkeley.edu.

If you have any questions or concerns about your rights and treatment as a research subject, you may contact the office of UC Berkeley's Committee for the Protection of Human Subjects, at 510-642-7461 or subjects@berkeley.edu.

CONSENT

You have been given a copy of this consent form to keep.

If you wish to participate in this study, please sign and date below.

Participant's Name (please print)

Date

Participant's Signature

Date

Person Obtaining Consent

Date

Appendix D: CONSENTEMENT DE PARTICIPATION A LA RECHERCHE

Titre de l'étude: Gendered Perspectives and Higher Education: Women in Sciences and Engineering in Cameroon

Introduction:

Je m'appelle Patience Fielding. Je suis étudiante en doctorat à l'Université de Californie, Berkeley, en collaboration avec mon conseiller de la faculté, le professeur Claire Kramsch à l'École d'éducation de l'Université de Californie. J'ai l'intention de mener une étude, dans laquelle je vous invite à y prendre part. Vous êtes invités à participer à cette étude parce que vous êtes étudiants de l'ENSP.

Objectif:

Le but de cette étude est d'examiner les étudiantes à l'ENSP de comprendre comment elles sont décrites à l'ENSP. Je serai intéressée d'obtenir les points de vue des étudiants masculins et féminins. J'ai l'intention de comprendre comment les étudiantes adhèrent dans cette institution historiquement. De cette manière, je vais chercher à comprendre la motivation de l'inscription à l'ENSP, les défis à relever en tant que étudiantes et les manières avec lesquelles l'école prend en charge leur apprentissage. Je tiens également à savoir comment les étudiantes elles-mêmes se positionnent vis-à-vis de leurs homologues masculins. Je vais aussi de la même manière recueillir les points de vue des élèves masculins vis-à-vis de leurs homologues féminins. A travers les points de vue des sujets masculins et féminins, j'espère pouvoir générer une image globale de l'espoir, les défis et les aspirations des étudiantes qui poursuivent leurs études à l'ENSP.

Procédures:

Si vous acceptez de participer à cette étude, vous serez invité à effectuer les opérations suivantes:

1. Vous serez observés en classe tout en participant au cours et autres activités de la classe. Je conduirais des observations dans les classes deux fois par semaine, sur une période de trois mois. Ces observations seront de 45 minutes. Pendant ces observations en classe, Je prendrai des notes et/ou filmer toute la séance en classe.
2. Vous serez également interviewés individuellement. Les entrevues auront lieu dans une salle désignée sur le campus. L'entrevue durera un total d'une heure. Les interviews pourront être achevées au cour de deux ou trois séances.
3. Il vous sera demandé de remplir un sondage ou questionnaire. Ce sera une combinaison de 20 questions fermées et ouvertes. Les questions vous seront données pour la complétion à un moment qui vous êtes favorable. Vous serez invités à retourner les questions achevées dans un délai de deux semaines.

Lieu de l'étude:

Toutes les procédures d'étude se dérouleront sur le campus de l'ENSP ou à un endroit convenu par le sujet (étudiant) et l'investigateur de l'étudiant (moi-même).

Avantages:

Il n'y a aucun avantage direct aux étudiants prévu de participer à cette étude. Cependant, il est à espérer que les informations obtenues à partir de l'étude informeront les politiques d'éducation,

des initiatives et des interventions au Cameroun.

Risques / Inconfort

Si l'une des questions de l'entrevue vous rend mal à l'aise ou contrarié, vous êtes libre de refuser de répondre aux questions que vous ne souhaitez pas. Veuillez noter que si vous cessez de participer à l'étude, vous recevrez une compensation que pour les heures de l'étude que vous avez terminée. Si vous restez à l'étude, mais choisissez de ne pas répondre à toutes les questions que vous ne voulez pas, vous pourrez toujours recevoir la totalité du montant de l'indemnité.

Violation de la confidentialité:

Comme pour toute recherche, il peut arriver que la confidentialité puisse être compromise, mais nous prenons les précautions nécessaires pour minimiser ce risque.

Confidentialité:

Vos données de l'étude seront traitées de manière la plus confidentielle. Les données recueillies seront utilisées exclusivement pour cette étude. Si les résultats de cette étude sont publiés ou présentés, les noms des individus et autre information personnellement identifiable ne seront pas utilisés. Afin de minimiser les risques pour la confidentialité, vous ne serez pas identifié par votre nom, mais par des codes. Les codes utilisés sur les protocoles ne seront pas liés aux feuilles de consentement signés par les sujets. En outre, les données seront conservées dans les fichiers de données sécurisées accessibles uniquement par le chercheur principal. Aucune de données ne seront transférées en utilisant l'Internet.

La conservation des dossiers de recherche:

Lorsque la recherche est terminée et que tous les rapports, y compris thèse sont achevés : Je détruirai les échantillons / bandes et notes / archives à la fin de l'étude.

Compensation:

En échange de votre temps / effort / frais de déplacement, vous recevrez un paiement en espèces de 20,00 \$ pour prendre part à cette étude. Vous recevrez \$10,00 lorsque vous signez le formulaire de consentement au début de l'étude. Vous recevrez \$10,00 après avoir pris part à l'étude en participant à l'étude en salles de classe, j'observerai et répondrai aux questions de l'entrevue. Vous recevrez le reste de fonds \$10,00 dans les limites de deux semaines après que j'ai terminé la collecte de mes données. Si vous n'avez pas terminé l'étude, vous ne recevrez pas le reste de l'argent.

Droits:

La participation à la recherche est entièrement volontaire. Les sujets auront le droit de refuser de participer ou de se retirer à tout moment de cette étude sans pénalité ou la perte des prestations auxquelles vous avez autrement droit.

Questions:

Si vous avez des questions ou des préoccupations au sujet de cette étude, vous pouvez me contacter à patience@berkeley.edu .

Si vous avez des questions ou des préoccupations au sujet de vos droits et de traitement en tant que sujet de recherche, vous pouvez communiquer avec le bureau de la commission de UC Berkeley pour la protection des sujets humains, au 510-642-7461 ou subjects@berkeley.edu .

CONSENTEMENT

Vous avez reçu une copie de ce formulaire de consentement à conserver. Si vous souhaitez participer à cette étude, s'il vous plaît signer et dater ci-dessous.

Nom du participant (s'il vous plaît imprimer) Date

Signature du Participant Date

Personne obtenant le consentement Date

Appendix E: Student Interview Protocol: French

Instructions: S'il vous plaît, répondez aux questions suivantes:

- 1) Nom: Pseudonym:
- 2) Age:
- 3) Sexe:
- 4) Etat civil:
- 5) Niveau scolaire du père de la mère du tuteur
- 6) Région d'origine :
- 7) Langues parlées :
- 8) Niveau d'étude :
- 9) Département/ Spécialisation
- 10) Qui s'occupe de vos frais/besoins d'école?
- 11) Quelle a été votre motivation pour entrer à l'ENSP
- 12) Décrivez votre parcours scolaire avant ton entrée à L'ENSP. Comment as-tu préparé ton concours d'entrée à L'ENSP?
- 13) Qu'est-ce qui vous intéresse dans le métier d'Ingénieur?
- 14) Décrivez une journée typique d'étudiante à l'ENSP
- 15) Quelles sont les difficultés auxquelles vous êtes ou vous serez confrontées en tant qu'étudiante?
- 16) Le pourcentage de femmes ingénieurs est très bas au Cameroun. A votre avis, quelles sont les raisons ?
- 17) Est-il nécessaire d'avoir des femmes ingénieurs? Quels sont les avantages d'avoir des femmes ingénieurs dans votre pays?
- 18) Quels sont les obstacles auxquels sont confrontées les femmes ingénieurs/scientifique?
- 19) Décrivez les méthodes d'enseignement à l'ENSP? Comment est-ce que ces méthodes peuvent être améliorées pour rendre les cours plus intéressants?
- 20) Connaissez-vous des étudiantes qui ont abandonné leurs études à l'ENSP? Quelles en sont les raisons?
- 21) Quelles sont les matières les plus intéressantes de votre programme scolaire? Sont-elles favorables au genre féminin? Expliquez:
- 22) A ton avis, que pourrait faire l'administration pour rendre l'ENSP (les matières, l'environnement, les méthodes d'enseignement) plus convenables aux étudiantes?
- 23) Comment vous sentez-vous dans cet environnement en tant que femme/homme, étudiante et future ingénieur?
- 24) Comment faites-vous pour vous détresser? Quels sont vos loisirs et passe-temps?
- 25) Quelles autres questions me suggériez-vous de poser concernant vos expériences à l'ENSP?
- 26) Quelles sont vos impressions après avoir participé à cette étude ?

Guide académique et conseil d'orientation

Instruction : Indiquez votre niveau de perception sur les phrases suivantes

Phrases	Totalement D'accord	D'accord	Neutre	désaccord	Vraiment Pas D'accord
L'insuffisance du matériel adéquat pour l'apprentissage peut affecter en majorité les femmes que les hommes					
Le parcours scolaire précédent l'entrée à l'ENSP de certains étudiants n'est pas favorable à leur succès au sein de l'ENSP					
Il y a un suivi continu pour les étudiants en difficultés académiques					
Il y a un bon suivi et orientation au sein de l'école					
Les enseignants se prennent en compte la différence de genre et essayent de soutenir les étudiantes					
Les étudiantes se sentent libres et en sécurité pour travailler et étudier comme les garçons à tout moment au sein du campus					
Dans beaucoup d'aspect, L'ENSP a une atmosphère accueillante pour les étudiants femmes et homme					

Les Facteurs Qui Affectent la Performance des Etudiants

Instruction: Cochez la réponse selon le genre sur la colonne correspondante.

Quels facteurs a ton avis affectent les performances académiques des étudiants	Femmes			Hommes		
	Oui	Non	Je ne sais pas	Oui	Non	Je ne sais pas
Faible gestion du temps						
Harcèlement sexuel						
Faible sociabilité						
Problème économique : Financier						
Manque de suivi et de soutien						
Manque de matériels d'enseignement						
Manque de confiance						

Instructions: Please respond to the following questions:

2) Age:

4) Marital Status:

Mother

Guardian

7) Languages Spoken :

9) Department/ Specialization

11) What led you to enroll at ENSP ?

12) Describe your trajectory into ENSP. How did you prepare for the entrance exams?

13) What do you like about becoming an engineer/scientist?

14) Describe a typical day at ENSP.

15) What challenges do you/will you face as male/female student?

16) The proportion of women scientists/engineers in Cameroon is quite low. What do you think accounts for this fact ?

17) Is it necessary to have women scientist? What are some of the benefits of having female engineers in the community

18) What obstacles do you see to having more female engineers? How might those obstacles be overcome ?

19) How would you describe the teaching methods at ENSP? How do these methods contribute to your success at ENSP ?

20) Do you know any students who dropped out of the program? What were the reasons?

21) How would you describe the curriculum at ENSP? Is it gender friendly ? Explain.

22) In your opinion, what should be done to make the school environment and curriculum/pedagogy more gender friendly?

23) How do you fit and see yourself in this environment? As a female, student, and future engineer ?

- 24) What do you do to de-stress? What are your past times and recreational activities?
- 25) What other questions should I have asked about your experiences at ENSP?
- 26) What have been your impressions responding to these questions and participating in this study ?

Academic Guidance and Counselling Support

Instructions : Please indicate your level of agreement to the following statements

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Lack of adequate learning materials can affect more female students than males					
Some students' previous academic experiences does not prepare them to succeed at ENSP					
There is continuous and need-driven remedial support at ENSP					
There is good guidance and counseling service at ENSP					
Instructors take gender disparity seriously and have attempt to extend support					
Female students feel free and safe to work and study as boys at any time on campus					
In most aspects, ENSP has an equal welcoming atmosphere to male and female students					

Factors that Affect Students' Performance

Instructions: Check the appropriate responses.

In your opinion which factors affect students' academic performance ?	<u>Females</u>			<u>Males</u>		
	Yes	No	Don't Know	Yes	No	Don't Know
Poor time management						
Sexual harassment						
Poor social skills						
Economic problems: Financial hardship						
Lack of guidance and support						
Lack of teaching materials						
Poor self-esteem						

Appendix G: English Version: Interview Protocol for Professors and Staff

Introduction: We are seeking to understand the choice of engineering as a profession. In particular, we would like to understand the student and teacher experiences at ENSP. Your views are therefore extremely important and valuable to our study.

1. Name:
2. Gender:
3. Department:
4. Administrative responsibilities
5. Number of years employed at ENSP
6. What do you enjoy about teaching/working at ENSP?
7. What are some of challenges you face as a teacher/staff at this institution?
8. Describe your typical day at ENSP?
9. In your view, what are the main reasons why students choose to study engineering?
10. What are the some of the challenges faced by students at ENSP?
11. Are there any particular challenges faced by males/females? Explain.
12. What accounts for the absence of official policies to promote a greater enrollment of women at ENSP?
13. What accounts for the absence of official policies to increase the number of female teachers/staff at ENSP?
14. To what extent does the entrance examination function as an impediment to the admission of females into ENSP?
15. Does ENSP have any programs to support female students/professors/staff?
16. What could be done to make the institution more gender inclusive?
17. What do you think should be done to make curriculum and teaching methods responsive to the needs of female students?
18. Do you notice any difference in aptitudes, attitudes, or participation between male and female students?
19. How do you ensure equal classroom participation between male and female students?
20. What kinds of collaboration activities you have with your male/female colleagues?

Appendix H:French Version : Interview Protocol Professors/Staff

Introduction: Nous cherchons à comprendre le choix de la profession d'ingénieur. En particulier, nous aimerions comprendre l'élève et expériences des enseignants à l'ENSP. Vos points de vue sont donc extrêmement importants pour notre étude.

1. Nom :
2. Sexe:
3. Département:
4. Les responsabilités administratives
5. Nombre d'années d'emploi à l'ENSP
6. Qu'aimez-vous à propos de l'enseignement / travail à l'ENSP ?
7. Quels sont des défis auxquels facent les professeurs / personnels de cette institution?
8. Décrivez votre journée typique à l'ENSP
9. À votre avis, quelles sont les raisons principales pour lesquelles les étudiants choisissent d'étudier l'ingénierie ?
10. Quels sont les quelques-unes des difficultés rencontrées par les étudiants de l'ENSP ?
11. Y a-t-il des difficultés particulières rencontrées par les hommes / femmes ? Expliquez.
12. Comment expliquer l'absence de régulations officielles pour promouvoir un plus grand nombre de femmes inscrites à l'ENSP ?
13. Comment expliquer l'absence de régulations officielles afin d'augmenter le nombre d'enseignants / personnel féminin à l'ENSP ?
14. Dans quelle mesure l'examen d'entrée sert comme un obstacle à l'admission des femmes dans l'ENSP ?
15. Y-a t'il des programmes pour soutenir les étudiantes / professeurs / personnel féminin ?
16. Que pourrait-on faire pour rendre l'institution plus inclusive selon le genre?
17. Que pensez-vous qu'il faudrait faire pour rendre le curriculum et les méthodes d'enseignement plus responsives aux besoins des étudiantes ?
18. Avez-vous remarqué une différence au niveau des aptitudes, des attitudes, ou de la participation entre les étudiants masculins et féminins ?
19. Comment assurez-vous la participation égale entre les étudiants masculins et féminins ?
20. Quels types d'activités de collaboration avez avec vos collègues hommes/femmes?