RECONSTITUTING PORTALS AND POWER RELATIONS: THE INTERNATIONALIZATION OF L’ECOLE POLYTECHNIQUE

A dissertation presented

by

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to

The Department of Sociology and Anthropology

In partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in the field of

Sociology

Northeastern University
Boston, Massachusetts
November 2014
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ABSTRACT OF DISSERTATION

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ABSTRACT

This dissertation scrutinizes the link between higher education and elite formation in France to understand what the changes undertaken by elite higher education institutions in response to globalization mean for the reconfiguration of the French elite. Despite its democratic spirit and turbulent history, France has demonstrated remarkable stability concerning the reproduction and legitimation of its elites, largely though its state-controlled education system. The social, economic, political, and cultural dynamics of the current era of neoliberal globalization, however, bring numerous changes to nation-states and education systems, including internationalization and diversification strategies. Such evolutions complicate historical links between the academy and the national elite, potentially challenging the stability of French social reproduction.

To examine these dynamics, this dissertation employs a case study focusing on the pre-eminent grande école, l’Ecole polytechnique (l’X), which has historically served as a conduit to the national technical elite. I argue that the internationalization and diversification strategies undertaken by l’X in response to the forces of globalization are filled with multiple tensions. The implementation of changes in order to respond to the demands and flows of global science, industry, business, and higher education is countered by conservative efforts to preserve the nation-state’s legacy, structures, and privileges of its elites. Additionally imbricated in these tensions are competing notions of meritocracy that bring the French ideal of republican universalism - or abstract citizen equality - into question. The particularities of the French notion of meritocracy are brushing up with notions of meritocracy increasingly emphasized in the internationalization and diversification of higher education, producing frictions that both
question as well as reinforce the notions of republican universalism and meritocracy held by the French nation-state and its elites, resulting in socially contoured relationships of power in terms of class, gender, and national origin.
ACKNOWLEDGEMENTS

As my advisor has countless times reminded me, a dissertation is a marathon and not a sprint, and so heartfelt thanks are due to the many people who have provided encouragement, support, and sustenance along the course.

First and foremost, I would like to thank my advisor, Kathrin Zippel, for her committed feminist mentorship – intellectual, professional, and personal – during this project and throughout my program. Her creativity, understanding, and support over two continents and amid unexpected turns have been truly invaluable, and I have learned enormously from her as a student and collaborator. Without her confidence and guidance, completion of this project would not have been possible.

I feel additionally blessed to have enjoyed the feminist mentorship of Linda Blum during my program and dissertation. Linda’s rigorous thought, smart insights, and generous commitment to me as an individual and scholar and have helped me grow as a feminist in sociology. It has been a true pleasure to work with her as a research and teaching assistant, and to reflect about my work with her. I am particularly grateful to Jeff Juris for his thoughtful guidance, provocative questioning, and thorough engagement with my work, elements that have been decisive for me in order to make the connections and articulate the arguments I found central and just for this project. Many thanks to Steve Vallas for his theoretical insights, good humor, and cheerful support for this dissertation, which will certainly continue to bear fruit. I would also like to thank Laura Frader, who went above and beyond as an external reader to offer feminist guidance about the “French case.” It has been a delight to learn from her and be inspired by her passion and energy.
While not a member of my committee, I am deeply indebted Christine Musselin. Her initial confidence in me and my work, and the ensuing invitation to be a visiting doctoral student at the Centre de sociologie des organisations (C.S.O.) at l’Institut des études politiques de Paris (Sciences Po), have been essential. Her commitment to intellectual work and scholarly solidarity is truly extraordinary and exciting. Merci beaucoup! Accordingly, I would like to extend my sincere gratitude to the collegial researchers, doctoral students, and administrative staff at the C.S.O. for welcoming me to participate in their academic community as a visiting doctoral student, which has been a stimulating, rewarding, and enjoyable experience.

Many thanks to Joan Collins, Mary Ramsey, and Tracy Johniken in the Northeastern Sociology and Anthropology department office for all of their administrative assistance and support. I would like to acknowledge Olivier Azzola, the archivist at l’École polytechnique, for his welcome and assistance. Thank you also to Francis Pavé, Laura Fioni, Scott Viallet-Thévenin, Philippe Boureux, Amanda Guesdon, and Quitterie de Fonbrune for their exchanges about my project and for the logistical doors they opened for me. Immense gratitude is due to Romain Cames, Elyette Mage, and Clémentine Hahn for fantastic transcription connections and aid, as well as to all of the interviewees who generously took the time to speak and share with me. Mille mercis! Profound thanks, too, to the Council for European Studies and to Northeastern University for fellowship support during this dissertation project.

It has been a deep pleasure to engage with fellow student colleagues about our work throughout the program and dissertation progress, notably Firuzeh Shokooh Valle, Laura Visser, Emily Cummins, Estye Fenton, Yingchan Zhang, Ethel Mickey, Leandra Smollin, Brett Nava-Coulter, Betul Balkan Eksi, Behice Pehlivan, Nakeisha Cody, and Emily Smykla. Additionally, I am particularly grateful for the sound advice and caring encouragement of Heidi Barajas and
Kenny Nienhusser to pursue sociology, as well as for the constant feminist support and friendship of Darlyne Bailey, Kelly McNally Koney, Ruthmary Powers, Mary Ellen McNish, and Katie Embree. Furthermore, I thank Kathleen Holtermann, Michael Kiskis, MaryJo Mahoney, Mitchell Lewis, Lynne Diamond-Nigh, and Leslie Siskin for their instruction, wisdom, and guidance that fostered my interest in and passion for language, culture, theory, feminism, and education.

To my parents – George and Catherine Uhly – and my sisters - Laura Uhly and Diana Uhly – thank you for believing in me and for your unselfish encouragement to pursue my dreams, even if they are thousands of miles away: this love is one of the greatest gifts a family can give. To the Carydis and di Paola families, merci beaucoup pour votre accueil et votre amour – j’ai terminé la thèse! To my spiritual communities in the United States and in France, thank you for your forgiving welcome and gentle push to seek life beyond myself. To my best friend and honorary sister, Katharine Burakowski, words cannot describe how grateful I am for our friendship and our learning and growing together after all these years. I am really proud to be your friend – and of our doctoral accomplishments!

Finally, to Christian Carydis, thank you. Thank you for your commitment to building together, for your patience across time and space, and for your support in all ways. Thank you for being an enthusiastic cheerleader, trustworthy sounding board, meticulous proofreader of French translations, and all-around joyful partner. Your love has helped me reach the finish line, and I look forward to the road that lies ahead for us together.
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CHAPTER 1 - INTRODUCTION AND BACKGROUND

With this military side, there is an aspect of patriotism, to give something to France. (...) We engage in service for the state in several manners: there are those who become functionaries who work directly for the state, and others that will be engineers or managers who will be in French businesses for the French economy. So in the end, we don’t necessarily continue with military service, but we are formed to serve the state. And that is really a sentiment that I acquired at the school. (Colette, French student)

Introduction

Despite its espoused republican universal and meritocratic values, France has demonstrated remarkable stability concerning the reproduction and legitimation of its elites. Social reproduction of the elites seems to be deeply entrenched in France: study after study suggest that little meritocratic social mobility actually takes place (Bourdieu 1996 [1989]; Boussard and Buisson-Fenet 2010), and scholars suggest that France has “perfected” elite selection through its state-controlled education system. The social, economic, and cultural dynamics of the current era of neoliberal globalization, however, bring numerous changes to nation-states and education systems, including internationalization and diversification strategies. Such evolutions complicate historical links between the academy and the production of a national elite, potentially challenging the stability of French social reproduction. In this dissertation, I ask, given the unique link between higher education and elite formation in France, what do the changes undertaken by elite higher education institutions in response to globalization mean for the reconfiguration of the French elite?

To address this question, I employ a case study scrutinizing the pre-eminent grande école, l’Ecole polytechnique (l’X), an engineering school that has historically served as a conduit to the national technical elite and stands out as the summit of the grandes écoles. As a public
institution of higher education and research under the tutelage of the French Ministry of Defense, l’X has been intimately implicated in the development of the French nation-state, even bearing the motto, “Pour la patrie, les sciences, et la gloire!” (“For the country, for science, and for glory!”). Its graduates – the polytechniciens – have historically held elite roles in the French state administration, and, more recently, in business and industry. With its military legacy and explicit links to the construction and defense of the French state and its elite, as well as its technocratic rationality and meritocratic aims as an engineering school, l’X offers a fascinating window into the reconfiguration of the French elite during the contemporary era of globalization. It is thus an appropriate site to examine the modern contract between the nation-state and higher education in France to understand how the processes of globalization affect elite public universities.

I argue that the internationalization and diversification strategies undertaken by l’X in response to the forces of globalization are filled with multiple tensions. The implementation of changes in order to respond to the demands and flows of global science, industry, business, and higher education is countered by conservative efforts to preserve the nation-state’s legacy, structures, and privileges of its elites. Additionally imbricated in these tensions are competing notions of meritocracy that bring the French ideal of republican universalism - or abstract citizen equality - into question. The particularities of the French notion of meritocracy - or achievement according to individual achievement and efforts, regardless of social origins - have long provided the cover of symbolic violence, or misrecognition of power dynamics, undergirding the French education system and leading to the social construction and reproduction of its elite. These particularities, however, are brushing up with notions of meritocracy increasingly emphasized in the internationalization and diversification of higher education, in which different forms of achievement and excellence are valorized, and different degrees of attention to social difference,
such as gender, class, and nation, exist. Through an intersectionality analysis - or attention to the “dimensions of inequality” as dynamic, mutually constituting relationships of gender, class, race/ethnicity, and nation (Ferree 2008) - I find that these encounters are producing frictions that both question and reinforce the notions of republican universalism and meritocracy held by the French nation-state and its elites, resulting in socially contoured relationships of power in terms of class, gender, and national origin.

**Why Study France and Its Education System?**

This project examines the modern contract between the nation-state and higher education in France to understand how the processes of globalization affect elite public universities. France is a particularly important and useful site for this study. With its legacy in the Liberal Enlightenment ideals that stimulated the 1789 French Revolution, the French nation-state is a model of modern, centralized, bureaucratic rationality constructed according to the value of meritocracy. The example of France and its Revolution for equity in law has served as motivation for other nationalist causes; France has become a model of “nation” and of nationalism, reclaimed by other communities (Anderson 1991). Its construction has been deliberate and achieved through force, such as the imposition of the French language and the development of its territory, in order to forge a strong, centralized national identity (Scott 1999). Scientific and mathematical logic are highly privileged and valued in academic, as well as political thought. Furthermore, through French colonial conquests, as well as the exchanges and travels of its elites and engineers, the model of the nation-state has spread to other countries and regions. As a leader in promoting discourses of human rights, France remains a powerful and influential actor in Europe and in the world.
France also represents a key model of democratic citizenship embraced in modern nation-states. In France, the notion of citizenship has been founded upon the ideal principle of republican universalism, which emerged out of the *Déclaration des droits de l’homme et du citoyen de 1789* (Declaration of the Rights of Man and of the Citizen), Rousseau’s social contract, and Sièye’s notion of a nationally sovereign representative government. While republican universalism and its foundational components have undergone heated theoretical and political debates throughout history, I provide herein a brief overview of their distilled, common interpretation. A “mythologized restatement of principles of 1789” (Scott 2004), republican universalism rests on abstract concepts of the *individual* and the *nation*. The *individual*, according to the republican universal ideal, is a rational being, abstracted from her or his social conditions and thus interchangeable with all other individuals. As such, the *nation* is the people’s will, as expressed by representatives who speak collectively for the whole, rather than for recognized distinct social groups, or *communitarianisme*, which is officially vigorously opposed. Each individual citizen theoretically represents the nation, and universal inclusion of citizens in politics is important.

According to the ideal principle of republican universalism, all individual citizens in the nation are considered equal and should thus enjoy equal access to and treatment by public institutions, such as the education system. In the spirit of modern rationality, the French state has sought to create a meritocracy, or social structure according to individual achievement and efforts, through its education system. To fulfill this ideal, the French education system has historically served as an instrument of the state to reproduce republican norms and shape each individual student as a citizen who can appropriately engage with the state and occupy her/his place in life in relation to individual ability and industriousness, regardless of social origins;
equality of access in the education system is thus essential. Similarly, the public school has been an important site to cultivate the national identity and affiliation among its pupils.

While these notions of republican universalism and meritocracy have been anchored as theoretical ideals undergirding the French nation-state and its citizenry, their real application and fulfillment have been riddled with complications and problems. Throughout the construction of the French nation-state, various types of “difference,” such as gender, race/ethnicity, nation, religion, and social class, have received attention and been attributed meaning, which have shifted in significance over time (Weil 2004b; Chebel d'Appolonia 2009). Repeated attempts have occurred to suppress *communitarianisme*, the identification with specific groups, at different times (Weil 2004a; Bowen 2011; Mir 2011). Social science research shows that social groups and differences do matter: inequality regimes, or “loosely interrelated practices, processes, actions, and meanings that result in and maintain class, gender, and racial inequalities” (Acker 2006: 443), are inherent in social structures and processes. Such inequalities tend to be perpetuated across generations so that social reproduction is strongly anchored in France (Bourdieu 1984; [1989] 1996; Bourdieu and de Saint Martin 1987; Bourdieu, Grignon, and Passeron 1973; van Zanten 2010; van Zanten and Robert 2000).

The theory of Bourdieu, in particular, offers an especially illuminating springboard into these questions in France. Developing a comprehensive system to explain the maintenance of state legitimacy, social reproduction, and symbolic boundaries, Bourdieu saw the education system as central to his framework, which - although nominally constructed around republican universalist and meritocratic ideals according to Liberal Enlightenment thinkers - engages in processes of stratification, along with symbolic rites that are socially recognized and state sanctioned as legitimate and prestigious. Bourdieu reveals not only how combinations of
economic, social, cultural, and symbolic capital undergird access to higher education, but also how the interplay between academic structures and individual agency contributes to the class structure reproduction. As entry into the most prestigious academic institutions - the \textit{grandes écoles} - has historically led to positions in the state administration - the \textit{corps de l’Etat} - the state plays a primary role in the formation and certification of its own elites, who, in turn, take positions in the \textit{corps de l’Etat} and play a primary role in the construction of the state.

Despite his theoretical contributions and extensive ethnographic work, Bourdieu’s framework has largely focused on class, whereas critical feminist scholarship shows how the French elite has not only been defined by social class, but also by other relationships, such as gender (men) and race/ethnicity (white and born in France) (Chebel d’Appolonia 2009; Scott 2004; Boussard and Buisson-Fenet 2010). In part, these stratifications relate to the development of who has been considered “French” and thus able to be considered “elite.” France has a legacy privileging white, property owning men, massively excluding Muslims, Arabs, and Jews, and women (Weil 2004b). Thus, the republican universalism undergirding French citizenship developed upon the exclusion of certain groups of people and impeded their access to elite institutions, stymying the development of a meritocracy according to Liberal notions. Moreover, on a more theoretical level, defining and comprehending the concepts of “difference” and “merit” pose myriad concerns (Scott 2004).

In addition, the social, economic, and cultural dynamics of the current era of neoliberal globalization, notably around higher education, potentially challenge the relatively stable conditions of the reproduction of the French national elite. Many elite professions and most major elite institutions of higher education now have stakes in both the national and international fields (Boussard and Buisson-Fenet 2010; Amsler and Bolsmann 2013); they are no longer solely
nationally oriented. International mobility and recruitment change the composition of student bodies at institutions of higher education. Academic programs seek to adapt their formation to meet the demands of elite professions and potential foreign assignments. In France, an elite associated with the world of business and industry has emerged, often separate from the public sector and state elite. As seen in other national settings, this new elite is popularly perceived as engaged in individually oriented activity and concerned with personal wealth, rather than public service and the national welfare (Higley and Lengyel 2000; Schatz 2000).

While global flows and exchange have been occurring throughout much of history, I see the current era of globalization as distinct, involving profound qualitative and quantitative changes in economic, social, political, and cultural relationships and processes with respect to time and space. Through advances in transportation and communication technologies, capital, goods, people, and ideas have become engaged in new flows, creating new attachments and connections. Additionally, contemporary globalization is intimately imbricated with neoliberalism, a political and economic project advocating individual entrepreneurial freedom, private property rights, and free markets, which has nonetheless resulted in trends toward massive financialization, the entrenchment of economic elite power, the decline in Keynesian economics, and the deterioration of democratic practices. Ultimately, contemporary neoliberal globalization unsettles modern contractual obligations and responsibilities between individuals and institutions.

The study of the intersection of neoliberal globalization and higher education has tended to distinguish between “globalization” and “internationalization,” defining the former as forces acting upon higher education (Altbach and Knight 2007; Altbach and Salmi 2011). “Internationalization,” thus, is considered the strategies, policies, and practices that academic
systems, structures, and individuals undertake to respond to globalization (Altbach and Knight 2007). I argue, however, that “internationalization” clearly involves concrete choices and actions that allow higher education to participate in and influence neoliberal globalization, and according, the ways in which global capital and authoritative knowledge are accessed. I use here the term “internationalization” in reference to these discussions in the literature, yet I suggest that this particular conception obscures the neoliberalizing tendencies of higher education as it participates in this process, thus potentially diverting attention from the power relations and the logics of neoliberalism that are becoming embedded in higher education. The internationalization of higher education can accordingly be understood as a type of discourse that indicates active knowledge production, development, and labor-relevant training, which have become normalized in higher education for institutions to be seen as legitimate actors in a global market (Stier and Böörjesson 2010). The term “internationalization” is itself also important. At its root, it guards the word “nation,” thus suggesting that the nation-state remains implicated and intact. “Internationalization” occurs between nation-states, within which higher education is inscribed.

Furthermore, during the past 40 years, the notion of meritocracy has become more and more prominent as the key value for social organization, access to work and material resources, and academic achievement, particularly among the elites (Khan 2012). In France, the notion of “meritocracy” has long undergirded the education system and the ideal construction of its elite, and as higher education – an obligatory portal to many elite positions - is increasingly considered on the international stage, discourses about creating a “global meritocracy” have arisen (Wildavsky 2010).

The foundational ideals of republican universalism and meritocracy come into the spotlight as the French nation-state confronts the contemporary processes of globalization and
neoliberalization. These processes, which complicate the sovereignty of nation-states, the role of higher education, and the exclusive ties between common notions of “nation” and “citizenship,” potentially disrupt notions of difference and merit, and thus disrupt or reconfigure social reproduction in France and in other nation-states who have followed the French model. The public higher education system – the site of cultivation and realization of these ideals, which falls under national responsibility – is thus an important window to study their meanings, production, and accomplishment. Yet, little research has targeted the intersection of contemporary global flows, higher education, and the supposedly meritocratic production of the French elite, thus creating an opportune moment to revisit Bourdieu’s theory and examine how long-held patterns and practices of national social reproduction might be changing.

Research Site: What is l’Ecole polytechnique (L’X)?

Brief History

Following Enlightenment principles, the modern French nation-state has sought to create an elite based on meritocratic achievement. The modern education system has been foundational to this goal, with the most elite schools, the grandes écoles, developed to offer technical and professional education to form administrators for the state administration – the corps d’Etat.

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1 Notions and discourses of citizenship, universal rights, and meritocracy have been traveling – and transforming - on the flows of globalization. While it is not the aim of this dissertation to map, study, and understand the journeys and evolutions of these terms, it is nonetheless important to recognize their centrality in founding the modern French nation-state and their continued presence in debates about citizenship, the state, and public education.

2 L’Ecole normale supérieure is somewhat exceptional in this case; focusing on the humanities, social sciences, and physical sciences, it trains professors for high school and higher education. The institutions that lead to careers more explicitly linked with official power include l’Ecole polytechnique, l’Ecole des hautes études commerciales (School of Advanced Business Studies), and l’Ecole nationale d’administration (National School of Administration). Also, it is important to note that research in France occurs through the CNRS, which is a large network organization that combines all fields of basic research, as well as specialized institutes, sometimes attached to a grande école or a university. This structure is relatively flexible and project-based (Vinokur 2010).
and the army. The *grandes écoles* have historically been separate from universities\(^3\), institutions focusing on more theoretical and intellectual training\(^4\). Privileged as rational and neutral selection tools, the math and science disciplines have been central to the French education system (Belhoste, et al 1995; Belhoste 2002). Engineering schools have historically held particular prestige, playing a fundamental role in producing the most elite, technically competent individuals with the knowledge to build the modern French nation-state. Among them, *l’Ecole polytechnique* (l’X) stands out in esteem as the summit of the hierarchy of the *grandes écoles*, traditionally functioning as a key conduit to the national technical elite in the *corps de l’Etat* and serving as the model for other *grandes écoles* (Suleiman 1979; Gillispie 2008). As Bourdieu ([1989] 1996) has termed it, l’X is a “*grande porte*” that offers access to the most important state technical posts, as well as other prestigious positions: alumni include past French presidents, such as Valéry Giscard d’Estaing; military heroes, such as the Maréchal Foch; well-known entrepreneurs and business leaders, like André Citroën and Bernard Arnault; not to mention the philosopher/early sociologist Auguste Comte.

Created in 1794 under the name *l’Ecole centrale des travaux publics* (Central School of Public Works) by mathematicians heavily implicated in roles of national defense and engineering, it served as the model for other *grandes écoles* (Belhoste 2002). Since then, mathematics has been especially privileged as the key testing subject for entry to l’X (and other *grandes écoles*) because of the perception of its simplicity and objectivity of measurement to

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\(^3\) In contrast to the *grandes écoles*, public universities are relatively open in admission, having opened radically to massively accommodate students during the late 20th century. Both universities and *grandes écoles* are relatively low in cost (universities average between 300 to 3,000 Euros in tuition per year and the *grandes écoles* range between 300 and 7,000 Euros per year) (Prieur 2008). Given its history of attention to class struggles, the French government has instituted a standardized system for scholarships and grants to permit students from lower economic classes to attend higher education; funding supports exist for both public universities as well as the *grandes écoles* (Morgan 2006; Nationale 2010).

\(^4\) Except for that of doctors, lawyers, and pharmacists
ensure meritocratic entry (Gillespie 2008). Under Napoleon in 1804, l’X was designated a school of formation for officers of the army (Suleiman 1979) and came under the control of the Ministry of the Interior with the motto “Pour la patrie, les sciences, et la gloire!” (“For the country, for science, and for glory!”). This mission distinguishes l’X from other engineering schools in France, where service and attachment to France are less explicitly emphasized. Thus, it is a highly elite academic and military institution.

*Historical Admission to l’X: The Concours and the Classes Préparatoires*

Entry to l’X has historically demanded a long and rigorous educational preparation and selection through the *concours*, or national exam. Recruitment by the *concours* has been conceptualized as a meritocratic mechanism of selection based on individual capacity and drive. It developed out of the French Revolutionary spirit concerned with equality, opposed to privilege linked to birth and family, and it was designed to serve as an efficient and legitimate selection tool in the education system, the results of which are ideally considered unquestionable (Belhoste 1995, 2002). Although involving slight adjustments from year to year to correspond with advancements in the STEM fields, the procedures of evaluation and classification for the *concours* became officially systematized in 1852 (Belhoste 2002). Since then, any major modifications of the *concours* and its organization – such as designating who is eligible to participate - have taken place only after intense reflection and scrutiny by the administration of l’X and the French state.

Preparation for and participation in the *concours* for l’X involve intense competition. Historically, students have only been eligible to take the *concours* after completing the science
track\textsuperscript{5} of the \textit{classes préparatoires}. Following their baccalaureate (high school) diploma, students can apply to the \textit{classes préparatoires} with a dossier based on their high school academic performance. Upon selection, students spend two years in the \textit{classes préparatoires}, during which they may specialize further into particular STEM-related tracks. Ultimately, these \textit{classes} prepare them for the \textit{concours} for l’X and/or for other elite STEM institutions. During their intense education in the \textit{classes préparatoires}, students do not have time to engage in outside work that could result in remuneration for them or their families. Students who cannot live at home or cannot pay for alternative housing can receive scholarship monies for housing. While entrance fees are minimal for public \textit{classes préparatoires}, private ones also exist, which require tuition payment. The \textit{Lycée Sainte-Geneviève} (nicknamed “\textit{Ginette}”) is a private institution that is a major feeder school for l’X.

The \textit{concours} for l’X consists of a written and an oral component; it is necessary to first pass the written part in order to advance to the oral part. Students are scored and ranked, and their entry to l’X depends on their ranking position. As l’X is a military institution, students must also sufficiently pass physical exams, which, while important, are largely symbolic. Approximately 400 students enter l’X via the traditional \textit{concours}. Students with French nationality who are admitted to l’X and become \textit{polytechniciens} hold the title of a state functionary and thus receive a stipend, privileging their entry into the French employment and

\textsuperscript{5} Two other \textit{classe préparatoire} tracks exist: literary studies and economic and commercial studies; however, they are to prepare students for other types of \textit{grandes écoles}, such as elite institutions specializing in the social sciences and humanities, or business schools, respectively.
pension system\textsuperscript{6}. L’X is thus at the intersection of the French education system and defense of the French nation-state.

\textit{Broadening the Pool of Candidates: 1970-Present}

Although a conservative and elite reference in France, l’X has certainly not remained completely static throughout its history. Its original designation as a school of army officer training initially barred women students, foreign students\textsuperscript{7}, and students with disabilities from presenting themselves for the \textit{concours}; however, these interdictions have changed over the past 40 years. In 1970, it became a public institution of higher education and research under the tutelage of the Ministry of Defense through an ensemble of reforms, giving the institution greater administrative autonomy and opening it up to preparing students beyond the \textit{grands corps de l’Etat}. The Minister of Defense at the time, Michel Debré, led this reform, emphasizing that l’X had become an institution that primarily trains civil engineers for a plurality of fields, rather than solely military officers and engineers. These reforms additionally included the institution’s move from Paris to Palaiseau, a suburb outside of the capital city, as well as a re-articulation of the mission of l’X that emphasized its reach beyond the military.

Associated with its transition in status, women gained access to l’X – as well as to all other military schools in France – by a national decree on August 25, 1971, and received the right to participate in the 1972 \textit{concours}\textsuperscript{8} (Belhoste 2002). While age, health, and normative physical abilities had historically played discriminating criteria for admission, in 1993, students

\textsuperscript{6} In various national settings, members of the military were among the initial beneficiaries of welfare systems; the model of their benefits was extended to the broader populations as such systems developed (Goodwin and Mitchell 2000).

\textsuperscript{7} Access to foreign men has varied, however, in relation to the foreign policy of France, which I will discuss further.

\textsuperscript{8} Women were initially housed in the nursing station, as there was no other facility available for them.
with disabilities were expressly admitted. Following the 1994 *Conférence des grandes écoles* (organization representing the ensemble of the *grandes écoles* and concerned with their direction) session focused on the question of internationalization, l’X launched its initial internationalization strategy in 1995 (Lazuech 1998), notably instituting the *concours voie 2*, opening admission to foreign students and a limited number of French students who had not participated in the *classes préparatoires*.

During much of the institution’s history, auditing foreign men students had been permitted to attend or audit courses at l’X; in 1921, they gained access to the *concours*, although their numbers remained restricted due to the unique link between the *concours* and the French education system, and in particular, the necessary formation through the *classes préparatoires* (Belhoste 2002). The number of foreigners permitted to enter was capped at 40 students, and all who entered needed to score higher than the lowest scoring French student who was admitted; additionally, they were required to pay tuition (or bring their own funding resources, such as a scholarship from their home country), unlike their French counterparts. These foreign students were often part of the elite in their homeland (generally French colonies or former French colonies), who were sent to France in order to be trained as engineers who could then return and form their colony’s or developing nation state’s civil and military technocracy (Karvar 1997). L’X thus played a diplomatic role for France⁹, structuring the notions of modern development – and even of engineering education - abroad¹⁰. For much of the past, however, structures such as the education classification system and military status – and even formal rules concerning the

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⁹ Indeed, the *Ministère des Affaires Etrangères* (Ministry of Foreign Affairs) played an especially important role as a conduit for foreign students; when other governmental bodies linked to the military dissuaded foreign students from entering, this ministry offered openings according to diplomatic needs and conditions

¹⁰ Their return was often complicated, however, as their education did not necessarily correspond with existing structures in their homelands. At the same time, education at l’X inculcated a strong notion of national identity in these students, which they could then infuse in the construction of their home nation-states (Karvar 1997).
physical spaces foreigners at l’X could occupy – maintained a separation between French and foreign students (Karvar 1997). The institution’s deliberate decision to recruit foreign students marks a potential break with these patterns, which deserves greater scrutiny.

**Diversifying Admission to l’X: The concours voie 2**

It was under the leadership of the *Conseil d’Administration* (Council of Administration) by Pierre Faurre when l’X put its formal internationalization strategies into place, most notably by the 1995 opening of a second type of *concours*, the *concours voie 2*, and the augmentation of the possible places at l’X from 400 to 500 students per cohort. Certainly, the traditional *concours* following participation in the French *classes préparatoires* remains an admission option for foreign students; however, the *concours voie 2* represents another entry option for students – in France or abroad - who have not had the opportunity to participate in the *classes préparatoires*, yet who have had at least 2 years of university study. For foreign students, mastery of the French language is not necessary to participate in the *concours voie 2*, which can be completed in English. Admission is based on a dossier that includes academic records, a personal statement, recommendation letters, as well as exams in French or in English (written exams in math and science; oral exams in math and physics; and a general cultural exam based on an analysis of scientific documents, which are similar, but not identical to the *concours voie 1* for students who have participated in the *classes préparatoires*), an interview, and a physical exam. The fee for application is 80 Euros. While foreign students represent the majority of students who enter via the *concours voie 2*, approximately 10 students in each cohort (of 500) are French students who have followed the same entry route. Similarly, depending on the cohort year, between 15-30
percent of the foreign students enter via the traditional *concours* following the *classes préparatoires*.

Students who enter l’X must be between the ages of 17 and 22 years for French nationals and between 17 and 26 for foreign students. Scholarships are available and distributed according to the merit or “excellence” of students, although some are related to social criteria; these range from partial to full cost of attendance. The *Association des Anciens Elèves* (Alumni Association) is heavily involved in their management, helping to fund foreign students’ scholarships and even assisting with their housing search during their fourth year. Furthermore, in an attempt to reduce economic disparities during the educational experience at l’X, all French nationals contribute a bit of their stipend to a fund that allows foreign students to receive the equivalent stipend. Today, among the *cycle polytechnicien*, approximately 100 students of the 500 in each entering cohort are not French citizens. In the 2008 cohort, the greatest foreign student representation came from Asia (34 percent of foreign students), North Africa (22 percent of foreign students), and South America (20 percent of foreign students). (See Appendix A, Tables 4 and 5). While student demographics and origins will be discussed further in the following chapters, the contemporary representation demonstrates a shift from the years prior to the institution of the *concours voie 2*, when the majority of foreign students came from former French colonial regions: Southeast Asia, the Middle East, and Africa – particularly North Africa.

*The Degree Cycle and Curriculum at l’X: Le Cycle Polytechnicien*

The current *polytechnicien* degree cycle lasts four years. During the first year, French students spend eight months in a military or civil service *stage* (internship), and three months in a common introductory science core academic experience. Foreign students follow a largely
different program. In relation to their knowledge of French and their particular academic backgrounds, they take intensive French language courses and/or courses in the STEM fields in an attempt to reduce any gaps between their educational preparation and the preparation that the majority of students had in the classes préparatoires. Foreign students also complete a civil service stage (internship), as they cannot participate in the full military stage with French students. While instituted to facilitate the academic integration of foreign students, these distinct pathways at the beginning of the polytechnicien program nonetheless set up an initial important distinction between foreign and French students, which impacts their integration. I will discuss these distinctions and symbolic boundaries further in the dissertation.

The following two years of coursework seek to offer a common, pluridisciplinary base in STEM and engineering education, interspersed with opportunities for other professional stages, which may take place abroad. Rather than specialization, coursework is oriented toward professional generalist preparation in order for students to ultimately take positions as managers and administrators in the corps de l’Etat, business, industry, or research. The majority of course offerings are in the STEM fields and are given by nationally and internationally renowned academic faculty; however, students can take courses in the social sciences, humanities, languages, and arts. Overall, the departments at l’X include: Applied Mathematics; Biology; Chemistry; Economics; Informatics; Mathematics; Mechanics; Physics; Humanities and Social Sciences; and Languages, Cultures, and Communication.

During their second year, students complete a collective research project in teams of 5-7 students, and each student team must include one foreign student in order to encourage work across cultural and educational differences and perspectives. Project subjects range from basic to applied research, and may even touch the social sciences. These group projects are evaluated as
part of a competition in which the best projects receive prizes. Students’ third year experience involves greater specialization in their coursework, as they prepare for their fourth year of the *polytechnicien* program, which principally determines their professional direction and takes place off campus. French students are ranked by their academic performance at the end of the third year\(^\text{11}\), which has historically served as the sorter mechanism that governs their possibility to enter the *corps de l’Etat* of their choice, if they opt to work for the French state. During their fourth year, students complete a master’s program at an applied or professional school, or they may begin a doctoral program\(^\text{12}\); for those students who seek to integrate into one of the *corps de l’Etat*, they do so by completing a master’s program at the appropriate applied feeder school for the particular *corps*\(^\text{13}\). Today, approximately 20 percent of *polytechnicien* graduates begin their careers in the *corps de l’Etat*.

**Fortifying an Esprit de Corps**

Amid the spirit of intense academic competition of the French education system, l’X builds a strong *esprit de corps*\(^\text{14}\) among its students, This notably begins with participation in the military *stage*, and continues through social life on campus, largely organized around a military structure. Students are placed into different sports, which they practice six hours per week, and they live in dorms with their co-educational sporting units and dine together in the communal space. Members of the military oversee the sporting sections and activity, similar to resident hall

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\(^{11}\) Foreign students are ranked separately.

\(^{12}\) The majority of *polytechnicien* students receive the *polytechnicien* diploma at the conclusion of this fourth year; however, if their terminal degree program extends beyond the year, as is the case for those who pursue a doctoral degree, they receive the *polytechnicien* diploma upon completion of this final degree.

\(^{13}\) For instance, students admitted to the *corps des ingénieurs des Mines* terminate their *polytechnicien* program at the *Ecole des Mines*.

\(^{14}\) The extent of strong identification with one’s higher education institution is relatively rare in France, compared with that which is observed in the United States (Gillespie 2008).
advisors in the United States. Additionally, participation in the student activities and clubs on
campus is an important, albeit highly masculine, socialization feature of l’X. Approximately 180
student clubs exist at l’X, ranging from music and theater, to wine-tasting and gardening, to film
production and newspaper writing, etc., and students are free to create their own clubs according
to their interests. Participation on event committees is equally encouraged. Many social
exchanges also take place at the campus bar; responsibility for the bar’s functioning and
organization is considered important. Ultimately this team-building atmosphere seeks to create
links that will span beyond the *polytechnicien* experience on campus and foster the strength of
the *polytechnicien réseau*, or *polytechnicien* network. This network offers a key source of
potential professional and personal support for *polytechnicien* students and, more importantly,
alumni, even earning a comparison to the “mafia” (Belhoste 1995; Kosciusko-Morizet 1973).

**L’X as Window into National and Global Forces**

With its military legacy and explicit links to the development and defense of the French nation-
state, l’X is considered highly elite and an important symbol of modernization; it is the summit
of the nation-state’s tool to turn individuals into citizens, its education system. Given the
system’s stated goals of republican universalism and meritocracy, demonstrated through
successfully passing the *concours*, the elite quality of l’X is intimately tied to the ideal of
meritocratic academic excellence. Furthermore, its technocratic rationality as an engineering
school presents it a supposedly non-political cover of symbolic violence that characterizes access
to l’X as “natural” (Scott 1985). Nevertheless, scholars have revealed flaws in the notions of
republican universalism and meritocracy, as well as in the French education system, which have

At the same time, as an engineering school that offers a pluridisciplinary STEM education, l’X is on the front line of global academic flows. Careers for university-educated elites often span beyond national borders; discourses often posit a raging “global war for talent” among elite professions. No longer solely employed by the state in the corps de l’Etat, polytechnicien graduates now work in a wide range of professions, including industry, business, finance, and academic research. For instance, French firms recruit heavily from engineering schools, and alumni of l’X are currently well represented among the business elite; in 2010, 12 of the 35 French CEOs of the top 40 French companies (the CAC 40) were polytechniciens (Joly 2011).

**Chapter Overview**

For this project, I follow recent sociological education studies and employ qualitative and quantitative approaches (Fourcade 2009; Musselin 2009), including an institutional policy document content analysis, longitudinal student demographic statistical analyses, and interviews with students, faculty, and administrators. The content analysis of institutional documents offers key data to ground and frame the study, evidencing “diversifying” and “internationalizing” institutional strategies, as well as some of their outcomes. The longitudinal student demographic analyses, inspired by Bourdieu’s (1984; [1989] 1996) studies of the French elite and the grandes écoles, demonstrate the demographic changes in the student body during the period of focus for this study: 1970-2008. Due to limitations in this data, the analyses remain primarily descriptive, although illuminating important changes over the past 40 years. The 53 open-ended, semi-
structured interviews with administrators (N=11), students (N=31), and alumni (N=11) sought to more fully capture the subjective dimensions of “diversification” and “internationalization,” as well as their tensions, contradictions, and diversity of perspectives on the ground. I performed inductive thematic analyses of the interviews as part of a grounded, reflexive research design, paying special attention to questions of intersectionality.

In Chapter 2, I outline the conceptual framework for this project, drawing from Bourdieusian, critical feminist, and globalization scholars, as well as literature concerning the internationalization and diversification of higher education in France. I detail the methodology for this project in Chapter 3. The following four substantive chapters focus on four particular windows into the reconfiguration of the French technical elite.

In Chapter 4, I concentrate on the institution of l’X and its links with the French state by asking the following questions:

With a motto that emphasizes service to the nation-state of France, why has the institution embarked upon so-called internationalization strategies? What tensions have they provoked? What are the values and priorities embedded in the internationalization and diversification strategies of l’X? Whose interests are behind them?

I begin the chapter by describing the notion of meritocratic excellence in France, to which the legacy of l’X is very much attached. I argue that the institution’s association with excellence derived from the perceived meritocratic tool of the French concours has shaped its relationship to and development of its internationalization and diversification strategies as the field of elite higher education has moved from a national to an international stage due to changes in the global economy. I describe these strategies, particularly the development of an alternative concours that opens the institution to foreign students and the diversification initiative of the Project X2000.
Concurrently, I analyze the changes and tensions that they have triggered in the configuration of the *polytechnicien* student body, particularly in terms of gender and national origin, as well as for the institution of l’X itself as it seeks adapt its unique model as a military and engineering school to gain international visibility and recognition. In the second part of the chapter, I contend that the changes undertaken by l’X extend well beyond the particular institution of higher education itself and, more importantly, reveal how the French nation-state seeks to guard its elite position globally and the legitimacy of its education system nationally, and I identify the tensions surrounding this goal.

In Chapter 5, I focus on the cultivation of the *polytechnicien* elite through its formation at l’X and its preservation through its redoubtable network by focusing on the following questions:

Who is educated at l’X? What are the goals of the formation? How do the institution’s internationalization and diversification strategies fit in? What types of capital are emphasized?

In this chapter, I center on the *polytechnicien* curriculum and how the institution of l’X seeks to cultivate its technical elite, its *esprit de corps*, and its habitus. I illustrate the foundational characteristics of the educational experience at l’X that seek to develop this habitus and the solidarity that it generates, including its generalist education, the *stages* (internships), extracurricular activities, and the conference cycles, and I argue that the development of an elite habitus is the primary goal of the formation at l’X, although this development is not seamless, as suggested by students’ expressed self-consciousness surrounding these elements of their formation. Additionally, I focus on the solidarity nurtured by the institution, and notably by its alumni. I depict the *réseau polytechnicien* - the network of polytechnicien students and alumni - and the stakes that they have in the internationalization and diversification strategies of l’X as
they attempt to guard their security as members of the national and international technical elite amid changes in the global economy. I describe the nuanced relationship that foreign students have in this network and the ways in which the institution and its alumni seek to integrate them. I argue that the concerns expressed by alumni and students about security in maintaining their place as elite amid changes in the global economy make the solidarity and support maintained by the polytechnicienne community even more important, thus attaching key value to the social and cultural capital cultivated at l’X.

Taken together, these first two substantive chapters illustrate the interests and efforts made by the French state and its technical elite to remain elite, as well as the tensions they face.

In Chapter 6, I examine the path to becoming a polytechnicien(ne) by addressing the following questions:

Who are the students and alumni of l’X? How did they become polytechnicien(ne)s? What are the implications for social organization around a genuine meritocracy in the contemporary age of globalization?

To follow the previous two chapters that focus on the French nation-state and its technical elite and how they attempt to preserve their privileged positions through l’X, globally and nationally, I analyze the traditional entry path to l’X in the context of the French education system and its attachment to the notion of meritocracy, particularly in light of the social composition of the student body at l’X. I provide an overview of the educational pathways to l’X, and illuminate the social factors and institutions that serve as gatekeepers to l’X, including the classes préparatoires, socially contoured encouragement, and family origins. I argue that these factors shape understandings of meritocratic achievement in classed and gendered ways, indicating that symbolic violence, or misrecognition of the power dynamics that undergird achievement and social reproduction, continues amid diversification. Rather than focusing on initiatives that
would markedly change the current system of social reproduction, the institution concentrates its efforts on remaining elite; thus, examining, understanding, and remedying social reproduction receive little priority in relation to the efforts to internationalize.

I conclude by suggesting that amid the dramatic changes that they have entailed, the internationalization and diversification strategies still protect the social structures of the education system and produce a socially contoured understanding of meritocracy that benefits the elite, thus essentializing disparities and placing primary responsibility on individuals to conform to these structures. Despite increased focus on meritocracy, discourses of higher education continue to privilege the elite, particularly those who have the social, cultural, and economic capital necessary to understand, access, and take advantage of the education system. “Meritocracy” is nationally contoured and serves as a conservative force to maintain and nationally legitimize its current education system that elites are able to navigate well.

Finally, in Chapter 7, I take a more intimate look at l’X and local notions of inclusion and exclusion on campus by focusing on these questions:

What boundaries, meanings, and identities are being created, contested, and performed among students? What forms of capital and types of dispositions are privileged? How do these boundaries connect to internationalization and diversification strategies?

In this chapter, I examine how integration works at l’X and analyze the symbolic boundaries rendered salient on the polytechnicien campus amid its diversification efforts. I find that the distinctions drawn around educational background and engagement in campus socialization distinctions hearken to an ideal model of hegemonic masculinity of intellectual and physical dominance. This ideal bears its legacy in the masculine contours of meritocratic achievement, as well as the military history of l’X. I describe how this ideal engenders particular tensions for the
integration of all students, particularly for women and foreign students. I further suggest that the internationalization and diversification strategies of l’X are accompanied by boundary-making and -reinforcing work that reifies the ideal of an elite as a masculine French national, thus creating hierarchies within the technical elites and posing challenges to an homogenous esprit de corps.
CHAPTER 2 - CONCEPTUAL FRAMEWORK

Introduction: The Modern Nation-State and Globalization

In my study, I focus on a case concerning an elite higher education institution, which forms elites of a particular sector and place – the technical sector in France. As I draw heavily from Bourdieusian theory, I attempt to pay special attention both to material and symbolic resources, as well as to the positions individuals occupy in social space that allow them access to these resources. I thus define elites as those who have advantaged access to or control over socially valued, transferable resources. (See Khan (2012) for further discussion of the state of the sociology of the elites.)

In their specific social context, the elites of l’Ecole polytechnique (l’X) offer an important window into broader changes concerning social reproduction and the nation-state in the context of contemporary globalization, as they are purportedly the products of a system nominally constructed around republican universalism and meritocracy. As nation-states confront the contemporary processes of globalization and neoliberalization that complicate the sovereignty of nation-states, the role of higher education, and the exclusive ties between common notions of “nation” and “citizenship,” the ideals that serve as the foundation for the French nation-state, as well as for other nation-states that have used France as a model, come into the spotlight again. The elite public education system – the epitome of cultivation of these ideals, which falls under national responsibility – is thus an important window to study their meanings, production, and accomplishment.

In the following pages, I discuss the literature that undergirds this study and my conceptual framework.
Citizenship and the Modern Nation-State

“Nation” and “state” are devious concepts, problematic to define, and thus challenging to analyze. The modern concept of the nation delineates a particular territorial and political loyalty, beyond other sorts of affiliations (Haas 1986). The nation is built upon an imagined – in other words, thinking, reflexive, and creative – community, producing insiders and outsiders (Anderson 1991). The state is a core element in the development of the nation. Weber ([1919] 1946) has defined the state as “a human community that (successfully) claims the monopoly of the legitimate use of physical force within a given territory” (78). Despite the abstract, imagined, shared “core values” of a nation, its dissemination is very material, rational, modern, and rooted in the state. The material development of the state concomitantly fostered the development of the abstract notion of nation (Harris 1991), notably through the spread of a common language, as well as through colonial conquests (Anderson 1991; Gellner 1981). In colonial activity, members of the “home” culture created distinctions between themselves and “other” cultures, while at the same time disseminating a model of “nation” to people under colonial rule. “Nation” is thus cultivated and extended through the state.

In France, the concept of citizenship is bound up in the ideal principle of republican universalism, which emerged out of the Déclaration des droits de l’homme et du citoyen de 1789 (Declaration of the Rights of Man and of the Citizen), Rousseau’s social contract, and Sièye’s notion of a nationally sovereign representative government. It rests on abstract concepts of the individual and the nation. According to the republican universal ideal, the individual is a rational being, abstracted from her or his social conditions and other attachments, and thus interchangeable with all other individuals. The nation is the people’s will, as voiced by
representatives who speak collectively for all individuals, rather than for recognized distinct social groups, or *communitarianisme*, which is officially rejected. National identity trumps all other attachments or identities. Each individual citizen theoretically represents the nation, and universal inclusion of citizens in politics is important. Because all individuals of the nation are considered citizens, they are all theoretically considered equal.

According to the ideal principle of French republican universalism, all citizens should enjoy equal access to and treatment by public institutions. This equality is considered essential to rationally structure society around merit, as a meritocracy. Seeking to break with the hierarchical structures of the *Ancien Régime* that privileged members of the nobility, aristocracy, and Church, Enlightenment and Napoleonic reforms proposed to organize French society on the foundation of merit, theoretically understood as individual achievement based on effort and innate talent, rather than on the basis of social origins. The French state education system has been considered key to accomplish this goal, ideally forming each individual student as a citizen who can appropriately engage with the state and occupy her/his place in life in relation to individual ability and industriousness, regardless of family heritage. Moreover, the public school has been an important site to build the nation, cultivating national identity and affiliation among its pupils.

While the notions of republican universalism and meritocracy have been anchored as theoretical ideals undergirding the French nation-state and its citizenry, their application and fulfillment have been problematic. France has a long legacy that has privileged white, property owning men, massively excluding Muslims, Arabs, and Jews (particularly those with Algerian origin), and women (Al-Saji 2010; Bleich 2005; Célestin, DalMolin, and de Courtivron 2003; Chebel d'Appolonia 2009; Keaton 2006; Lépinard and Mazur 2009). Women and non-white men
were deemed to have irreducible differences that transcended the abstraction of republican universalism (and even speaking French), thus warranting different treatment.

In part, these stratifications relate to the historical development of who has been considered “French.” French nationality is accessed through conditions of both *jus sanguinis* as well as *jus soli*, with great emphasis on the assimilationist socialization process that occurs through education to acquire the codes that permit access and fulfill the nation’s republican rights (Weil 2004). Nevertheless, key social structures and practices that facilitate assimilation – that develop “Frenchness” – such as housing opportunities and the education system – have not engaged with all individuals equally. As Marx and Engels ([1848] 1978) and subsequent scholars (Bourdieu [1989] 1996; Block 1987) have shown, the state tends to primarily represent and serve the elite and dominant strata of society, at the expense of the poor, despite holding up a veneer of public service; thus, state structures facilitating French “assimilation” have been dominated by the elites.

In the growth of the modern nation-state, the link between citizenship and education has only developed gradually. Indeed, politically engaged individuals have tended to have some form of education, even if self-education; nevertheless, the extension of education to all citizens has occurred with the creation of a state education system. In France, the 1880s was a fundamental moment in the democratization of education. With the *lois Ferry* (Ferry Laws) in 1881-2, primary education (ages 6-13) became public and free; and while this series of laws did not obligate students to attend school, parents were demanded to provide equivalent instruction either at home or through another source. Additionally, these laws standardized primary instruction, notably through the French language and civic education, thus seeking to cultivate French citizens, although with gender differentiated focus in certain subjects, orienting boys and
young men toward public life and activity, while preparing women for private life in the home, including household chores and childcare (Clark 1984). Standardization of the collège (middle school) took place nearly a century later, in 1975, with the loi Haby (Haby Law), and coeducation was mandated in 1976\(^{15}\).

Like the nation, the state defies circumscription; definitions often fail to capture the extensive and bureaucratic reach of the state into countless functions and aspects of life. Additionally, the actual autonomy and capacity of a state deserve scrutiny (Skocpol 1985; Evans, Rueschemeyer, and Skocpol 1985); its autonomy - or the ability to “formulate and pursue goals that are not simply reflective of the demands or interests of social groups, classes, or society” (Skocpol 1985: 9) - can only be relative (Poulantzas [1969] 1972)\(^{16}\). Although difficult to demarcate, the state does nonetheless exist, and to continue and maintain relative stability, the contemporary democratic state must remain legitimate in the eyes of the citizenry. According to Block ([1977] 1987), this stability and legitimacy primarily relate to the economic well being of society. Materially, continued state functioning requires income, obtained through taxation, fees, and borrowing; this income can only be successfully procured if economic activity is sufficiently robust. Moreover, robust economic activity permits relative stability in states (where members of the government are elected by a voting public) by securing voter confidence. Yet, if the state primarily represents and serves elites, how can it remain legitimate in a theoretically democratic nation, notably France, built on the value of republication universalism?

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\(^{15}\) The December 28 1976 decree to apply the Loi Haby of July 11, 1975.

\(^{16}\) In this context, Abrams’s (1988) thoughts on the state are certainly pertinent. Abrams posits that we must actually study the “state-idea” and the structuration of practices – often, not very unified - that legitimate and reify the idea of the state. The seeming omnipresence of the state’s practices and effects thus raises questions about where its boundaries with “civil society” are and if the latter even exits.
Understanding State Legitimacy and Social Reproduction: The Theory of Pierre Bourdieu

The theory of Bourdieu sheds some light on this question. As Bourdieu ([1989] 1996; 1984) has described, the state engages in symbolic violence - or the misrecognition of the power dynamics that generate dominant and dominated groups through a sort of “complicity” (Krais 2000) - to remain legitimate. Through its administrative and bureaucratic structures and processes, the state takes on an objectivity, which is further naturalized through individuals’ subjective dimensions of engagement with these structures and processes. Bourdieu ([1989] 1996) highlights how social reproduction is obscured through “state magic”: the use of science, statistics, and the bureaucracy of institutions, as well as the way cultural capital is transferred (378).

Furthermore, although nominally constructed around republican universalism and meritocracy, the education system – and thus the state - is intimately implicated in the reproduction of inequalities in France. Emphasizing the interplay of social structure and individual agency, Bourdieu suggests how elite power has become legitimate and justified in French society (Bourdieu [1989] 1996). Bourdieu has studied how the elite grandes écoles play a fundamental role in the conferral and consecration of the “nobility” of the state through their processes of “separation and aggregation” (102), which function as rites of passage recognized by society as legitimate, such as the concours and the classes préparatoires (Bourdieu and de Saint Martin 1987: 20). Accordingly, the state exerts power not only through physical force, but also through symbolic dimensions, such as its ability to officially confer status and recognize symbolic capital, like educational degrees. As with the notion of the nation, public schools – instruments of the state – cultivate respect for the state among students. These symbolic acts become official – and sacred - through ceremonies that institute the hierarchies as natural; according to Bourdieu, as diplomas are one of the most important elements of social distinction.
in France, this is an example of the state’s use of symbolic violence. Thus, aside from educative functions, the education system is largely a tool of classification that inculcates particular forms of comportment, sorts and distributes students into particular categories, and constitutes the reproduction of the social structure, rather than achieving a meritocracy (Suleiman 1979). Moreover, in France, entry into the most prestigious academic institutions - the *grandes écoles* - has historically led to positions in the state administration - the *corps de l'Etat*; thus, the state plays a primary role in the formation and certification of its own elites, who, in turn, take positions in the *corps de l'Etat* and play a primary role in the construction of the state. This conservative linking has contributed to the reproduction of the elite.

Bourdieu’s theoretical model of social reproduction rests upon several key concepts: the field, the habitus, and the “*prises de position*” (position-takings). The field is made up of the social structural forces and arrangements that influence the individual actors who are located within them. Individuals occupy social spaces, within which they develop a certain system of dispositions, outlooks, and tastes, or the habitus. The habitus is “a structured and structuring structure” (Bourdieu 1984: 171); it is “both a generative principle of objectively classifiable judgments and the system of classification…of these practices” (170). It is therefore understood that the habitus both shapes and is shaped by the social space. It is an embodied, classifying tool that separates people into distinct social groups, and with the internalized structure of tastes and practices, people classify themselves and others through their development of certain tastes and practices; the habitus “generates meaningful practices and meaning-giving perceptions” (Bourdieu 1984: 170). Contained within their fields and through their habitus, individuals subsequently make choices (“*prises de position*”/position-takings), which, in turn, both reflect (and reproduce) their social position and impact their social space.
As part of his model of the field, habitus, and position-takings, Bourdieu offers a nuanced definition of capital in an attempt to explain how the boundaries of social class and inequality are maintained; this definition includes four types: economic/material, social, cultural, and symbolic. Economic/material capital includes the tangible resources that one possesses, such as money, material goods, possessions, etc. Social capital involves the social connections and networks to which one may belong and have access. Cultural capital is a particularly key form of capital for Bourdieu, and he defines it as an “informal academic standard, a class attribute, a basis for social selection, and a resource for power which is salient as an indicator/basis of class position” (Lamont and Lareau 1988: 156). Notably, it includes all of the interpretive schemes that one can use to understand cultural products and situations, and it takes time for cultivation. Symbolic capital is the legitimacy one possesses to share and spread ideas. Behind all of these forms of capital exist economic wealth and power, which afford dominant classes the time, energy, and access to develop their knowledge, appreciations, tastes, and dispositions – their habitus.

According to Bourdieu, the combination of the forms of capital separates people into social classes, and the specific interplay among the field, habitus, and individual choices contributes to the reproduction of the class structure. The field itself spatially circumscribes individuals and limits their movement and contact – both physically and symbolically – with people from other classes. The economic wealth of the dominant class offers sufficient material, social, cultural, and symbolic capital to construct and maintain its position and remain inaccessible to the lower and working classes; and this capital and its transmission to future generations of the elite class are further protected by structures of the field. There exist an “economy of practices” and a “competition for rare goods and practices” that undergird the social structure (Bourdieu 1984: 99), and the elite classes seek to maintain their position with
access to these rarities. Moreover, because they have the power to define what is rare, they can successfully ensure their place in the structure and access to capital. While some members of the working or middle classes may aspire and strive to enter the elite classes through emulation, these efforts are always noted by the elites as false; from birth, these other classes have not had full access to the types of capital that cultivate and support the development of the elite habitus, and so their efforts to join the elite are ultimately denied.

This is nowhere more evident than in the education system in France, particularly in the case of the *grandes écoles*, where knowledge of “general culture,” for instance, has been a requirement for entry, thus being a mechanism that has helped dominant classes both control the institutions as well as define “legitimate culture” for France (Bourdieu and Boltanski 1976; Bourdieu, Grignon, and Passeron 1973). The process for entry, the rigorous national exam of the *concours*, demands significant economic and cultural capital for success, often through participation in the *classes préparatoires*; while prestigious public *classes préparatoires* exists, the intense demands of the coursework generally do not allow students to hold any sort of remunerating employment and thus demand some financial contribution from family (Adangnikou and Paul 2004). All of this requires familiarity with the education system, as well as with the values and traditions of the national elite, which are conserved and transmitted from one generation to the next (Buisson-Fenet and Draelants 2013; Draelants 2010).

Moreover, this system is maintained through symbolic violence: Bourdieu (1984) notes that “the (sociologically well-founded) illusion of ‘natural distinction’ is ultimately based on the power of the dominant to impose…a definition of excellence which, being nothing other than their own way of existing, is bound to appear simultaneously as distinctive and different, and therefore both arbitrary…and perfectly necessary, absolute, and natural” (255). The standards set
by the elites benefit them by helping to preserve their position; their “merit” and “excellence,” however arbitrary and socially constructed they might actually be, seem to be part of the natural order, therefore concealing the functioning of power to maintain the structure of inequality. The infiltration of state activities into the lives of individuals tends to cultivate their habitus in a way that legitimizes the state and its structures. As Khan (2011) has argued, “merit” is a social construction, and what counts as “merit” depends upon context. Demonstrating “merit” often thus relies upon access to the resources necessary to cultivate this “merit.”

**Beyond Class – Gender, Race/Ethnicity, and Nation**

Despite his comprehensive and nuanced work, Bourdieu’s primary social stratifications relate to social class; at best, other elements, such as gender and race/ethnicity, could be considered part of the habitus and thus socially naturalized, resulting in domination on these dimensions through symbolic violence (Bourdieu 1990; Krais 2000; Krais 2002; Krais 2006). Yet, much sociological and feminist scholarship shows that all social structures and processes are composed of inequality regimes - or “loosely interrelated practices, processes, actions, and meanings that result in and maintain class, gender, and racial inequalities” - which are important and, as possible, should be considered in sociological analyses through an intersectional analysis (Acker 2006: 443). The elites in France have historically been defined not just by their social class, but also by other social relationships and practices, such as their gender (men) and race/ethnicity (white and born in France); there is thus a hegemonic masculinity - defined by R.W. Connell and James Messerschmidt (2005) as normative patterns of practice around the most honored manner of being a man that structure social relations - linked to notions of the French elite. As described
earlier, these stratifications in part relate to the historical development of who has been considered “French” and thus able to access elite institutions, such as the *grandes écoles*.

Higher education institutions themselves continue to operate in ways that reproduce boundaries along gender and race/ethnicity. While women were prohibited from entering institutions of higher education at their earliest stages, over the past 40 years they have witnessed major gains in entry and participation (Charles 2011; England 2010). Today, while women represent the majority of undergraduate students in many Western countries, institutions of higher education are still marked by both vertical and horizontal gender segregation: women have yet to reach equal representation among the most senior professorship and leadership posts, and the disciplines remain notably segregated by gender (Charles 2011; Charles and Bradley 2002; Kaufman 1995; Kleinman and Vallas 2001; Siemienska and Zimmer 2007). Women tend to be concentrated in positions with the lowest levels of pay, security, mobility, and prestige, with men remaining higher in the occupational ladder and in control of power, decision-making and resources, which creates a notable gendered organizational stratification within colleges and universities.

Institutions explicitly linked to science are particularly gendered, as the “logics” of science do not tolerate any other engagement outside of work and encourage symbolic actions, such as staying late at work and working on weekends, that are not fundamentally necessary for scientific production (Beaufaïs and Krais 2005). Highly feminized disciplines, such as education, human services, and social work, are often considered the least prestigious, while the disciplines significantly overrepresented by men, such as the science, technology, engineering, and math (STEM), and business and management fields, are seen as the most highly valuable and elite (Hearn 2001) and consequently receive the greatest institutional attention, investment,
and support (Mackinnon and Brooks 2001). As commonly constructed, the highly feminized
disciplines often include elements of emotional labor, while the STEM disciplines and other
masculinized fields, such as economics, privilege reason, abstract thinking, and are more
intimately tied to capitalist development. Engagement in these latter disciplines brings greater
status to faculty and students. France has shown a long history of emphasizing the biological sex
of women – whether as mothers or as sexual objects – which additionally contributes to their
construction as less capable of work constructed as masculine, such as the areas of science,
technology, and politics (Morgan 2006; Scott 2006). French researchers have noted that the
discouraging educational climate towards girls and young women in the science fields affects
their future participation in these fields (de Cheveigné 2009a; de Cheveigné 2009b).

Faith in the ideal of republican universalism has led to policies preventing the use of
race/ethnicity as a legitimate form of classification in France; however, literature – both from
within and outside of France - suggests that institutions of higher education – access to the elite -
are often stratified by race/ethnicity (David 2009; Luke 2001; Ong 2005; Penn 2009; Sabbagh
and van Zanten 2010; van Zanten 2010). In addition to historical exclusions, France has
experienced recent tensions in terms of race/ethnicity in the “headscarf debates,” which
culminated in the ban of ostentatious signs of religious affiliation in public places. The
“headscarf debates” actually began in the educational setting of a public primary school where
young Muslim girls wearing headscarves were constructed as violating the value of laïcité
(secularism, or the separation and neutrality of the state towards religious practice); as a central
site of democratic formation, the school should theoretically be devoid of religion and serve as a
tool that normatively cultivates modern citizens and how they should behave in public life
(Barras 2009). As Nilüfer Göle (2002) has described, the “modern citizen” has normative visible,
public, and bodily elements that correspond with the national imaginary. Understood as representing Islam, the veil was interpreted as fostering *communitarianisme*, or the recognition of and bodily engagement in particular ethno-racial or religious groups, thus potentially preventing public social mixing. In this context, Islam was seen as “porous” - between the normative French binaries of public/private, politics/religion, mind/body – and therefore not compatible with supposedly unifying and uniform French notions of republican universalism (Scott 2004). Thus, the headscarf became a sign that marks a problematic embodied and non-modern difference of the “Other,” one with an allegiance beyond (or in addition to) France (vom Bruck 2008). Since then, this binary has been again invoked through the law to ensure the “moral order” by identifying bodily practices, such as veiling, that supposedly contradict “French” values of “gender equality” (Bowen 2011). In general, Muslim and ethnic minority representation in the French state has thus far been notably limited, suggesting access to the *grandes écoles* has been similarly limited (Mügge 2012). As gender, race/ethnicity, and social class contour the elite in France, it is thus fundamental to apply an intersectional lens to this study.

**Globalization and the Nation-State**

The contemporary period of globalization challenges the structures and sovereignty of the modern nation-state. While global flows and exchange have been occurring throughout much of history, the current era of globalization involves profound qualitative and quantitative changes in economic, social, political, and cultural relationships and processes with respect to time and space (Held, et al 1999; Juris 2008; Robinson 2011). Thanks to advances in transportation and
communication technologies, capital, goods, people, and ideas engage and become engaged in new flows, creating new attachments and connections.

One of the principal overlapping elements of the contemporary era of globalization is neoliberalism, particularly in the political and economic realms. For this project, I draw from David Harvey ([2005] 2007), defining neoliberalism as “a theory of political and economic practices that proposes that human well being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade” (2). Neoliberalism operates under the assumption that the market – conceptualized as abstract and neutral - is the ultimate arbiter for exchange and establishment of contractual relationships. While the Liberal Enlightenment values of “human dignity” and “individual freedom” supposedly undergird neoliberal philosophy, the construction and implementation of neoliberal policies and practices have resulted in trends toward massive financialization, the entrenchment of economic elite power, the decline in Keynesian economics, and the deterioration of democratic practices. These changes\(^{17}\) alter the contractual obligations and responsibilities between individuals and institutions, resulting in new patterns of stratification - along the lines of class, gender, race, ethnicity, national origin, and religion - both locally and globally (Acker 2004).

Several notable global transformations and flows pose questions to the sovereignty, autonomy, and capacity of the modern nation-state. For example, productive elements - including natural resources, technology, and labor forces - have become integrated into economic

\(^{17}\) Often violent (Acker 2004; Faber 2008; Juris 2008; Held and McGrew 2009)
circuits of capital and their organizational structures, particularly transnational corporations\textsuperscript{18} and banks; and they now operate “both ‘over’ and ‘under’ the nation-state system” (Faber 2008: 171)\textsuperscript{19}. Scholars suggest that as a result of these flows - and the power imbalances that exist around the globe - the contemporary economy of the global North is increasingly characterized by high technology, advanced communication and transportation sectors, and educational services, rather than mass-produced consumer goods; this development is supported by the export of raw materials, consumer goods, and energy by the global South. Accordingly, there is often more wealth entering the global North than what is returned, with heightened poverty in the global South (Faber 2008). Overall, this has resulted in greater concentration of wealth among elites, which has been a key driver of inequality (Piketty and Saez 2006).

Additionally, amid the temporal and spatial changes marking the contemporary era of globalization, global cities have become particularly key, denationalized, centers in the architecture of globalization (Sassen 2001). Serving as nodes of production and concentrated sites of hardware, and they are connected across the globe in networks of both collaboration as well as competition, and they have even become sites of citizenship and rights claims (Holston 2001; Sassen 2002). While some scholars reconceptualize sites of rights claims and citizenship beyond the model of the nation-state, others have specifically revisited the concept in terms of right of access, which has often become part of the discourses of citizenship, suggesting that full access and social inclusion involves “mobile citizenship,” which goes beyond questions of

\textsuperscript{18} Leslie Sklair (2002) has focused specifically on transnational corporations, which offer a powerful material base, often rivaling the economic power of nation-states, and support the transnational capitalist class and its potential dominance in terms of “culture-ideology.”

\textsuperscript{19} Illustrating these new structures and processes that operate “over” and “under” national borders, Faber has described how advanced communication, transportation, and technological infrastructure systems often allow transnational corporations the mobility to set up production facilities on multiple continents in countries where “favorable business conditions” - including low-wage laborers, natural resources, lax environmental regulations, and minimal taxes - exist, which “race to the bottom” policies that undervalue the resources of these regions foster.
disability to include financial, physical, temporal, and organizational elements and networks of relationships (Cass, Shove, and Urry 2005). Conversely, international mobility and exchange foster “structurations of the global inside the national,” which “(denationalize) what was historically constructed as national” (Sassen 2010: 3), rendering the “global” and the “national” difficult to separate. Additionally, during the past 40 years, relative to previous generations, contemporary elites are less likely to have gained access to their wealth through inheritance, and thus depend more upon earnings than ownership of capital. Their weight has shifted toward work in finance, rather than in state administrations, and they are globally more diverse, geographically and racially (Zweigenhaft and Domhoff 1998).

Acknowledging the increase in mobility, the intensification of exchange across nation-states and cultures, and the development of supranational organizations has prompted some scholars to consider the possible novel development of common “world” principles, practices, and rights. “World polity” theory, for example, suggests that the rise of global interactions facilitated by transnational and supranational organizations has created world polity cultural principles, which include universalism, democratic individualism, voluntaristic authority, rational progress, and world citizenship (Boli and Thomas 1997). In particular, these principles are related to increasing standardization of organizational and institutional regimes and tend to cut across rationalizing scientific, technical, economic, and infrastructural international non-governmental organizations that have proliferated over the past century, and are correlated (although also overlapping) with other measures associated with rational development, including increasing educational enrollments (Ahrne and Brunsson 2006; Beerkens 2010; Djelic and Sahlin-Anderson 2006; Djelic and Zarowski 2005; Drori and Meyer 2006; Ramirez 2006).
At the same time, world polity theorists have suggested that the expansion of the nation-state system has been, in part, constructed through worldwide cultural and associational processes linked to the diffusion of rationalized world models related to scientific and professional authorities, and they argue that despite diverse histories and traditions, notable “cultural” similarities exist across nation-states, which cannot be reduced to the nation-state structure or to the global economy (Meyer, et al 1997). While this theoretical perspective potentially skews the “naturalness” of these rational principles and overly emphasizes the “rationality” of the nation-state, thus downplaying issues of power, it does reveal the continued weight of the nation-state and its model amid flows of globalization.

Along with the more macro changes in the contemporary global and neoliberal era, the individual has become a central subject and actor who is considered responsible for her/his own project of perfection; globalization has thus resulted in substantial and distinguishing accompanying shifts in subjectivity, often characterized by the concept of neoliberal governmentality (Foucault ([1978] 1991; Beck 2008; Beck and Sznaider 2010; Fisher 2006; Hardill and van Loon 2006; Rose 1999). As described by Foucault in his lectures at the College of France, neoliberal logic, bolstered by the Enlightenment’s emphasis on the democratic possibility of the individual, fosters the production of self-interested and entrepreneurial subjects, or homo economicus, for whom economic production, performance, and competition become the center of everything in life (Read 2009). Neoliberal governmentality has involved the development of the contemporary ideal “active citizen,” who is encouraged to be a prudent employee and consumer as her/his contribution to society; this modern autonomous individual has co-emerged with the modern state (Lemke 2001).
Globalization, the Nation-State, and Higher Education

In addition to its location nationally, higher education is increasingly considered in the global context. One of the most important characteristics of the neoliberal era has been the development of the knowledge society and privileging of “cognitive capital” (Boisier 2003). For instance, the World Trade Organization has created the General Agreement on Trade and Services (GATS) that regulates global trade in education services, which can be treated similarly to any other service or export product traded on the global marketplace, rather than a cultural agreement or public good (Amit 2010; Slaughter and Rhoades 2004).

Most scholars investigating the intersection of neoliberal globalization and the academy have tended to define “globalization” as forces acting upon higher education (Altbach and Knight 2007; Altbach and Salmi 2011). Distinct from globalization, is “internationalization” - or the strategies, policies, and practices that academic systems, structures, and individuals undertake to respond to globalization (Altbach and Knight 2007) - and while slight variations exist, “internationalization” defined as such is commonly employed and discussed in the higher education and sociology of education literature. This concept of “internationalization,” however, clearly involves concrete choices and actions that allow the academy to participate in and influence neoliberal globalization, and according, the ways in which global capital and authoritative knowledge are accessed. I use here the term “internationalization” in reference to these discussions in the literature, yet I suggest that this particular conception obscures the neoliberalizing tendencies of higher education as it participates in this process, thus potentially diverting attention from the power relations and the logics of neoliberal governmentality that are becoming embedded in higher education. The internationalization of higher education can thus be understood as a type of discourse that indicates active knowledge production, development,
and labor-relevant training, which have become normalized in higher education for institutions to be seen as legitimate actors in a global market (Stier and Böörjesson 2010). Individual institutions cannot absent themselves from the effects of these policies (van der Wende 2007).

Higher education thus becomes concerned with revenue generation as the motor of the new economy as much as with scholarly development, and neoliberalizing state policies subsequently target and effect changes in the institutions themselves (Djelic 2006; Robertson and Keeling 2008). Indeed, in a handbook composed for the World Bank about how to build a “world class research university,” Philip Altbach and Jamil Salmi (2011) write:

Education, or more specifically, higher education, is the pathway to the empowerment of people and the development of nations. Knowledge generation has replaced ownership of capital assets and labor productivity as the source of growth and prosperity. Innovation is seen as the mantra for development…Knowledge creation requires a network of scholars actively engaged in its pursuit because the search for the unknown is a product of engaged minds, constantly challenging the known in an enabling environment. The modern university is the ideal space for the ecosystem of scholars to search for new ideas in a spirit of free inquiry (xiii).

They continue to note that highly sought graduates, research production, and technology transfer represent the ideal outcomes of such an institution. In their analysis of the European Union (EU), Susan Robertson and Ruth Keeling (2008) note that initiatives and agreements such as the Lisbon Strategy for the European Higher Education Area, the 1992 Maastricht Treaty, and the Bologna Declaration have been motivated by geo-political and economic interests of the EU. These measures have been linked and embedded within related European and national policies, thus attempting to make Europe the most competitive and knowledge-driven regional economy in the world by more fully engaging in the exchange of knowledge through mobility measures and establishing competitive models that limit the extent of development by private higher
Such changes have resulted in responses and greater academic internationalization initiatives from other countries, including the United States and Australia, with attempts to remain globally competitive. For instance, seeking to continue to attract Asian students and not “lose” them to Europe, Australia became “Bologna compatible,” ensuring that its educational structures and qualifications would align with those in Europe; similarly, while refraining from major restructuring, the United States undertook efforts to better publicize the strengths and best-practices of its higher education system, particularly highlighting its relative flexibility in comparison with Europe (Robertson and Keeling 2008).

While also aiming to create more opportunities for engagement across national and institutional borders, exchange and mobility programs have led to increased competition between institutions and the spread of higher education rankings and ratings on a global scale (Ramirez 2006; Slaughter and Leslie 1999; Slaughter and Rhoades 2004; Wildavsky 2010). As Niilo Kauppi and Tero Erkkilä (2011) describe, rankings such as the Shanghai List and the Times Higher Education Supplement hold important symbolic power and serve as reference points, structuring the types of higher education models to be emulated and which are difficult to dislodge, regardless of their technical utility or the substantive “excellence” produced (Readings 1996). Nevertheless, these trends have resulted in a greater emphasis placed on performance (Brooks 2001; Hearn 2001; Ramirez 2006), with competition growing between institutions and a worldwide institutional hierarchy developing.

As Shannon Calderone and Robert Rhoads (2005) suggest, the era of neoliberalism has fostered nationalistic fears of loss of competitive strength in international markets. Accordingly,
the state attempts to utilize its influence in higher education to continue to develop and fortify its economic advantage by creating a workforce that will support economic development through business and science;\textsuperscript{20} ensuring access to higher education and opportunities for training, as well as supporting cutting-edge research, have come to be described as important state goals (Bleiklie 2005; Calderone and Rhoads 2005). Despite the reduction in public support and spending, states continue to be involved in higher education, providing the largest share of resources to facilitate changes in knowledge/learning regimes and creating new types of regulation (Levi-Faur 2005; Slaughter and Rhoades 2004). Today, rather than primarily through military violence and power, nation-states who engage and compete as the global elite seek political, cultural, and economic might, and thus require workers who are properly educated to participate in knowledge work and contribute toward the competitive excellence of the state (Levi-Faur 2005; Leydesdorff and Wagner 2008; Mohanty 2006). Scientific production has largely been a site of focus of exchange in higher education, and in concert with deepening neoliberal logics and tendencies, colleges and universities are increasingly linked to scientific and technological innovation for both economic and military purposes through the development of stronger ties between institutions of higher education and military, industrial, and corporate sectors, which have sought to harness the knowledge production that occurs within the academy (Etzkowitz and Viale 2010; Paarlberg 2004; Kleinman and Vallas 2001; O’Mara 2005; Saxenian 1994; Slaughter and Leslie 1999). Advanced scientific development is considered crucial for the most sophisticated defense and smart weapons systems, and as STEM research and development expands more globally, maintaining access and control over these knowledge resources is seen as key for continued

\textsuperscript{20} While humanities and social sciences departments are not necessarily disappearing, higher education has witnessed a shift in the apogee of disciplines from theology, to philosophy, to science over the past 700 years (Readings 1996).
military dominance (Paarlberg 2004). Thus, while often participating in transnational alliances, states, particularly stronger and more stable nation-states (Ripsman and Paul 2005), seek to invest in and mobilize these types of knowledge industries for their defense.

On a more micro level, neoliberal discourses tend to privilege social organization based on meritocracy, accordingly placing substantial attention on individual achievement (Rose 1999; Harvey ([2005] 2007). In the neoliberal model of higher education, the rewards for the work in which one engages and for one’s generation of knowledge are higher when such activities and types of knowledge manifest in easily measurable outcomes (Barkholt 2005; Brooks 2001; Mackinnon and Brooks 2001). As noted earlier, with greater focus on professional training and preparation of students to enter the workforce as active, responsible citizens, professional and applied disciplines – those that are market-relevant, such as technology and the sciences - receive favor over the liberal arts and basic research training, such as the humanities, some physical and social sciences, education, social work, and family studies (Carroll and Beaton 2000; Slaughter and Leslie 1999; Slaughter and Rhoades 2004). According to neoliberal logics, higher education has been increasingly conceptualized as a self-credentialing tool, in which students are making a personal investment to better themselves (Bacchi 2001); cost-benefit analyses are now regularly used to attempt to convey the value of education, particularly for political arguments (Barnett 1985). Practices associated with internationalization specifically attend to self-credentialing; for example, historical associations of travel and student mobility as vehicles for self-credentialing continue, despite the limited revenue (if any) that these practices bring to institutions (Amit 2010).

In the contemporary era, some have thus heralded greater diversity in higher education institutions and even the construction of a global meritocracy of minds (Wildavsky 2010).
Despite this proclaimed openness to allow for and encourage meritocratic advancement, however, while racial and gender diversity have increased, little advancement in class diversity exists. Overall, despite the “disembodied ideal” in elite higher education organizations, success in knowledge labor requires certain types of gendered, raced, and classed bodies that can satisfy the model of efficiency and image prized by neoliberalism: namely, the fit, white, male body who shows evidence of heterosexuality, proper taste, cosmopolitanism, and possibilities of mobility (Blackmore and Sachs 2001; Blair-Loy 2001; Cockburn 1991; McDowell 2009; Prichard 2000; Radhakrishnan 2011). Thus, in order to conform to and successfully meet expectations in this environment, identity, performance, and self-presentation must be highly managed; in following with corporate practice, this management of body and self is often enforced through “peer scrutiny” (Connell and Wood 2005: 353). This is particularly the case in the contemporary global and neoliberal era, in which the individual has become a central subject and actor who is considered responsible for her/his own project of perfection (Beck 2008; Beck and Sznaider 2010; Fisher 2006; Hardill and van Loon 2006; Rose 1999). This places especially stringent demands on women, particularly women of color, as Maria Ong (2005) has demonstrated in her study of young women physicists who employ various strategies to negotiate their identities and successfully perform in their academic settings. As Linda McDowell (1997) has described, women face paradoxical demands in terms of their bodies: while highly fit, controlled, and attractive bodies are preferred and expected, bodies that are too sexually alluring are considered dangerous or, alternatively, welcoming of men’s objectification, sexual advances, and even harassment. In France, given the example of the “headscarf debates,” one might imagine that bodies that conform to what is perceived as “French” standards will be privileged
over those who do not, disadvantaging in particular women from ethno-racial minority groups in higher education and hampering their possibilities to enter the most elite strata.

**Negotiating the “National” and the “Global”**

While intending a return to or resurrect Liberal Enlightenment values, which served as abstract ideals around which modern nation-states were constructed, neoliberal globalization today poses challenges and questions to the sovereignty of nation-states, the role of state institutions (like public higher education), and the exclusive ties between common notions of “nation” and “citizenship.” Educational mobility between different national systems that privilege different types of “merit” potentially disrupt or shift the types of symbolic violence or misrecognition that occur in national systems. Such changes potentially challenge the relatively stable conditions of the reproduction of the French national elite, thus creating an opportune moment to revisit previous studies and examine how French elites issued from the *grandes écoles* might be changing.

While the abstract notions of republican universalism, meritocracy, nation, and citizenship have largely failed to accommodate political, material, and social realities, thus resulting in social reproduction, neoliberal globalization might offer opportunities for changes that break with historic social reproduction. For instance, world polity theorists have noted processes of isomorphism that encourage greater democratic values and participation, particularly in education. Initiatives located in France to increase women’s participation in higher education and the STEM disciplines, for example, have been animated internally, but also with support, research, and influence from international groups (Jarty 2007; Busquin 2002). Additionally, supranational and regional bodies, such as the European Union, have incited
changes in structures; as part of the Bologna process in Europe, most institutions in France have transitioned their degree structures to conform to the “bachelor,” “master,” and “doctorate” model of degrees. Moreover, greater international mobility and exchange of ideas could disturb national attachments, encouraging more “cosmopolitan” outlooks and identities (Ball 2010).

At the same time, there are few signs of major transfers or shifts in power towards the underprivileged and dispossessed. Because the power to define educational structures and criteria largely remain in the hands of the national elite and privileged classes, they continue to hold up the notion of meritocracy as a major social value; as Khan (2012b) has aptly described, meritocracy has become a “rallying cry of the rich” (480). While new forces and relationships may be developing through neoliberal globalization, it is imperative to pay attention to the power relationships at play and to question discourses of automatic or natural advancement with neoliberal globalization, such as favorable progress towards greater meritocracy.

As Polanyi ([1994] 2001) and many subsequent scholars have observed - despite discourses often suggesting otherwise – the self-regulating market is a myth. The market is always embedded in the larger economy, itself embedded in society; furthermore, economic development is largely directed and shaped through political will and choice. Polanyi has illustrated this argument by identifying the “double movement,” or how extensive use of state intervention has regularly attempted to respond to and regulate the market, both through its management of currency, as well as its attempts to protect and control its subjects. Facing attempts to separate the market from society – in processes and practices characteristic of global capitalism – society (sometimes through the intervention of the nation-state) attempts to protect itself from the market. Such perspectives and analyses suggest that rather than disappearing in the face of the rising privilege of the market, the nation-state is only shifting its functions and
roles in relation to other actors in the global arena (Calderone and Rhoads 2005; Fourcade 2007; Wacquant 2010). Similarly, the already privileged actors who rally for “meritocracy” at the national and global levels likely have interests in what “meritocracy” means and how it is implemented, and how they can guard their privilege.
CHAPTER 3 - METHODOLOGY

Research Questions:

Through my case study of l’Ecole polytechnique (l’X), I scrutinize the changes undertaken by elite higher education institutions in response to globalization and their implications for the reconfiguration of the French elite.

Specifically, my project asks the following questions: Why is a highly prestigious and elite national institution of higher education undertaking internationalization and diversification strategies? In light of the French ideal of “republican universalism,” what does it mean for l’X to seek out specific types of students – such as women and foreigners – to “diversify” and “internationalize”? What are the values and priorities embedded in the internationalization and diversification strategies of l’X? Whose interests are behind them? What types of capital are emphasized? Who is educated at l’X, and how does one become a polytechnicien(ne)? What boundaries, meanings, and identities are being created, contested, and performed among students, and how do they connect to diversification strategies? And finally, could strategies of internationalization and diversification, influenced and provoked by globalization, destabilize long-held patterns and practices of social reproduction? Or do they reinforce them? At the juncture of the nation-state and globalization, l’X is an important window to see how the nation-state is mediating global flows and trends.

Methods
Following other recent studies of institutions of higher education, I collected a range of data, employing both qualitative and quantitative research approaches (Fourcade 2009; Musselin 2009). These data included:

- Institutional documents from the archives and website of l’X
- Student demographics from 1970-2008
- 53 interviews with administrators (N=11), current students (N=31), and alumni (N=11)

**Content analysis**

Much of the existing literature on the contemporary shifts in higher education employs content analyses of institutional documents, which offer important data to ground and frame the study (Trondal 2010). The document content offers evidence of official goals, initiatives, and practices to develop “diverse” and “internationalized” academic institutions, as well as some of their outcomes; additionally they reveal how nations and institutions present internationalization and articulate norms related to education, science, work, mobility, gender, and the existence of a nation-state education system (Stier and Böörjesson 2010).

To gain access to the institutional documents of l’X, I contacted the archivist by email. During my pre-dissertation research stage, I made a site visit and explained my research interest in the internationalization and diversification of l’X. The archivist was able to offer access to archival material concerning these changes, including Activity Reports, Records from the Council of Administration, notes and letters by former members of the administration of l’X, articles from the student and alumni journal, *Jaune et Rouge*, and the *Contrats pluriannuels d'objectifs et de moyens* (Multi-year Contracts of Objectives and Means with the French state). While certain materials - such as the Activity Reports - were available for consultation during the entire period of my study (1970-2008), others - such as the Records from the Council of
Administration, and notes and letters by former members of the administration of l’X – were only available through the late 1990s, as the most recent years remain in administrative offices and are not available for consultation.

Additionally, I examined the website of l’X and the policy documents that pertain to the functioning of the institution. Recent activity reports, as well as all official laws and decrees currently in vigor are found on the website. In Appendix E, I detail the administrative organization of l’X and the members of key administrative committees. I make further reference to these elements during the substantive chapters of the dissertation.

**Student demographic analysis**

Bourdieu’s (1984; [1989] 1996) studies of the French elite and the *grandes écoles* offer an extensive baseline of demographic characteristics to be considered in the reproduction of the elite; drawing from these studies, as well as studies that suggest academic stratifications by gender, race/ethnicity, and national origin (Lazuech 1998; van Zanten 2010), I requested and was able to secure the following student demographics from between 1970-2008 (2008 being the latest data available in the archives):

- Gender, Cohort, Year of birth, Department (administrative region) of birth, Country of birth, Nationality, Department (administrative region) of parents’ residence/Country of parents’ residence, City of *concours*, *Filière* of *concours*, Socioeconomic category of father’s profession, Socioeconomic category of mother’s profession, Is parent *polytechnicien(ne)*? (Yes/no), and Placement (*corps de l’État*, business, etc.) upon exit

Although an extensive list, the usefulness of the data in all categories proved limited. While the categories of cohort, gender, nationality, year of birth, and alumni status of parent(s) were largely
complete, the other categories posed challenges for longitudinal analysis due to large chunks of missing data or ruptures in compatibility. For example, the categories used to measure socioeconomic status changed radically beginning in the year 2000, rendering difficult continued analysis throughout the years of study. Similarly, changes in the organization of administrative departments of the French territory did not allow for consistent analysis. Much of the data on place of the *concours* was missing, particularly for non-nationals.

Nevertheless, the Activity Reports often provided aggregated data that proved useful, even if more punctual, which helped complement the gaps encountered with the student demographics. Accordingly, I focused my analysis on the student demographic categories mentioned above in which the data was complete, as well as the aggregated data shared in Activity Reports. Such data illustrate the changes in the student body over time and are found in supporting tables displayed in Appendices A and B and referenced in the chapters that follow.

*Interviews*

To more fully capture the subjective dimensions of “diversification” and “internationalization,” as well as their tensions and contradictions on the ground, I conducted 53 open-ended, semi-structured interviews with administrators (N=11), students (N=31), and alumni (N=11). Intensive interviewing is an effective method to discover people’s experiences, feelings, and thoughts in their own context and to uncover taken-for-granted assumptions; additionally flexibility in the interview schedule allows for elaboration by the interviewees. Interviews are also conducive for inductive reasoning and a grounded, reflexive research design (Becker 1996; Scott, London, and Gross 2007). They have been shown to be an important element of both Bourdieusian and feminist methodologies to reveal the creation and contestation of meanings, identities, and
boundaries (Cockburn 1991; Lamont 1992), as well as how individuals incorporate or diverge from official institutional positions (McCoy 2006). These characteristics therefore made intensive interviewing a useful choice for this study, which seeks to scrutinize what l’X and its “diversification” and “internationalization” mean to its administration, students, and alumni; to identify the criteria they use for boundary-making (Lamont 2000); and to note the diversity of perspectives that exist among members of the polytechnicien community.

My interviews with administrators sought the official view of the institution on its internationalization and diversification strategies and recruitment of students, as well as to help uncover the values and priorities embedded within them and thus the meanings of “diversification,” “internationalization,” and “elite.” I identified the administrators from the website of l’X and contacted them directly via email for interview. Nearly all of the administrators I targeted agreed to speak with me.

I sought to interview students to find out about their backgrounds and motivations to attend l’X, as well as how they see themselves connected to France and the broader world. Furthermore, the interviews attempted to uncover the types of boundaries the students implicitly draw and their bearing on the formation of status hierarchies and the construction of the “elite.” Because I focused on understanding the differences in meaning and identity across the lines of gender, race/ethnicity, and nation, I targeted men and women students originating from France, as well as from abroad.

While I initially planned to contact the students via l’X, I received little institutional response to assist me with this task. To gain access to students, I visited the Student Association Office on campus. I explained my interest and study, and the students provided me with a list of students who were part of the student government whom I could contact. Starting with this list, I
was able to secure interviews with several students. I gained additional points of entry to the student body through several acquaintances and colleagues in France who knew current *polytechnicien(ne)*s and suggested that I reach out to them with their referral. Through my initial contacts, I generated a sample through snowball sampling. To ensure diversity of my sample, I asked interviewees to recommend other students who were different from them by gender, academic/professional interest, and/or national origin. I spoke with 18 students who had French citizenship at birth: 8 women and 10 men. I also spoke with 10 students with foreign citizenship, 4 of whom were women, and 6 were men. Finally, I spoke with 3 students – 2 men and 1 woman – who were born abroad and came to l’X as foreign students but who became French nationals since then. Ten of the students had entered l’X via the *concours voie 2*; none of them held French citizenship at the time of their entry. Three students of who held foreign citizenship upon entrance to l’X had participated in the *classes préparatoires* and thus had been admitted via the traditional *concours voie 1*.

Finally, I interviewed 11 alumni. The alumni are key players in the reproduction of the l’X; they are the elite who have historically conserved power and wealth in French society and for whom structural changes to advance meritocracy – both nationally and globally – are potentially threatening. Thus, understanding their involvement, influence, and perceptions of l’X and its internationalization is key. I identified initial interviewees through the *Association des Anciens Elèves* (Alumni Association) as well as through referrals from acquaintances and colleagues; as with the students, I completed my sample with snowball sampling. Four of the interviewees were women, and the remainder was men. One man had come to l’X as a foreign student but had become a French national since then, remaining in France; one woman was
foreign, but again, has stayed in France to work. For both the students and the alumni, nearly all of the individuals I contacted agreed to be interviewed.

Fifty interviews took place in-person, and three took place over Skype, due to travel constraints. Interviews took place on the campus of l’X or at a location convenient for the interviewee, such as a café or the place of work for alumni. Interviews lasted between 25 – 80 minutes, with an average of 42 minutes with administrators, 37 minutes with students, and 46 minutes with alumni. The interview data was collected by a recorder and transcribed by a native French speaker. Only one (student) interviewee declined to be recorded. As I have professional competency in French, I conducted the interviews in French and have offered translations of the data in the text, as necessary, in English. I subsequently performed an inductive thematic analysis of the interview data, developing themes through memo writing, paying special attention to the diversity and variety of responses, rather than attempting to create a typology or aim for generalizability.

Tables 7, 8, and 9 in Appendix C detail the interviewee profiles. I collected this information with a handout I distributed following each interview. All student and alumni interviewees have been given pseudonyms. While some of the administrators agreed to be referenced by their titles when cited in the text, not all did; for consistency, I reference all as “member of the administration,” “member of the direction,” or “administrator.” The interview questions and handouts are found in Appendix D.

**Considerations of Location of Researcher**

While this study posed little overall risk for the respondents and the researcher, I note several important dynamics that may have impacted the study and must accordingly be considered. First,
while I speak French with professional competency, I am not French. This “outsider” position could serve as both an advantage as well as a disadvantage for this research. It is possible that my “external” interest may have actually facilitated my access and conversations, particularly with the administration of l’X. Given the institution’s goal to become internationally known, interest from a foreign researcher could have been viewed positively and as a means to bring attention to l’X. On the other hand, given the prestigious status of l’X, it was very important for me as an “outsider” – and as a woman - to demonstrate I understand the context of l’X in France, as well as higher education administration and the logics of the changes in the contemporary economic climate, in order for the administration and alumni to take me seriously as a researcher, as well as to trust me and feel comfortable and forthcoming in answering my questions. Overall, administrator respondents expressed that they were happy to talk with me, often noting they were passionate about l’X and they enjoyed speaking about it. It is possible that interest from a woman graduate student also facilitated access, particularly in an environment dominated by men. Additionally, I was careful to ensure that my interactions with the students, particularly those who are not French citizens, allowed them to speak openly; my own foreign status may have facilitated this.

It is important to note that while I visited the campus many times for interviews, this study does not rely on ethnographic data. As such, there may be discrepancies between what interviewees said and what they actually do and experience on campus (Khan and Jerolmack 2012). Nevertheless, by requesting that students suggest names of students that they see as different from them during my snowball sampling procedure, I attempted to fashion a diverse sample of students whose distinct locations and perspectives could help detect the potential contradictions between rhetoric and action.
Finally, I note that I am a feminist graduate student who studies the sociology of gender and higher education in the context of global neoliberalization. I studied abroad in a Spanish university, and I have a master’s degree in Educational Leadership, Policy, and Politics and worked for several years in higher education administration. These experiences were positive for me and have likely oriented me toward my topic of interest for this study. At the same time, I may bring assumptions about how higher education and study abroad work from my own experiences, which may have shaped the questions that I posed and the interpretations I have made.
CHAPTER 4 - Altering the Template? L’Ecole polytechnique and the French State

Today, we look for international students; we educate them; we pay them; we give them scholarships. What I would like is for it to be like Harvard, Cambridge, where foreigners come to knock on the door, and voilà…And they pay the institution 3 times more. (...) We are not there at l’Ecole, which is a bit of a shame. There is still a lot of work to do. (Mathilde, French alumna)

Introduction

L’X has long been considered the foremost institution that consecrates the technical elite in France. Its motto offers an interesting window into what the institution symbolizes: “Pour la patrie, pour les sciences, et pour la gloire!” (“For the nation, for science, and for glory!”). As one French student, Colette, shared with me, the order of the words is not by hazard; serving the country is considered the primary mission of the institution. Next in the slogan comes the path to do so – science – and at the end, the result should be one of glory for the nation, the individual, and the institution. This nationalist mission distinguishes l’X from other engineering schools in France, where service and attachment to France are less explicitly emphasized. Colette continued by expressing a particular pride in her educational pathway, her arrival at one of the most prestigious schools in France, and her hope to serve her country:

We are rather privileged by state aid. We have a stipend, which isn’t that big, but it helps a lot when we are students with respect to the United States, where one has to pay impossibly high fees. So, we are lucky from this point of view, and for me, that means that we have responsibilities towards the state. And so, I would like to work abroad (…), but I would like to go abroad in a French business in order to give meaning, to contribute, to create wealth for France, to give sense to it all.

With a motto that emphasizes service to the nation-state of France, why has the institution embarked upon so-called “internationalization strategies”? In the pages that follow, I
discuss the development of the institution’s internationalization and diversification strategies and the interests, values, and priorities behind them in order to uncover the meaning and power dynamics enmeshed in these strategies. I argue that through the institution’s greater opening to the recruitment of students who originate beyond national borders, l’X seeks to continue creating an elite that will benefit France and ensure its economic, political, and cultural dominance in the global field. As l’X is a public higher education institution, this suggests that the nation-state continues to be an important actor in globalization. At the same time, the polytechnicien community faces numerous tensions amid these changes, notably in relation to the intimate association of excellence with the traditional French concours, as well as to the institution’s military organization, history, and traditions. The internationalization and diversification strategies of l’X are thus strategies to remain elite at the national level and secure its place at the global level, and they require negotiating the tensions that arise in these efforts.

French Excellence and l’Ecole polytechnique
The grandes écoles have long been intimately tied to the notion of excellence in France. Historically, the French education system served as an instrument of the state to achieve the ideals of republican universalism and meritocracy, attempting to normatively form each individual student as a citizen who can appropriately engage with the state and occupy her/his place in life according to ability, regardless of social origins. As described earlier, throughout the eighteenth and nineteenth centuries, the grandes écoles were developed to offer technical and professional education for the corps de l’Etat and the army. Entry into the grandes écoles occurs through the rationalized process of the national concours exam, and a diploma from a grande école confers elite status due to the institution’s selectivity. In part, French academic excellence
is created in the French education system through its processes of notation, grading, selection, and sorting – like the sacred *concours* - which separate out the masses into distinct paths (Perrenoud 1984) according to their engagement with the “repository of knowledge” (Beland 1976).

As the summit of the hierarchy of the *grandes écoles* and with its military legacy, l’X is considered highly elite; and given the system’s stated goals of republican universalism and meritocracy, demonstrated through successfully passing the *concours*, the elite quality of l’X is intimately tied to the notion of meritocratic academic excellence. This reputation remains robust in France. During my interviews, the words “excellence” or “excellent” were used to reference or describe l’X 73 times (37 times during the 11 interviews with administrators; 8 times during the 31 interviews with students; and 28 times during the 11 interviews with alumni)\(^{21}\). Students who pursue engineering envisage passing the *concours* of l’X as the ultimate achievement. As this French student, Clotilde, says succinctly to describe the school:

> (W)hen one says, “It’s not necessary to have gone to l’X to do that,” it’s “l’X” that we say, it’s not *Centrale* or *les Mines*\(^ {22}\)…It’s the image of excellence…We can do anything.

Guarding this reputation is important to the polytechnicien community, and today, for the current President Biot, one of the most important missions of l’X is the formation of elites in the world (Rollot 2014).

**Excellence on the Global Stage**

\(^{21}\)“Excellence” was referenced more often than “merit,” which was referenced 19 times (5 times during the 11 interviews with administrators; 7 times during the 31 interviews with students; and 7 times during the 11 interviews with alumni). I attribute this to the fact that “excellence” is so intimately tied to the *concours* in France that it attains a nearly quantifiable, objective element. “Merit,” although theoretically inherent in the system, is still more ambiguous and questionable.

\(^{22}\)She references here two other prestigious engineering schools in France: l’*École centrale des arts et manufactures* and l’*École nationale supérieure des mines de Paris.*
Over the past 40 years in which the flows of globalization have taken root, however, the field of elite higher education has changed and now operates on a global scale, rather than simply on the national level (Altbach and Knight 2007; de Wit 2002; Stromquist 2007; van der Wende 2007). Because international exchange reflects and is propelled by other sectors of activity, such as business, industry, and finance, important implications exist for institutions of higher education to form students who can be hired by and engage in these globalized environments, and higher education institutions have thus responded through internationalization strategies. France’s Conférence des Grandes Ecoles, an organization representing the ensemble of the grandes écoles and concerned with their direction, noted in 1984 that moving towards internationalization is “the way of the future,” thus encouraging member schools to move in this direction to remain competitive:

The international opening is, for a school, both the cause and the sign of competition. A school that turns inward is a school that mutilates itself culturally. The international is the image and engagement for the future; more than a guarantee, it is, for the school, a question of survival. (Commission des Relations Internationales 1986)

Demonstrating the ability to adapt and respond to the contemporary world, “international” qualities have accordingly become associated with the notion of “excellence.” Degrees of “internationalization,” such as percentage of foreign students and faculty and number of opportunities for international exchanges or study, have become part of higher education international ranking systems or at least featured in institutional profiles in marketing efforts. With international recognition comes important symbolic capital for institutions and their members, which thus can potentially provoke challenges and shifts in the field of higher education, especially at the national level (Lazuech 1998; Bourdieu [1989] 1996; Wagner 2003).
With the opening to globalization, the particularities of the French education system - as well as the elements upon which French meritocracy has been constructed, such as the *concours* - have come under new scrutiny. The various major international ranking systems, many of which have been designed around characteristics more heavily emphasized in North American and Anglo-Saxon institutions (namely, in the United States and the United Kingdom), l’X sees its “elite” place and its excellence brought into new and different perspectives. This French student, Geneviève, offers her perception of these changes:

I also think that all of the international rankings play a role, like the Shanghai rankings. And you realize that *l’Ecole polytechnique*, it’s not the best school in the world. For the French, there are certain French people who considered that it was the best school in the world, and I think that there are still those who think that way. And that is completely off target from the reality. With the rankings, you realize that France…finally…is not the center of the world.

Put in the context of the international rankings, l’X is no longer “first” – in 2013, it ranked between the top 200-300 institutions worldwide\(^{23}\), which challenges the perspective of its superior excellence. Able to profit from the association between “international” and “excellence,” many internationalizing French business schools have fared relatively well in their own international ranking classifications (Blanchard 2009); students also shared that the place of l’X has been a bit shaken by the emergence of elite business schools with aggressive internationalization strategies, such as *HEC*, which instituted a *concours* for foreign students in the 1970s, as well as the political science bastion, *Sciences Po*, where 46% of students hold citizenship outside of France.

At the same time, as no major inter- or supra-national regulation agency for higher education exists, there are no transparent, legitimate, and shared principles for how to evaluate

\(^{23}\) The Shanghai rankings site specifies this broad range for institutions that fall at this classification level.
and understand “internationalization.” Thus, the value and meanings of “internationalization” remain rather ambiguous, apart from the rankings terms, which are quite debatable (Espeland and Sauder 2007; Lazuech 1998, 1999). The juxtaposition of this equivocal process and the centralized, formalized, hierarchical French education system and its attachment to the supposedly meritocratic *concours* thus pose questions for the state about how to negotiate change and preserve its legitimacy.

With its national elite connotation and legacy, l’X has been considered a “laggard” in terms of its internationalization efforts. Due to its prestigious history and demonstrated success on the national scene, l’X did not react as immediately to changes on the international stage. Bernard Esambert, President of l’X’s Council of Administration during the 1980s, has been cited as an initial herald of the institution’s internationalization. Emphasizing the crucial role that knowledge creation in higher education has for national economies, Esambert describes the international as an essential field to conquer in order to defend the excellence of l’X, and that of France. In his “*Note sur l’Ecole polytechnique,*” dated from October 28, 1985, he states:

However immodest be this approach, it will perhaps merit further discussion that *l’Ecole* will not be able to ignore, given the economic upheavals that change the structure of the world. (…) Because we now live in a state of global economic war. (…) It is by exporting more goods, services, and knowledge products, that each nation tries to win this war of a new kind, in which businesses are the armies. (…) Because the scientist has become an important factor in this war. (…) Withdrawal from the conflict would be a suicidal move for the state because the economic war has its virtues. (…) In conclusion, each nation must encourage its companies to hold high the colors by putting them in a position to innovate constantly to export more, to expand abroad, in short, by living in a context that has become irreversibly global. (…) *L’Ecole polytechnique* (…) must assert its vocation train officers for the economic war, that is to say, the executives of the nation which should enable it to maintain its economic standing within nations.
In this forceful statement – heavily masculine and practically bellicose in tone – Esambert highlights the development of international economic competition in which France must play a dominant role. He calls on l’X to continue its role as educating those who can defend the interest of France, even as the “battlefield” has changed form since the beginnings of the institution. Internationalization, then, involves strategic discourses and practices, with the goal to benefit and defend the contemporary economic interests of France, in this case. The French nation-state needs its best minds – not just brute military force - for its defense.

And while the members of the Council of Administration were “unanimous” in their agreement with further reflection and discussion towards internationalization efforts, they also emphasized that this internationalization must preserve the institution’s excellence:

In terms of the international radiance of the school, the agreement is unanimous, on condition that this radiance translates into real excellence in teaching and research. (Procès-verbal de la 61ème séance du 28 janvier 1986, 277)

Yet the concrete details of how to remain “excellent” while opening up to global flows, as well as targeting recruitment from the most advanced developed nations - including the United States, Japan, the United Kingdom, and Germany - posed major problems for l’X, as its excellence rested on its rigorously configured, uniquely nationally oriented selection procedure: the *concours* following the *classes préparatoires*. Historically, a small number of international students attended l’X. Sons of diplomats or originating from former French colonies that had instituted an education system following the French model, these students had passed through the *classes préparatoires* and succeeded in the *concours*. Hence, even as non-French nationals, their education aligned with the French mold.
Furthermore, even among the grandes écoles, l’X has long-sought to retain its distinction as the nation’s most elite institution, thus cultivating a sense of distrust towards evolutions taken by other institutions, such as internationalization strategies. As a former member of the administration explains, its conservatism is linked to a sense of superiority:

*L’Ecole polytechnique* considers itself above the others. […] Thus, when other schools do something, they consider that they are inferior schools. And they don’t want to be placed in the same basket.

Unable to rapidly reconcile these tensions, the Council of Administration took several years to discuss and reflect upon how to preserve the “excellence” of l’X before undertaking any major internationalization strategies.

However, the association between “international” and “excellence” became ever stronger through the intensification of higher education globalization over the following years with the implementation of international higher education rankings systems, which focus on rationalized ways to quantify “excellence,” such as the number of international partnerships or the percentage of foreign students on campus (Kauppi and Erkkilä 2011; Robertson 2010; Espeland and Sauder 2007). As such, the link between “excellence” and student recruitment by a nationally oriented concours became more tenuous for the institution. The fear of losing its legitimation as “excellent” and “elite” on the national level, along with the more visible roles of science in the sectors of business, industry, and finance – themselves in a heightened place in the French, European, and global economies - propelled l’X to embark upon internationalization and diversification strategies as a major priority in order to remain visible both at home and on the global stage. Indeed, alumni of l’X who had worked in international business, industry, and finance were among the strongest proponents of the internationalization of l’X, and it was under the leadership of the Council of Administration by Pierre Faurre that l’X put its
internationalization strategies into place, most notably by the opening in 1995 of a second type of
concours. Realizing that the reach would be limited if it required all entering students to pass the
traditional concours - as beyond language barriers, relatively few other countries follow the
specificities French education model - the Administration developed an alternate entry, the
concours voie 2, based on a portfolio application and oral exam, which can be completed in
English, primarily for foreign students who have not participated in the French classes préparatoires. Additionally, approximately 10 places in the concours voie 2 (out of 100) are
reserved for French students who have not participated in the classes préparatoires, but who
have completed an undergraduate university degree, as a measure to encourage greater social
class diversity, as the universities tend to encompass a wider social spectrum than the classes préparatoires.

Today, each entering class of approximately 500 offers up to 100 places to foreign
students, a rather aggressive increase over the past 20 years, and certainly since the beginning of
the study, when foreigners composed 2.61 percent of the student body in 1970. Tables 1 and 2 in
Appendix A illustrate this augmentation since the mid-1990s. Although not resulting in an
automatic increase with the institution of the concours voie 2, by the year 2001, a full 20 percent
of the cohort included foreign students. In fact, the percentage of foreign students is greater than
that of the overall percentage of women students, which has hovered between 13 and 19 percent
during the years since the concours voie 2 has been instituted. The percentage of foreign men
among all students has resembled closely the percentage of total women students since 2001,
which has varied between 11 and 19 percent. In 2008, foreign women are slightly more
represented among all women (26.76 percent) than foreign men among all men (18.89 percent),
and thus make up a greater percent of the women student body than the overall foreign
representation among the student body. Overall, such developments demonstrate the efforts given to internationalize the student body, which nonetheless remains very masculine. I will further discuss these gender imbalances in Chapters 6 and 7.

Additionally, these new recruitment efforts became encompassed within an even broader diversification reform program, the *Projet X2000*, which involved the diversification of its entry exams, the *concours*, the addition of internship opportunities, both in France and abroad, as well as its subject areas of specialization, which I will also further discuss in Chapter 5. Such efforts sought to better align l’X with evolutions in the advancements in the STEM fields and their place in international industry, business, and finance. For example, students today can specialize in biology and applied math, which were added over the past 20 years; secondary specialization also now exists in economics\(^{24}\) and ecological sciences, fields that have grown more prominent in the recent decades and which have a “global” nature (Fourcade 2009; Engels and Ruschenberg 2008; Jappe 2007).

In addition to student recruitment, the international strategies of l’X involve partnerships with institutions in other countries; currently, 170 agreements with foreign universities exist (Communication 2009). It has established double-diploma degrees, and it is part of several international partnerships, including the research consortium Alliance (Columbia University, the *Université Paris I, Sciences Po*) and the IDEA League (Imperial College of London, *Technische Universiteit Delft*, *ETH Zurich*, *RWTH Aachen*, and *Paris Tech*), which offers research scholarships and exchange opportunities for students and scholars to focus on science and technology. Among its instruction staff, 18 percent are international, and 64 nationalities are represented among the students (Communication 2009). The school boasts that over 80 percent

\(^{24}\) With a highly theoretical and mathematical leaning, much like econometrics (Lazuech 1999; French alumni interviewee)
of each class cohort spends, on average, nine months in an international internship, research, or study abroad opportunity.

**Addressing the Challenges to the Goals of International Excellence and Visibility**

Even with the *Projet X2000* reform, and despite its base in the STEM fields, which are often considered universal, l’X has faced several challenges to its visibility and recognition on the global level. First, for much of the institution’s history, the engineering degree in France has not necessarily corresponded with other degree models. As part of the Bologna process in Europe, this concern has been somewhat ameliorated, as most institutions in France have transitioned to the “bachelor,” “master,” and “doctorate” model of degrees; however, the engineering degree at l’X still remains unique. The French system’s lack of correspondence with internationally recognized models and ranking systems, such as the Academic Ranking of World Universities (ARWU), has also been a source of tension for many, especially when other lesser-known measures capture its qualities. French alumnus Pascal describes an alternative ranking system that better showcases the strengths of l’X:

(The ranking of) *l'Ecole des Mines* is interesting. *L'Ecole de Mines* in Paris is one of the engineering schools that ranks just below l’X. And they said that they are going to measure something different (...). The system looks at the Fortune 500 companies – now there, that’s international – and in addition, it’s essentially important – and it looks at the executive directors (...). And the ranking system looks at, among the Fortune 500 companies, what education these directors had. And l’X is ranked among the 10 best.

Despite such alternative measures of its quality, the notion of international visibility has remained a priority for l’X. Administrators and alumni emphasized that it has been absolutely

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25 The masters program was instituted in 2005, while the doctoral program began in 1985 at l’X.
26 Also more commonly known as the Shanghai rankings
essential for the institution to be widely recognized as elite and excellent on the global level, beyond its visibility in France. As a former member of the administration indicates:

So, in my view, the first priority for l’Ecole polytechnique, once (the internationalization strategies) have been launched, is to finally be viewed, considered, and recognized by its peers - the other foreign establishments - as finally being part of this club of international institutions with a vocation to be international, with international quality, with international excellence. To say it more precisely, in each country, there are establishments that are at the head of the line – in sciences and engineering, if we look at the United States, (...) MIT is not simply a nationally oriented American university. It has an international authority, and if we take a little tour of the world, in each country, we are going to find the institution of reference, that has an international notoriety. And so, it was essential, it was one of the stakes for Polytechnique, which is at the head of the line of engineering schools in France, to have this international institutional status. So, I think that is the first priority.

Yet, beyond the particularities of the French engineering degree, the institution’s organizational structure - partly related to its military history and status - has also posed challenges to its visibility at the international level. As this former administrator describes, the composition of the institution has changed dramatically over the past forty years, which requires a different type of leadership and management:

When you look at the history of l’Ecole polytechnique, it was created in the eighteenth century, for the engineering cycle; the French students are military personnel; and the entire organization is a military-type of organization, built on the military. Little by little, we add women – they are also in the military, that’s in 1972…After, we add foreign students – they are not in the military…And after, we add students in masters and doctoral programs…All of that around the year 2000. So, in fact, there is a population today, when we look at l’Ecole polytechnique, there are certainly the engineers, the French polytechniciens are in the military, but on the side, there are quite a few people who finally have nothing to do with the military. And if we look at the organization, strictly speaking, it is, all the same, still very centered on the notion of French military students. And I could tell you tons of anecdotes, but the management of foreign students in this context, that has been difficult and amusing because there were things that were not anticipated for them; people did
not know what to do; we had to look for the backdoor routes in order to do what one normally does in other institutions.

As this quote suggests, the internationalization strategies demand major changes for the institution of l’X. Its organization, based on military models, no longer corresponds with contemporary models of higher education institutions that seek international renown. More importantly, its national orientation and spirit – coupled with practices that assume a very homogenous student body – do not effectively welcome the types of diversity – however limited - that its internationalization and diversification strategies have sought to institute.

To help address these concerns, a major modification to the institution’s structure has recently taken place: in 2013, l’X instituted the position of “president,” analogous to the position of president that exists in many other institutions of higher education. Throughout much of its history, l’X had two major positions at its leadership head: the President of the Council of Administration and the Directeur Général, the latter of which was an officer in the French military. While these positions and the individuals who filled them met contextual criteria associated with notions of leadership, they did not necessarily correspond with the major elements that characterize higher education presidents in elite institutions abroad; in particular, they neither obligatorily possessed a Ph.D., nor boasted the kinds of high level management and leadership trajectories common among other higher education presidents (Dubois 1997; Musselin 2004; Pausits and Pellert 2009). Becoming more engaged through internationalization initiatives has also changed the type and volume of work required by the head of the organization. During my interview, the previous Directeur Général shared that his workload increased enormously during his seven year tenure; the current necessary engagement with outside stakeholders, alumni, and partners requires a different allocation of time and energy than what had been
previously demanded. With this recent structural modification, the institution demonstrates that its leadership is familiar with the sanctioned contemporary academic pathways, including completion of a dissertation. S/he is “visible” as a member of and major player in the “club” of presidents of “elite” institutions\(^\text{27}\) who needs to be at the table during international conferences.

Boosting its international notoriety for research has also become a goal for l’X. With their legacy as institutions for elite training, the \textit{grandes écoles} have not historically been considered sites of intense faculty research; this role was rather undertaken by the institutions of the university and the CNRS. Throughout its history, l’X certainly has trained and employed brilliant researchers, notably in mathematics, but its faculty have often held temporary or joint appointments with other institutions, such as the universities. Even universities, which have been historically considered training sites for researchers, have not been visible sites of research. The CNRS and its laboratories serve this function in France; however, they fall outside of the criteria of visibility of international institutions of higher education. Thus, as additional measure to become internationally prominent, l’X has joined the \textit{Université Paris-Saclay}, a public establishment of scientific cooperation, which is composed of over twenty higher education and research institutions, creating an institutional conglomeration with the size to be potentially internationally visible in the area of research; notably, this grouping also hopes to ascend the Shanghai rankings. As part of this group, l’X still plans to remain the “best school,” in the words of its current president, Jacques Biot (Beyer 2013); rather than simply being a member of \textit{Paris-Saclay}, l’X sees itself as a \textit{co-actionnaire} (co-shareholder) as a founder of this group (Rollot 2014).

\(^{27}\) Archival material and interviewees often referenced Harvard, MIT, Caltech, and Stanford as examples and models for l’X.
For polytechnicien students, the Paris-Saclay association potentially will offer greater access to early research opportunities during their studies or stages. With the presence of other institutions of higher education, research institutes, laboratories, and industries in close proximity to the polytechnicien campus, there will possibly be an enhanced cosmopolitan and less secluded atmosphere. Although potentially transformative, one can only conjecture its impacts, however, as this association remains in the early stages of its construction. Furthermore, it is important to note that its key roles will be with the associated faculty, researchers, and graduate students at l’X, rather than specifically with the polytechnicien degree students. And while a major priority, this also poses incredible logistical challenges for the institution, as were mentioned in several interviews with the administration. Beyond Paris-Saclay, while the institution continues to build from individual links that attached researchers have with foreign scholars and institutions, l’X has developed several institutional partnerships to foster international mobility and visibility. Partnerships through the Ministère des affaires étrangères et européennes (Ministry of Foreign and European Affairs) exist, as well as through programs on the European level, such as Erasmus and the IDEA League.

Additionally, the institution has invested in developing links with business and industry. Beyond individual researcher and institutional links to foster basic research and scholar mobility, the Direction des relations industrielles et partenariats (Direction of Industrial Relationships and Partnerships) engages in creating partnerships with business, industry, technology, and research. Under the Direction de l’enseignement et de la recherche (Direction of Industrial Relationships and Partnerships), it has created the position of Director of Innovation and Entrepreneurialism, latching onto the notions of “innovation” and “entrepreneurialism,” which have become

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28 In the sense of elite, “ivory tower” distinction, but also physical separation, as the polytechnicien campus is situated on a high plateau outside of Paris; it is not physically easy to access.
keywords in neoliberal educational development, and the school hopes to “distill this spirit through the entire school,” according to the Director of Teaching (SciVol 2013). Although only recently launched, these partnerships and initiatives have begun to support the creation of businesses related to research, industry, and even recruitment. Because of the perceived increased need for innovation and entrepreneurialism, such efforts are considered necessary for the institution to provide its students with opportunities to engage in this work in the contemporary economy.

The development of the Fondation (Foundation), in particular, offers an important example of the quest of l’X to establish its reputation of “excellence” on the international level and the involvement of its alumni. Higher education foundations are associations that expressly raise and invest funds from donations to support institutions of higher education. Often technically independent from the institutions of higher education they support, they have become heavily involved in the management of higher education, particularly in the United States. Currently claiming over 25 years of existence, the Fondation of l’X was established and continues to be directed by alumni members who worked abroad and perceived that l’X was not recognized in other countries, notably, the United States. Although mentioning that the subsidies from the state have not decreased, members of the Fondation shared they were concerned that this level of funding was not sufficient to establish the international reputation of l’X and allow it to be competitive on the global scale. The Fondation established its first Capital Campaign in March 2008 for 35 million Euros; despite their attachment to l’X, alumni in France responded to this development with much more hesitation and skepticism than alumni in the United States and Great Britain, as the notion of a “foundation” for a higher education institution is quite foreign.

29 … “distiller cet état d'esprit dans toute l'Ecole”
30 The budget of l’X is approximately 190 million € per year.
given the history of public education in France. Members of the *Fondation* shared they recognize that they cannot compete with an institution like Harvard, whose foundation dates back several centuries; however, they proudly shared how other elite high schools in France had begun to request their guidance, as this system is starting to take root, and concerns to raise funds also play a role in the future orientation of l’X. While largely managed by members of the alumni, the *Fondation* is imbricated with the state, as members of state ministries sit on its board of directors.

At the same time, several alumni and students intimated anxiety about how to preserve the historical traits of l’X, particularly those related to its military character and the *concours*, so uniquely tied to the notion of “excellence” in France. With its illustrious past and national ties, some alumni are hesitant to embrace rapid and massive changes. Several alumni unfamiliar with the *concours voie 2* expressed surprise and concern that this entry outside of the specific classes *préparatoires* training could sacrifice student body quality, and thus the prestige and excellence attributed to l’X. The institution’s military links, traditions, history, and campus setting offer unique characteristics, which many do not want to lose; the *polytechnicien* “campus” actually corresponds more closely with American institutions and the type of campus life offered for undergraduate students there, which is very rare in France. One French alumnus, Xavier, even suggested he regretted students no longer daily wear the military uniform. As naturalized student Diana suggests, the history and tradition of the school can serve as attractive factors, which, in her estimation, should be preserved:

To be a *polytechnicien*, that’s, well, there are several things. As you said, the history of *Polytechnique* is very important. Above all, it is to adhere to the *polytechnicien* community, to accept and appreciate the military aspect of *Polytechnique* – that is the history, the tradition. If you don’t accept
that, you’re not a *polytechnicien*, but rather just a student at *l’Ecole polytechnique*.

According to this viewpoint, the nationally oriented aspects of l’X, in particular its military attachment, are important and should not be lost as the institution seeks to become internationally renowned. Students who attend should embrace these aspects in order to become fully integrated into the *polytechnicien* community. At the same time, adhesion to this perspective also suggests willingness to privilege the values of the French military and potentially reject openness to diverse ideas and people, who might contest the values of the military.

**Elite Service to the State**

But is the pursuit of excellence simply the story of an institution – or even a sector of the French elite – that wants to preserve itself? I argue that the implications are actually much greater. The pursuit of international excellence by l’X is instead a small part of a large and complicated story of how France, as a nation-state, can remain globally powerful, and in a sense, “elite.” In the contemporary economy, nation-states undertake intense efforts to maintain and enhance their power through the knowledge production, innovation, and educational activities of higher education (Altbach and Salmi 2011; Calderone and Rhoades 2005; Robertson and Keeling 2008). Guarding their national and cultural identities, including language, amid global exchange also remains a point of contention and debate for nation-states, including France (Ariely 2012; Darchy-Koechlin 2012). With its nationally oriented history, state funding, and tutelage under the Ministries of Defense and Education, l’X has a particularly strong link to the French state (Bourdieu [1987] 1996; Darchy-Koechlin 2012). Thus, the concern for the “excellence” of l’X –
nationally and internationally - is also a tool for how France, as a nation-state, can remain elite during the contemporary era of globalization.

In France, the neoliberalization of political strategies has loosened state control over business, industry, money, and credit. Concomitantly, the alignment of the elite with the state has also loosened, and a business elite has emerged (Dudouet and Joly 2010). Despite such shifts, however, both the state and the business sector have stakes in maintaining control and the hierarchies of power (Bourdieu [1989] 1996; Bourdieu, Christin, and Will 2000; Dudouet and Grémont 2007). François-Xavier Dudouet et Eric Grémont (2007) show while there has been some shift away from family capitalist control, the business elite are still recruited from politico-administrative bodies, rather than from the business ranks; thus, the ancienne noblesse d’État (the former state nobility) has become the dominant population in business. Additionally, the military has become more technologically advanced and professionalized over the past 40 years (Evetts 2003), with more small and specialized subunits. Between 1980-2013, the French defense budget has decreased by 4.7 percent in real Euros, and from approximately 2.75 percent to 1.55 percent of the GDP during this time period, according to 2014 data from the Ministère de la Défense. France ended by law on July 13, 1972 all status discrimination between men and women in the military forces, although several years passed before women were able to enter officer positions. Currently, women represent approximately 14 percent of the armed forces in France (Alexis and Dubois 2010).

Following the European Union educational conventions and policies that it played a central role in engineering, France has implemented several changes in its higher education system (Bhandari 2009; Sursock and Smidt 2010; Vinokur 2010). Its institutions have sought to encourage European mobility of students through shifting degree structures to overall correspond
with the (mostly) common bachelor, masters, and doctoral degree structures. Additionally, it has emphasized its development of the R&D university-industry sectors, thus encouraging links between prestigious public institutions and private enterprises (Vinokur 2010). Since 2003, it has attempted to concentrate on attracting graduate students and academic researchers, seeking to improve its role in developing the “knowledge economy” and conforming with the EU goals “(i) to improve the quality of the services offered; (ii) to give precedence to foreign students of graduate level and researchers in science, technology, finance and management; and (iii) to attract brilliant students from scientifically developed countries, emerging regions and eastern Europe,” and setting up the CampusFrance institution to facilitate this (Vinokur 2010: 208).

In addition to the EU conventions and their associated changes, recent laws such as the Loi sur les Libertés et les Responsabilités des Universités (LRU) (Law Concerning the Freedoms and Responsibilities of Universities) of August 2007 attempted to create a major shift in French education policy. Described as a challenge to move toward “excellence,” this law transferred greater governance control to individual institutions and has emphasized the values of research, scientific development, and publications by its instructor-researchers; moreover, it has attempted to generate additional funding strategies and sources, including private foundations and businesses (Prieur 2008). In part, this has sought to feature more prominently France’s relatively preeminent levels of scientific production in order to elevate its institutions of higher education in international rankings, which, save its business schools, have thus far fared poorly in comparison with Anglo-Saxon institutions. This law became applicable to l’X, however, only after its demand in 2009 to have greater administrative control over the development of the Paris-Saclay project. Similarly, France has instituted several projects that group institutions together around research projects that attempt to draw international recognition, such as
l'Operation Campus and the Pôles de recherche et d’enseignement supérieur (PRES) (Prieur 2008). At the same time, the 2007 law, as well as the more recent Loi relative à l’Enseignement Supérieur et à la Recherche (Law Concerning Higher Education and Research) of July 2013, still emphasize the French state as an important driver and strategic actor in higher education, whose influence remains present amid the changes.

Currently, the percentage of foreign students in France stands at 12 percent of the higher education student body. While there has been a recent spectacular increase in the number of students from China, as well as large cohorts from Germany and Italy, the top 10 home countries of foreign students are former colonies, primarily from the Maghreb (Vinokur 2010). Following the independence of French colonies, international exchanges occurred between France and its former colonies as a show of good will and development aid. Despite a period of stalled growth of the foreign student population in the late 1970s and 1980s related to skepticism around immigration (Garneau 2007), France has remained involved in its traditional spheres of influence and remains an important destination for students from Africa; over one-third of all foreign students of African origin choose France (Vinokur 2010). The majority of incoming foreign students study within the university system, primarily in the literature and social sciences fields, followed by sciences, economics and management. Foreign students are represented more heavily among doctoral students, at 41 percent. After the United States and United Kingdom, respective, France is the third most popular destination for foreign students (CampusFrance 2014). The French Ministry of Education has set an ambitious goal to have 20 percent of higher education students engage in study abroad by the year 2020 (Nationale 2010).

Data from CampusFrance (http://www.campusfrance.org/fr/)
In conjunction with greater structural shifts, including the rise of the business and industry elite in France (Dudouet and Joly 2010), the increasing influence of foreign actors and partnerships in business (Bancel 2004), and a modification of the role and place of the military in the society (Evetts 2003; Paarlberg 2004), immense technological advancements have changed the nature of work in the STEM fields. Accordingly, the number of students who work for the state following their studies at l’X has declined markedly, and a substantial proportion now work in industry, business, research, and even finance. Table 7 in Appendix B shows that between 1977 and 2007, the percentage of polytechnicien students who directly entered the corps de l’Etat dropped from 40 percent to 19 percent, with now more than two-thirds of the students entering industry, business, banking, and consultancy. More recent cohorts have also seen a growing number of students who enter doctoral programs; for the cohort of 2010, 20 percent entered the corps de l’Etat; 22 percent entered doctoral programs; 51 percent entered business, industry, finance, and consultancy; and the remainder pursued other occupations or entrepreneurship.

While the percentage of students who work for the state following their studies at l’X has diminished notably over the past forty years, the French state still maintains a command of the distribution of students’ jobs; approximately 20 percent of students still pursue a career in the public sector (the state). In fact, certain state positions are virtually reserved for polytechniciens. There is an apparent calculated distribution of technical and political power in the state administration; as a French alumnus, Alain, who works for the state shared with me, one more or less knows by the position someone holds whether or not s/he went to l’X or to l’Ecole nationale d’administration (l’ENA) (the National School of Administration), the school that forms national administrators (and often politicians). As the state designates the number of places available in
its *corps de l'Etat*, the changes in the sectors in which *polytechniciens* work relate to the designated needs of the state. L’X’s missions to engage more intensely in the international realm, to focus on research, and to collaborate with other national and foreign institutions are set out in French law\(^\text{32}\) as follows:

*L’Ecole polytechnique* has, as its mission, to give its students a scientific and general culture that renders them apt to occupy, after specialized training, posts requiring high qualification or responsibilities with scientific, technical, or economic character, in the civil or military *corps de l'Etat* and in public service, and in a more general manner, in the ensemble of national activities.

To accomplish this mission, in both a national and international sense, *l’Ecole* offers a wide variety of educational and training opportunities and research activities… *L’Ecole* can engage in actions of cooperation with French or foreign teaching or research establishments.\(^\text{33}\)

Additionally, a decree in 2001 defines the broad contours of the *polytechnicenne* education as including general culture, scientific culture, and professional specialization. Thus, the state is at least partially behind the shifts in strategies undertaken by l’X.

In the contemporary era of global neoliberalization, such modifications point to the state’s consciousness that it needs a private economic sector capable of addressing what it no longer oversees directly and to engage in the international fields of STEM, industry, business, and finance. During the 1990s, France engaged in a series of deregulation initiatives in its public services\(^\text{34}\), such as the telecommunications liberalization in 1998, which opened these services to

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\(^{32}\) Law number 70-631 of July 15, 1970 and law number 94-577 of July 12, 1994

\(^{33}\) *L'Ecole Polytechnique a pour mission de donner à ses élèves une culture scientifique et générale les rendant aptes à occuper, après formation spécialisée, des emplois de haute qualification ou de responsabilité à caractère scientifique, technique ou économique, dans les corps civils et militaires de l'Etat et dans les services publics et, de façon plus générale, dans l'ensemble des activités de la nation.*

(alinéa ajouté à la loi n° 70-631 par la loi n° 94-577)

*Pour l'accomplissement de cette mission, à vocation nationale et internationale, l'Ecole dispense des formations de toute nature et organise des activités de recherche…Elle peut engager des actions de coopération avec des établissements français et étrangers d'enseignement ou de recherche.*

\(^{34}\) Liberalization of the electricity market to conform with European Union mandates has experienced a path particularly fraught with resistance.
competition and marked a shift from public to private control. Although his individual case also brings up questions of meritocracy and social reproduction, which will be further discussed in Chapter 6, the familial educational and career trajectories of French student Joseph captured this transition from public to private sectors in France: while his father entered state service as an architect after his studies at l’X, he will enter the private sector – as an architect. Thus, even if a majority of polytechnicien alumni of l’X no longer work directly for the state, they do represent a vital resource for France and potentially render service among the nation’s elite.

Accordingly, l’X still functions as a critical resource for the French state; the success of l’X to produce a strong technical elite – who works either in the public or the private sectors, yet who contributes to maintaining and advancing the economic and political power of France – remains an important goal for the state. Furthermore, as a member of the European Union, it needs its elite to be sufficiently attractive and competent in order to compete with highly mobile and competent elites from other neighboring countries who face limited formal constraints to employment across borders. As a centralized, strong nation-state that prides itself on its distinctiveness and culture, France seeks to guard its control and mark as elite; for instance, that French nationals receive international distinction with Nobel Prizes is very meaningful. Rather than simply extract talent from abroad, it values the talents of French nationals, thus cultivating a notion of “natural” strength of its population and of the inherent value of its education system.

To foster solidarity among students and cultivate a sense of service towards France and solidarity among students, even if students do not eventually work directly for the state, l’X continues to organize activities and traditions that foster notions of “glory” and “honor” around France as a nation-state, including the military and civil service stages, which are part of students’ curricula, as well as flag-raising ceremonies, balls, and attendance at state events, but
also more notably the parade for the national holiday, July 14th, in which polytechnicien students march in a showcased position. As will be discussed in Chapter 6, most French people are globally unfamiliar with l’X; however, l’X is commonly recognized through its association with the July 14th parade. Thus, its place in the national symbolic imaginary is uniquely linked to the French nation-state.

While the actual process of internationalization of l’X yet remains rather incremental through individual connections, the goal of internationalization is to enhance France’s political, economic, and diplomatic relationships with foreign countries; it is, as Arshad-Ayaz (2007) has described, a neoliberal tool. As this administrator describes, the countries targeted by l’X for student recruitment are related to:

> The foreign policy of France, which is concretely defined and put into place by the Ministry of Foreign Affairs - so which are the countries with which France wants to develop privileged relations. (…) The other criterion that we use is the economic interest of France - so related to the big business groups of France. (…) What are the countries in which they are already implanted, in which they want to develop, either for commercial industries or to develop other activities.

International recruitment efforts and attention, thus, are strategic, linked to fostering diplomatic ties and/or economic relationships. As suggested here and by the broadened number of countries of origin among foreign students, international recruitment at l’X extends beyond its earlier colonial spheres and corresponds more with contemporary development. (See Tables 4 and 5 in Appendix A.)

Changes in the national origin in the polytechnicien student body have occurred with the implementation of the concours voie 2. Prior to the creation of this concours, the majority of foreign polytechnicien students came from the regions of the world where France held colonies – North and Sub-Saharan Africa, Southeast Asia, and the Middle East. For instance, Tables 4 and 5
in Appendix A show that in 1972, students originating from North Africa made up 50.00 percent of the foreign student body, students from Sub-Saharan Africa 7.14 percent, students from Southeast Asia 14.29 percent, and students from the Middle East, 21.43 percent. At the same time, foreign students only represented 4.44 percent of the entire student body of 314, so very few were present in absolute terms. During the period prior to the concours voie 2, the few other foreign students were primarily children of diplomats who had the chance to pass through the system of education and the classes préparatoires in France (Karvar 1997).

With the implementation of the concours voie 2, these regions still remain represented; however, notable increases in students from other regions of the world, especially Asia, South America, and Eastern Europe and Eurasia have taken place. Asia and South America, in particular, have witnessed important economic growth over the past 40 years and are – at least according to my administrator interviewees - considered key regions for investment by business and industry. Students originating from Eastern Europe and Eurasia, and Southeast Asia were rapidly more represented just after the implementation of the concours voie 2, at 28.00 and 30.00 percent of the foreign student body in the year 2000, respectively, suggesting that initial recruitment efforts were made through existing professional relationships between researchers of l’X and institutions from these regions. At the same time, students from these regions only represented about 3 percent of the total student body. In the most recent cohort of the study, from 2008, the greatest foreign student representation came from Asia (34.04 percent of foreign students), North Africa (22.34 percent of foreign students), and South America (20.21 percent of foreign students), suggesting a shift of recruitment focus.

For centuries – certainly since the début of l’X – France has been a powerful economic, political, and cultural actor on the global stage. Prior to the contemporary phase of globalization,
France developed major world influence by cultivating and spreading institutions, practices, and values considered modern. Its engineers have inspired – if not left their own legacies in – the development of major works across many countries. Its model of state bureaucracy has served as a reference for other emerging state systems (Karvar 1987). Its managers are well represented at the top levels of many of the Fortune-500 groups. Moreover, its colonial projects – in Africa, Asia, and even the Americas – have created lasting links and continued influence outside of its geographic borders – and its place in the global cultural imaginary is particularly powerful. It serves as a permanent member of the United Nations Security Council and, as a founding member, hosted the summit to create the Group of Eight (G8), the international forum composed of the eight most economically wealthy (measured in GDP) countries in the world. It is the leading electricity exporter and one of the top 10 global leading arms suppliers. It is also one of the leading tourist destinations in the world, thus holding high cultural attraction. Twenty-nine countries claim French as their official (or co-official languages). Altogether, France holds a very elite place on the global stage; as such, its efforts as a nation-state to remain in its privileged elite position are expected. As the Director of the Alumni Association, Laurent Billès-Garabédian, indicates in an article entitled “Compétitivité d’abord” (“Competition First”), the internationalization of l’X is necessary to (re)establish the competitiveness of France and its industrialization politics by developing networks for public (and private) industries and for investments for research and development innovations. Such attention also communicates concerns and even fears that France does not rank sufficiently high among other major countries in terms of its development, innovation, and competitiveness in major industries.

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Thus, not only does the presence of foreign students and the ties developed to their home countries and institutions render l’X visible as “excellent,” but they also help establish privileged relationships for the alumni in their careers, thus benefiting their professional paths. And, accordingly, the successes of l’X and of its alumni help France maintain its position as an elite and powerful nation. While the institution estimates that many foreign students remain in France following their studies at l’X, thus limiting the implanted connections that the institution might have in other countries, France obviously benefits from the presence of foreign alumni on French soil. Several of the foreign-born students and alumni with whom I spoke had already sought and attained French citizenship towards the end of their studies at l’X. Diana, a student originating from Eastern Europe who recently became French, explained that it was more advantageous for her to remain in France rather to return to her home country:

If I wanted to return to (home country), having attended l’X is the same as having studied abroad anywhere. At the same time, there is a strong French network there (…), and the French who want to hire someone tend to look for someone who has studied in France, for the language and cultural codes. So, certainly, I would have an advantage in that environment in (my home country), (…) but I don’t think that I would be able to completely take advantage of my diploma, especially from a material point of view. It is better to be hired here than to leave, that’s for sure.

The French state welcomes these highly talented, elite students, in a form of “skimming the cream,” using this talented foreign-born elite for their own benefit. Certainly, these foreign-born individuals derive benefit from their studies in France and may choose to remain in France (or return to their home countries) for any number of more or less rational reasons; this is not the critical focus of this study. Rather, I call attention to the advantage that the elite institutions of France attempt to protect and maintain. As Robertson and Keeling (2008) have suggested in the broader context of Europe, nation-states offer guidelines for international connections and
investments with the goal to enhance their economic activity and influence, and are thus critical actors behind internationalization strategies in higher education.

Of course, this is not necessarily a new phenomenon. Throughout much of its history, France has used foreigners for its own defense. Since 1831, the Légion Etrangère (Foreign Legion) has welcomed foreign men to serve – and die – for France, even with a simple declaration of identity. Members of the Légion Etrangère have often been deployed abroad, especially in regions of conflict in former colonies. While the nature of their missions has diversified and now may involve more “peace-keeping” measures rather than battle, these men hold a highly elite reputation as extremely skilled combatants, having undergone a demanding selection process and intense training. Service also opens the door to citizenship for légionnaires. The contemporary internationalization strategies, however, take on a more symbolic meaning. The presence of foreign students suggests that France is indeed “internationally excellent.” At the same time, however, this targeted recruitment punctures the notion of neutral meritocratic selection, as this targeted recruitment exists unevenly throughout the world.

Despite the apparent enthusiasm of talented foreign students to remain in France – and the intense efforts of l’X to extend its network and visibility internationally – tensions exist around the extent of international mobility encouraged by l’X. While preserving its legitimacy and visibility\textsuperscript{36} as an elite institution (in the case of l’X) and a powerful nation-state (in the case of France) on the international stage served as an important motivation to undertake “internationalization,” concerns around losing human capital, particularly students trained in France, to other institutions and nations exist. During my interviews, some students noted that

\textsuperscript{36} As much on the national level as on the international level
spending time abroad was not a requirement for students at l’X\textsuperscript{37}, in contrast to several other elite institutions in France. They also perceived that the administration seeks to orient students toward certain career paths and experiences. For example, French student Colette told me that at a recent conference on the internationalization of l’X, the Directeur Général stated that l’X did not want too many students to spend their fourth year abroad, particularly if they pursued paths that potentially would lead them to become “bankers in London,” holding positions that, while individually economically lucrative\textsuperscript{38}, contribute less directly to the French economy. On the contrary, students were encouraged to take advantage of the already existing partnerships of the institution, even those within France.

Similarly, the notion of service to the state also comes up in relation to students’ stipends. Over the past forty years, the state has debated how this stipend is distributed, who might receive it, and who is required to pay it back. Throughout its history, polytechniciens who left state service during their careers have been criticized for profiting from a very inexpensive elite public education, for which they received state stipends, for purely personal gain, rather than giving back to France. During the period of my interviews, the rules were rather generous, as students who immediately chose to work in the private sector following graduation were not required to pay it back, which were the same conditions for those who chose to work for the state and honor their 10-year contract. This measure, however, came under debate again following my data collection, and in October 2013, the French state reduced by 500,000 € the subventions accorded to l’X, judging that the students who choose to work in the private sector following their studies

\textsuperscript{37} This changed during the year of my interviews.

\textsuperscript{38} Discretion about money has historically been culturally privileged in France (Lamont 1992). Neoliberal educational reforms have increased focus on economic rewards in the motivation of young people in other national context, however, and similar reforms may also have a similar impact on young people’s motivations in France (Pick and Taylor 2009).

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received conditions that were too favorable. Interestingly, some members of the government suggest that students are too attracted to high paying jobs in the private sector, turning them away for working for less pay for the state. Thus, to quell such reproaches, l’X has reinstituted required repayment of these stipends for students not working for the state. Students not entering the *corps de l’Etat* upon exit are required to reimburse their academic fees unless they choose another career route designated by l’X as exempt from reimbursement, such as entrepreneurialism, which hints at the French state’s encouragement of neoliberal subjectivities. Graduates who leave state service too early (within 10 years) also must reimburse on a sliding scale in relation to the amount of time spent working directly for the state.

At the same time, alumni who have worked in the business sector shared pointed concerns of the most talented French students leaving France immediately after their baccalaureate (high school) degree to pursue studies abroad. As French alumna Mathilde shared:

> We are in a system of the *concours*, so if we take the best and there are 20 percent of them that leave, there is a loss. And that is a risk today. I see it around us. (...) Ten years ago, everyone went into the *classes préparatoires*, but today, it’s not the case. (...) Of course, that only concerns the elites, but we are talking about elitist schools, in any event.

These expressed concerns accordingly suggest that the internationalization of l’X seeks to shape and maintain a hierarchy of power relationships in which France keeps its brightest students and also obtains the brightest students from abroad.

While all major modifications to l’X have required state approval and thus been influenced by the French state, alumni members with experiences abroad, notably in business and industry, have played especially dominant roles in the internationalization of l’X. Their paths and perspectives have differed notably from fellow alumni who have remained in France,
particularly those who worked for the state or the military. They resemble the more transnational elite described by Robinson (2011), which has encouraged nation-states to engage in neoliberal reforms. Alumni are heavily represented in the commissions amont and aval. The commission amont focuses on the action of the Council of Administration around admission (notably around the concours and classes préparatoires). The commission aval focuses on career insertion of students based on needs of potential employing businesses, industries, and the state. The input these committees provide seeks to produce students that will fit the profiles elite industry, business, finance, and research – as well as the corps de l'Etat - demand, in order to preserve l’X’s reputation of excellence and place among the elites. Similarly, they hold sway in their prominent representation and participation in the Fondation (Foundation) and the Association des Anciens Elèves (Alumni Association).

Although fewer students pursue military careers – or direct state service as a functionary in the corps de l’Etat – alumni still occupy places of power. In Appendix C, I list the members of these committees, as well as their professional affiliations. As these lists demonstrate, the members of the Direction of l’X, including the committees that advise it, hold weighty positions in major research, industrial, and business organizations39. Their presence and influence at l’X thus helps the institution tailor its education and students to fit the wide-ranging needs of these groups, which will not only benefit these employers, but also ensure that the polytechnicien alumni are attractive employees for prominent groups.

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39 These lists also illustrate that the evolutions of l’X maintain its very masculine character. As Connell (1993) has described, the neoliberal technocrat and global businessman embody contemporary hegemonic masculine ideals; such are the professional profiles cultivated at l’X. Moreover, there are simply very few women on the committees. I will further discuss the hegemonic masculine ideal of l’X in Chapter 7.
Conclusion

As this chapter suggests, the internationalization and diversification strategies of l’X are not simply about maintaining institutional preeminence in France. While guarding its place nationally is certainly part of the story, I argue that these strategies are also about ensuring the creation of an elite that will benefit France and ensure its economic, political, and cultural dominance in the global field. As Ho (2009) has suggested through her study of Wall Street, “strategies” undertaken by dominant groups reflect their worldviews and their commitment to impose these worldviews on others. The strategies of l’X – and of thus of France - are structures and practices undertaken by an elite to guard its legitimacy, dominance, and sovereignty in the face of change. Moreover, through the appropriation and utilization of global discourses, such as “meritocracy” and “internationalization,” they seek to define and thus control these discourses for their own benefit.

The development of these strategies has clearly been fraught with tensions about how to ensure that the meritocratic excellence associated with l’X (and with France) is not radically questioned. Indeed, these tensions, particularly around the entry *concours* to l’X, delayed the institution’s initial formal internationalization. While also allowing foreign students entry, l’X seeks to maintain its national distinction as elite and excellent, which has been constructed in relation to the French system of education and its notions of meritocracy. Nevertheless, maintaining its elite place is sufficiently important to undertake major changes in the identity of the institution, transforming its military structures to become an internationally recognizable higher education institution.

Additionally, the tensions amid the changes undertaken by l’X reveal a negotiation between homogenization and distinction. As world polity and neoinstitutionalist scholars have
suggested, changes occurring as part of globalization can result in apparent homogenization and isomorphism of institutions and organizational structures (DiMaggio and Powel 1983; Meyer, et al 1997). Willem Halffman and Loet Leydesdorff (2010), for instance, have suggested that international rankings of higher education institutions have resulted in greater homogenization of elite universities as they seek to conform with rankings criteria. I find this, too, at l’X, which has changed its administrative structure to be “recognizable” among elite institutional peers. At the same time, l’X seeks to preserve its distinction, notably in terms of its military links, history, and reputation as the most elite institution in France; “national” elements still hold symbolic value for the institution and for France. Guarding its distinction as “elite,” accordingly, has not simply been about staying ahead of other strata by continuing to define what is elite, as Bourdieu (1984) has suggested, but also about meeting criteria that others – including foreign institutions and organizations – have defined as elite.

Ultimately, this chapter suggests that the French nation-state continues to remain implicated in public higher education, adjusting educational programs in relation to state needs and relationships. Institutions of higher education – and particularly the STEM disciplines – are considered essential sites of developing the “cognitive capital” necessary for the defense of the nation-state through the scientific research and training produced there (Boisier 2003). At the same time, the STEM disciplines also open up to more globally focused or international careers, with potentially less attachment to a particular nation-state (Power, et al 2013). Particularly because l’X is a public institution, France does not want to lose the “capital” it forms at its own institutions to other nations or institutions. Students – both French nationals and foreigners - at l’X are thus enthusiastically encouraged to render service to France in their professional careers. While France still takes advantage of its colonial links through recruitment of elite students from
former colonial regions, it has extended its reach to other regions of the world considered “priority” for the state, for political and economic reasons. As such, the internationalization strategies of l’X move beyond past regions of influence and demonstrate notable changes.
CHAPTER 5 - *Cultivating the Polytechnicien(ne) and the Polytechnicien Network*

Growing up in the country in a rather modest family, I was always wide-eyed with wonder when people told me about where education could take you – places that seemed unreachable…And now, once you are a *polytechnicien*, you realize that all of the best people in your country have completed more or less the same studies as you. (Alain, French alumnus)

**Introduction**

For students who have been intensely immersed in academic pursuits in the *classes préparatoires*, the education at l’X offers a radical departure. With its military engagement and heavy emphasis on campus club participation, the curriculum at l’X aims to cultivate a holistic ideal of a leader in the realm of the technical elite. But what are the goals behind this education? Who is educated at l’X? How do the institution’s internationalization and diversification strategies fit into the goals of the education?

The education at l’X seeks to forge lasting bonds of solidarity between students that extend beyond attainment of their diploma. As a member of the administration described, each cohort includes future “very important business leaders, very important servants of the state (...), sometimes even the President of the Republic, military leaders, leaders in the world of industry…and each time, at very high levels.” He adds, however, that in addition to the distinguished achievements of individual students, for over 200 years, the school has successfully created “*un esprit polytechnicien, un esprit de corps*.” Cultivated in a school with military status intimately linked to the construction, fortification, and protection of the French nation-state, this solidarity is designed to nurture a sense of allegiance and service toward the French state. Yet, as I argue below, the significance of this solidarity ultimately protects their
elite status and facilitates their professional and personal lives. Amid discourses of globalization that promise meritocratic advancement, this solidarity instead fosters an entrenchment of the elite.

In the pages that follow, I describe key components of elite education at l’X and focus on unearthing the values and priorities embedded within it. I suggest that the education seeks to cultivate the elite habitus of well rounded, generalist leaders and managers who can adapt and work in any environment. I argue that this education is a fundamental component for the formidable polytechnicien network of alumni that offers security and solidarity for this elite polytechnicien community. I describe the challenges that this network faces in light of contemporary shifts in career and national attachments, as well as the concurrent emphasized confidence given to the network, both nationally and internationally, in the rise of perceived risks.

Developing a Contemporary Elite Habitus

As described earlier, l’X is a key site for the education and consecration of a technical elite to serve France, whether through direct state service in the military or the corps de l’Etat, or through the private sector in industry, research, or business. To penetrate and succeed in these elite ranks, an elite habitus is cultivated at l’X as a tool of support and protection for its members. As described earlier, Bourdieu’s concept of the habitus explains the structuring of embodied belonging of members of a community. An elite habitus exists at l’X, although broadly more “omnivorous” since Bourdieu’s studies (Lamont 1992; Khan 2011; Peterson & Kern 1996). In the past, the elite in France distinguished itself through the embodied capital of high

[40] This is also what I observed at l’X and during my exchanges with students.
cultural tastes and knowledge (such as that of music and art), formalized etiquette, and mastery of language skills, all of which facilitated their comfort in and navigation of institutions recognized as prestigious, such as elite schools. Over the past 40 years, however, the cultural tastes of the elite classes have largely become more diverse, so that these classes now consume both “high culture,” such as classical music and contemporary art, as well as “low culture,” such as country music and street festivals (Peterson and Simkus 1992). Nevertheless, comfort in and navigation of prestigious institutions remain key characteristics of the elite habitus.

As Bourdieu (1984) illustrated, the habitus is often cultivated through family and school environments. This remains the case today. In order to develop an elite habitus, students and their families are obliged to be familiar with the education system: not only the structures and pathways necessary to arrive at a desired educational outcome, but also the people with whom one must interact, as well as the proper comportments for successful interaction. Parents and other family members can certainly play a dominant role in cultivating an elite habitus and navigating the education system, even if students are not in a primary or secondary school environment that explicitly gives priority to these elements. In fact, as I will discuss in greater detail in the following chapter, these processes are very much related to social class. Parents who are familiar with the education system and can successfully navigate it in the interest of their children’s perceived academic abilities and emotional dispositions give important consideration to where they place their students. For example, these parents consider whether or not they place their child in a very prestigious and rigorous school where s/he may struggle more academically (and may not be among “the best,” relative to the other students), or in a less prestigious institution, where their student may be among “the best,” relative to other students (Draelants
Such decisions thus have important implications for students’ academic pathways and the development of the habitus.

By the time that they arrive at l’X, students have already begun to develop an elite habitus, simply through their rigorous academic training in the classes préparatoires or advanced university courses, if not also through their family environments, which I will discuss in further detail in the following chapter. Continued cultivation of an elite habitus represents a central component of the education at l’X. In addition to “excellence,” l’X is known for “pluridisciplinarity.” As an institution created to train the elite, it seeks to form well rounded, generalist leaders and managers who can adapt to and work in any environment. The elite habitus cultivated at l’X, thus, is one of well-rounded, generalist leadership. Generalist training has been a hallmark of l’X since the creation of the institution; students receive pluridisciplinary education at l’X during their education and then typically enter a school of application or research for more specialized training and a master’s or doctoral degree following l’X. For career advancement, the generalist training, plus the prestigious stamp of the polytechnicien diploma, have been considered most precious for polytechniciens; too much specialization in an area could handicap them from ascending the ranks by channeling them into a “dead-end” path.

The internationalization of l’X has somewhat changed what this “generalist” education means, however. In particular, l’X extended the length of its program from two to four years as part of the Reform X2000 to allow students to gradually move towards their specialized fourth year of study. Prior to this reform, students principally received generalist education during their two years at l’X; they moved into more specialized or professional studies during the years following l’X. Reflecting neoliberal pressures to develop specific skills, the Reform X2000 incorporated greater specialization into the polytechnicien degree program. As described earlier,
the first year of the current *polytechnicien* program is primarily devoted to a military or civil stage, and intensive French language study for foreign students. The following two years of coursework seek to offer a common, pluridisciplinary base in STEM and engineering education, moving towards greater specialization with each semester, as they prepare for their fourth year of the *polytechnicien* program, which principally determines their professional direction and takes place off campus. During their fourth year, students complete a master’s program at an applied or professional school, or they may begin a doctoral program; for those students who seek to integrate into one of the *corps de l’Etat*, they do so by completing a master’s program at the appropriate applied feeder school for the particular *corps*.

Additionally, the *polytechnicien* program now focuses on ensuring that its students are able to meet the minimal Test of English as a Foreign Language (TOEFL) passing score, and they have encouraged students to participate in language or professional internships abroad. Such measures seek to develop professional competence in another language – namely English, considered the international language in the STEM sciences, industry, and business – as well as experience in a setting beyond France. While encouraging “international experiences” in higher education today seems *de rigeur*, this push is a dramatic change for l’X. As recent as the early 1980s, engaging in an internship abroad was not permitted for students. Thus, the generalist education undertaken in the past was much more centered on France, rather than beyond its borders. Yet, as the professional destinations of *polytechnicien* students shifted more toward the private sector in which English proficiency and having a professional or educational experience abroad are increasingly considered necessary in order to secure a well-paying professional or elite position, l’X realized that it must shift its curriculum in order for its students to meet contemporary demands and offer experiences that encourage students to interact with others who
do not share their national, cultural, and/or linguistic background. Such experiences and exchanges seek to develop a more cosmopolitan habitus, so that students are at ease working in global science, business, industry, or finance. Furthermore, several grandes écoles, such as HEC, Sciences Po, and many prestigious businesses schools, had already included English language requirements and international exchanges as part of their curriculum; as more and more polytechnicien students enter the private sector, they are in competition with graduates from these other schools. To maintain their elite hold and live up to the prestige of l’X, they must be able to compete properly by meeting such standards, beyond the “universal,” “encyclopedic” scientific knowledge for which the institution has been historically known. For instance, one of the capstone experiences is the group research project they complete in teams consisting of between 5-7 students with at least one foreign student; the presence of a foreign student is seen as a way to encourage students to work together across potentially different educational backgrounds and perspectives. Project subjects range from basic to applied research and may even touch the social sciences. These group projects are evaluated as part of a competition in which the best projects receive prizes. Additionally, these projects offer an opportunity for socialization with and feedback from alumni volunteer evaluators who are able to share their professional perspectives on these projects with the students.

While not mentioned by all interviewees, several were extremely conscious of the intense efforts the institution makes to cultivate an elite habitus of excellence and leadership, and spoke frankly about them to me. As foreign student Klara said:

I came to l’X as a researcher. I had a very scientific background because in (home country), we start to work in the laboratory from the very beginning at the university. (…) At l’X, we don’t do science. It is an engineering school, but in my opinion, they form managers and leaders who are intelligent, who know the basics, but who don’t need to be very
specialized. (…) Even though we take courses, we have practically the same amount of time that is dedicated to understanding business, general culture, leadership (…) in order to motivate people to take responsibility. (…) These are people who have a very global vision, rather deep about certain questions, and they learn fast, but if we compare with my specialization courses in (home country), I think I learned everything I know in terms of scientific material in (home country). On the contrary, what we learn a lot more at l’X is more the human aspect maybe, a management side, a professionalization side, questions about business, how to manage it, how can a director integrate knowledge…

As she suggests, cultivation of an elite habitus is a central objective at l’X, perhaps even more important than advanced engineering training. For her and for others, the education at l’X has opened an awareness to the opportunities they have as polytechniciens and begun to fortify the skills they would need to pursue elite positions.

At l’X, the Direction de formation militaire et humaine (Direction of Military and Human Formation) coordinates the development of the elite habitus through the initial military and civil stages (internships), organization of sports and campus activities, and conference cycles. These curricular and extracurricular components are designed to develop the students at l’X as “well-rounded leaders.” Each year’s curriculum is calibrated to move the students from their protective bubble of their previous curriculum (primarily conceptualized as the classes préparatoires) and to potential positions of leadership. As an administrator described:

These are young adults who are barely 20 years old (…) who have never done anything but prepare for the concours, their studies; they live in a well-protected environment. And then, they find themselves alone in a big school where we demand a bit of autonomy from them, and I think that it is important to help them in terms of personal development. In fact, the second year is dedicated to – and here I am going to use the Anglo-Saxon term – we attend to their “soft skills,” completely.

Revealing the privileged and protected backgrounds of the majority of students, which I will describe in more detail in the following chapter, he shares how l’X facilitates their transition

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41 In 2011, 287 students participated in the military stage and 151 participated in the civil stage.
from school to work. He went on to explain that the school attempts to make students aware of – and develop – their “soft skills” and “emotional intelligence” so that they can be effective leaders, so that they “are capable to speak with a director, but also capable to convince a manual laborer.” They are pushed to see themselves in the place of leaders. During the year, the Direction de formation militaire et humaine holds individualized meetings with students. They review students’ progress and development of “soft skills” in an exchange in which the student ranks her/himself on these skills and then discusses the self-evaluation in relation to the perspective of the Direction. Such characteristics correspond not with the typical profile of an engineer, but rather with that of a manager or leader. This office makes extraordinary efforts in attempt to keep track of students; if a student starts to struggle or stops attending class, for example, the office intervenes to help the student get back on track in order to successfully complete her or his year.

The conference cycles at l’X further advance this objective. As part of the conference series, major leaders in industry, the military, politics, and society are invited to speak to the students about how they arrived to where they are, as well as the concrete details of how they operate in their position; as an example given by an administrator, they describe how they negotiate challenges, such as communicating with “union workers who are very difficult and do not want to listen, but because I spoke to them with truth and authenticity, they now listen to me.” As students described to me, the presenters as these conferences often encourage the students to envision themselves in the places of the presenters, to realize fully that they will be called to be leaders in positions of potential service. As Philippe, a French alumnus, noted:

42 Past invitéees have included such figures as the director of Air France, a former French President, and a cardinal in the Roman Catholic Church
Well, I don’t want to say that it is brainwashing, but they explain to us all the interest of working for the state and its big programs.

Such activities push the students to cultivate the self-confidence that is part of the habitus of elite positions and that they will need in social interactions, and also help the students orient their future professional choices. As Klara shared in her reflection on the training at l’X in relation to that in her home country:

In (home country), you were treated like a scientist. There were plenty of scientists around me, and even if you were the best, you didn’t feel unique. But, at l’X, they treat you really like someone unique. They really believe in you and envision for you a big future. (...) At l’X, they ask you straight up: “So, do you see yourself as minister or as president?” Truly!

As she and other students described, these messages impact the way they think about themselves and their paths. The efforts to cultivate an elite habitus awaken a sense of confidence they previously did not have, but which will encourage them to pursue elite positions. Sabine, a French student, disclosed:

Yes, I feel different, because I am a lot more confident in what I want to do; in terms of work, I have an extra plus. (...) My path is set for me; I am more sure about what I am going to do next year...I am not afraid of the future or of what I am going to do in a couple of months, or in a year.

Through the entrance to l’X and its training, she realizes she is on a secure path, which affords her confidence in her career path. Klara offered an even stronger appraisal of the elite habitus cultivation at l’X:

So, I may be arrogant, but I think that I had the right, that I merited my entrance to l’X. I wasn’t the worst student at l’X – I was good – so I am at the same intellectual level as the best in France. I’m rather ambitious, and it is l’X that gave me a lot of confidence in myself.

As Draelants (2010) has found, the strength of the image of excellence of having attended a  
grande école, like l’X, contributes to an internalization of the sense of excellence and self-
confidence. This internal sense of self thus orients students to future career choices they deem appropriate; it is part of habitus cultivation.

Participation in campus activities, overseen by the *Direction de formation militaire et humaine*, also further shapes the elite habitus. An administrator described how l’X takes special care to guide students in their participation in association activities so that they can be successful, not only in the tasks related to their activities at l’X, but also in the future:

> We say to them, “Well, it is you that set up this activity - it is you – it is your responsibility.” But, we are there in the background to advise them: “Ah, you shouldn’t do that…Ah, it is necessary to think about writing to so-and-so…Ah, there, you should contact this group of people because maybe they will be interested…” And so, we are not too far away from them, just close enough to help them move forward when they stray.

Such activities offer a safe training ground for students to develop the skills and confidence necessary to be successful candidates in elite positions. The institution thus makes extraordinary efforts to prepare students to enter elite positions upon completion of their *polytechnicien* degree, thus ensuring the continuation of its own elite reputation, as well as that of its students and alumni.

**Self-Conscious Elites**

The institutional efforts made to develop students’ elite habitus does not pass undetected. Several students explicitly expressed their awareness of the institution’s cultivation and encouragement towards leadership positions; they often made reference to this when discussing their participation in the military internship, in which they were placed in charge of other young men and women of approximately the same age. As one of the first moments in their lives in a leadership position with real import, they became aware of the weight of this experience and of
their elite place. Some students admitted that they questioned their merit in this position, that to have passed the *concours* of l’X would translate to a notable level of leadership. In a few cases when describing these conferences and the accent on leadership, students emphasized they did not necessarily consider their peers at l’X as exemplary individuals, and some alumni felt uncomfortable with the amount of effort and emphasis given to their development as “the elite,” stating they sometimes found they were “hit over the head” with the notion, and that it seemed inappropriate for students at the age of 20 to be told they are “the elite.” These students and alumni lamented that the intense repetition of the message that “they are the elite” tends to make *polytechniciens* think that they really are the elite, even at their young age. Such admissions suggest that the cultivation of an elite habitus is rather successful; students incorporate elite dispositions into their subjectivity so that they become part of their habitus. At their “young age,” *polytechniciens* thus have begun to develop the confidence needed to see themselves in elite fields; they are able to harness the social, cultural, and symbolic capital that their status as a *polytechnicien* offers in order to pursue elite paths. While these interviewees could have shared such reflections in the cover of false modesty, they do also suggest a sense of resistance and self-aware questioning among the students as they participate in this education.

Alternatively, several students readily admitted that many *polytechniciens* pursued l’X for its stature, and subsequently feel pressure to pursue careers that receive illustrious social prestige[^43], even if this means abandoning careers that seem more intrinsically appealing to them, such as teaching. These students noted it is important for them and for others to distinguish between capacities and values; while *polytechniciens* have demonstrated the aptitude to pass the

[^43]: Overall, students depicted strict images of career hierarchies. Not surprisingly, business directors were invariably described as important and powerful; however, despite the relatively solidly middle-class backgrounds that teaching careers offer, students painted them as being modest, with one French alumnus, Théophile, even describing his family as “poor” with his mother as a teacher and father an artist, both with undergraduate university degrees.
rigorous *concours* in the STEM fields, these “capacities” are not necessarily “qualities:” they are not necessarily “good” people. A few students shared that they knew of fellow students who pursued studies in science, the *classes préparatoires*, and the *concours* for l’X because of the prestige of the path, not principally because they were passionate about the STEM fields. At the same time, students communicated their awareness of the elite reputation of l’X, noting they felt some pressure to conduct themselves according to the reputation, that this reputation put some pressure on them. Beyond their individual selves, they also carried the reputation of l’X and that of France. With l’X as an important calling card, students shared that they must meet the expectation of the institution in their reputation. Their education has instilled a sense of pressure and obligation in them; in a sense, it has been successful.

While among the minority, several respondents commented on the disparity between the image l’X holds for much of the general public – the glowing image they had of the institution prior to their admission – and the experience that they found upon entry, which often occurs for students attending the *grandes écoles* (Draelants 2010). They suggested that despite the “generalist” orientation of the institution, students are not encouraged to question the values of the school and service to the state; rather, cohesion is very heavily emphasized. A few students were notably critical of the message of l’X – that it took on elements that nearly resembled brainwashing in its manner to emphasize community and to somewhat diminish individualized thought. As French-naturalized student Khalid shared:

> L’X is a school, but it is also a community. (...) There is sort of an implicit rule that needs to be respected, that you shouldn’t question the fact that *l’Ecole polytechnique* is the best school, that *polytechniciens* are the most intelligent, and that we are the best. That is the mentality, and it is necessary to enter within it and cultivate it. (...) Maybe I caricaturize a bit, but that is how I experienced it, and I am completely allergic to this sort of tribalism. (...) If it your ideas or studies that interest you, you will be
marginalized because you are not a *polytechnicien*; to be a *polytechnicien*, you have to be proud, you have to wear the uniform, you have to respect it. (...) It reminds me a little bit of “la religion à la con” (“screwed-up religion”), which I dealt with in (home country).

According to Khalid, the cultivation of the elite habitus and intense encouragement of an *esprit de corps* constrains individuals’ free and critical thought, as well as their potential choices, particularly in relation to their education and preparation for the future.

While this study can by no means evaluate whether or not *polytechnicien(ne)s* are “good” people, these comments reveal that the leadership training is not foolproof. Despite the institution’s motto implying that education at l’X leads to some sort of service for France (and not solely self), several recent scandals suggest that *polytechnicien* alumni are fallible and make decisions that are contrary to the interests and well being of others. For instance, alumnus Didier Lombard, former director of the major telecommunications company, *France Télécom*, spearheaded a reorganization that cut over 20,000 jobs and shifted job responsibilities for over 10,000 employees. After complaints of managerial harassment and a spike of 35 suicides, an investigation of the company’s practices was made and Lombard stepped down from his position. In fact, a few students suggested with some discomfort that the notion of “cohesion” was not simply the notion of solidarity, but rather the fabrication of a network that patently privileges *polytechniciens*, giving preference to other *polytechniciens* in hiring decisions.

**The Polytechnicien Network - “Le Réseau Polytechnicien”**

Beyond cultivating an elite habitus, succeeding to enter l’X opens the opportunity to be part of the elite network of *polytechniciens*, its redoubtable “réseau⁴⁴.” Throughout the history of l’X, this network has offered a key source of potential professional and personal support for

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⁴⁴ This network is known outside of l’X, as well, even described as a “mafia” (Kosciusko-Morizet 1973).
polytechniciens. Alumni demonstrate high levels of confidence in the ability of fellow polytechniciens. Having experienced the same rigorous and intense training, respondents told me that they know what they can expect from each other. In their careers – and even in social situations - members tend to privilege each other, as this French alumnus, Gabir, said:

There is sort of a brotherhood. There is the tendency to have confidence in you because the other knows what you can do.

Another French alumnus, Gilles, provided his perception on how polytechniciens tend to know and recognize one another:

In the working world, there are almost always polytechniciens in all of the businesses, structures, etc. So, when you meet someone, you also become curious to find out, “Hey, has he been to l’Ecole polytechnique?” So, there is this angle, and really quickly we arrive on a first-name basis among polytechniciens. The connection happens very quickly.

This perceived near “immediate” connection thus offers ground for privileged relationships and connection. Students also spoke of the réseau as a central and attractive component of l’X and an advantage they will have in the professional world, and it was frequently mentioned; the term “réseau” came up in interviews in relation to the network of l’X 64 times: 24 times during my 11 interviews with alumni; 6 times during my 10 interviews with administrators; and 34 times during my 31 interviews with students.

To facilitate connections and help protect each other, the alumni maintain an annuaire, which compiles and shares their updated contact and professional information. During interviews, alumni mentioned that they consult this handbook in the event that they search for a new job or to fill a post in their own organization. This important element of social capital allows the polytechnicien community to privilege and assist its members, and to ensure the employment

\[45\] This comment also reveals the masculine dominance at l’X, which will be further discussed in the following two chapters.
of this population. Klara illustrated the responsiveness of the *réseau* in terms of helping her, even as a student, to complete a project:

You have the *annuaire*. You are going to easily talk to other *polytechniciens* for any project that you have. For example, we needed to do a project for a business strategy course. So, we took the handbook, we looked for all of the people who work in this area, and we called all of the guys around 40 years old, saying “we had a project, would they help us?” The guys say, “okay, we’ll come and pass by the plateau tomorrow, if you want” – they are very helpful. Today, I sent emails because I am going to soon search for my first job, and I had responses right away – “call me tonight” - and it is Saturday! So the network works well… I think that the cohesion among *polytechniciens* is one of the principal traits.

As she describes, contact and support from the *réseau* begin early in the *polytechnicien* experience. Alumni volunteer to offer career counseling and to evaluate students’ team projects, which provides valuable opportunities to further students’ thinking and to prepare for their future careers. Campus activities also offer occasions to develop the *réseau* through interaction between alumni and students. One French alumnus, Alain, described his participation in an association that not only avails itself of alumni support, but also exists in conjunction with the *grande école*, HEC (l'École des hautes études commerciales de Paris, School of Advanced Business Studies of Paris) the most elite business school in France:

I was in an association called the *Trophée Voile X/HEC*. It is an association in conjunction with HEC, whose vocation is to organize a weekend regatta. On the boats there are the alumni of these schools who now work in businesses that sponsor the boats, as well as the students from both of the schools. It’s rather nice because it is at the same time a very convivial weekend, kind of in the spirit of networking, where we meet professionals. And in the association, it was necessary to find sponsors, or the business that really wanted to give money and send the alumni on the boats, and then to organize and hold the regatta.

Such interactions between the alumni and students foster contact within the *polytechnicien* network, cultivating their social capital, as well as their cultural capital by introducing them to or
further developing their familiarity with elite activities, such as sailing. Accordingly these opportunities encourage the reproduction of elite comportments and the development of an elite habitus in order to further establish and secure their legitimacy as “elite.”

**Extending the Réseau Abroad**

Extending the power and control of the *polytechnicien* network abroad is considered a major goal of the internationalization strategies of l’X. The presence of foreign students at the l’X is regarded as a potentially useful boost for the *réseau*. It not only helps to “expose” French students to different cultures and ways of learning and to prepare them to work in elite globalized environments, but also helps radiate the network abroad. While several alumni suggested that the development of the international *réseau* remains at a very nascent stage – apart from the contact information contained in the *annuaire*, there is not necessarily a global map of alumni - the ultimate goal is to maintain connection with foreign alumni and their points of professional insertion in order to create links for l’X so that its network of excellence can become more visible worldwide.

As mentioned earlier, l’X is not necessarily the first French institution of higher education to focus on developing internationalization strategies; neither is it the first institution to focus on alumni from or living abroad. Other *grandes écoles*, notably business schools like *HEC* (*École des hautes études commerciales de Paris*, referenced above by Alain), and *Sciences Po* (the elite political science institution) have reputedly strong alumni networks. Prior to its formal internationalization strategies, the Alumni Association of l’X had groups or contacts for alumni living abroad, such as the *Groupe X-USA/Canada* for alumni living in the United States
and Canada. The breadth of this network, however, has the potential to expand, as more alumni – both French and foreign – live and work abroad.

Given the accounts of the reactivity of the *polytechnicien réseau* within France; broadening the *polytechnicien* network internationally offers possible benefits for individual alumni who seek positions or business connections abroad. It also potentially benefits the institution of l’X as it attempts to further internationalize by providing channels of connection for researchers, student internships abroad, and even institutional partnerships. Hence, there exist important linked relationships from the individual to the state level. Not only does the presence of foreign students and the ties developed to their home countries and institutions render l’X visible as excellent, but it also establishes privileged relationships for the alumni in their careers, thus benefiting their professional paths. And, accordingly, the hope behind this initiative is that the successes of l’X and of its alumni will help France maintain its position as an elite and powerful nation.\footnote{Of course, understanding the “success” of this initiative is yet to be seen, which is beyond the scope of this project.}

For foreign students, however, the relationship with the network is nuanced. While challenges to their integration to this network exist (discussed further in Chapter 7), foreign students receive substantial encouragement and support from alumni, notably through the Alumni Association’s mentorship program, *le parrainage*. In this program, alumni establish connection with a foreign student as a host mentor, inviting the student to dinner at their homes, participating in culture outings like museum visits, and sharing practical information about life in France. In this position, they build students’ cultural and social capital: they serve as a potentially important source of advice on navigating French culture and society, particularly in
terms of professional questions, and even in terms of offering “cautions\textsuperscript{47}” for foreign students’ first apartments in Paris, meaning that they either co-sign on the lease or offer a security deposit, thus ensuring a safe base for students to begin their professional careers in France. Alumni who participate in this program shared that they felt motivated to give back to l’X and were enthusiastic about the presence of foreign students; a few of these interviewees had been foreign students themselves in France at l’X, and thus wanted to either continue the chain of benefits they themselves had derived from the alumni mentorship program or to offer benefits to current students that they had not enjoyed prior to the existence of the program. Additionally, the Direction des affaires étrangères (Office of Foreign Affairs) at l’X assists foreign students with all necessary administrative procedures for their time in France and at l’X. Most foreign students described the Alumni Association mentorship program and the administrative assistance at l’X as highly effective in their assistance in order for them to take advantage of and enjoy their studies in France.

Unlike many of the French students, foreign students intimated that they were relatively unaware of the weight of l’X and its réseau when they sought admission, although they quickly learned about the power and advantage they have or will have as being part of the network. Several shared with me that they plan to remain in France immediately following their studies, as the network is obviously much more embedded in France, and they will be able to attain a high-ranking job, which might then allow them to eventually return to their home countries in a prestigious position. For example, as this foreign student, Hualing, reasoned:

There are two sides: the academic and the business. (…) L’Ecole polytechnique has a very good reputation in the academic world (in my home country), but I am more interested in business (…), and I know that if I return to (home country) right after graduating here, I will not be

\textsuperscript{47} A “caution” is potentially ambiguous; it can mean to “co-sign” on a lease or a “security deposit”.

valorized. In fact, the big global industries do not know *l’Ecole polytechnique*. (...) That is why I would like to stay in France and work for 3 or 5 years, to acquire a little professional experience, and then find an opportunity that would let me return to (home country) in the position of a manager or experienced employee.

Several (French) alumni mentioned that they know few foreign alumni who did not remain in France following their studies at l’X; most take advantage of the renown l’X has in France and thus begin good careers in France, often remaining there. As such, these alumni complained that the international network of alumni still requires significant development, as many still stay in France following their studies.

The networks of l’X and its visibility internationally pose important questions for the institution and its alumni in terms of their capacity to influence across national borders. Foreign students’ preference to remain in France following their studies, at least for an initial period, is related not only to their awareness of the reputation of l’X in France, but also its lack of visibility – not to mention a potential lack of opportunities - in their home countries. Despite its prestige in France, l’X may not always be recognized as such in other settings; students’ professional experiences in France are often considered more valuable than their *polytechnicien* diploma in the context of their home countries and thus more important for them in securing a high-status post if they return. It is also possible that even if foreign students anticipate returning to their home countries after an initial position in France, they end up developing a career in France and remaining there. In any case, foreign students’ trajectories have implications for the shape of the development of the network of l’X internationally. Several alumni lamented that these transitions are not more intensely followed, despite the *annuaire*; the extent of the network of l’X on the international scene is not readily known, at least among alumni. Mapping the trajectories of
international students is beyond the scope of this project, however, yet would further shed light on the extent of international radiance l’X has through its foreign alumni.

**Preserving Elite Privilege in a Contemporary Environment of “Risk”**

Overall, while expressed enthusiasm and efforts to internationalize exist, an undercurrent of worry and anxiety accompany them, as internationalization opens the French elite to external demands, challenges, and scrutiny. As has been the case in other sectors, such as business and industry (Bancel 2004), France seeks to protect itself by attempting to control its extent of change. For example, it showed resistance implementing the European Union directive to deregulate its electricity market, proceeding more gradually than did other countries, with the French state still controlling 70 percent of the French market when several other European countries had already been fully liberalized (Strauss-Kahn, et al 2004). Similarly, concerned to maintain its dominance among the world powers despite its legacy of stability, France played a central role in the development of EU higher education policy, the adoption of which has been considered a convenient way to reform its own system (Vinokur 2010). Commissioned by Socialist Minister of Education, Claude Allègre, Jacques Attali created the report, “For a European Model of Higher Education” in 1998, which offered an especially nuanced focus on reforms for France’s relatively unique structure of higher education. In particular, the report suggested that the *grandes écoles* add research and development to their functions through the creation of linkages between the *grandes écoles*, government institutes, and university doctoral departments, thus creating “centers of excellence,” which would also have ties to business. This report actually served as the foundation upon which the Sorbonne Declaration and the Bologna Process were launched at the European level.
Accordingly, even amid transformations – such as the diversification strategies of l’X – there are also hopes and efforts to preserve certain elements and structures considered distinctly “French”; for example, the expanding prevalence of the use of English on the international stage has provoked frustration in France, where the French language has long been culturally valued and a tool of national unity (Scott 1999; Darchy-Koechlin 2012). While cultural homogenization is certainly a suspect project and potentially grievous outcome of globalizing flows, the alarms raised by the French elite suggest attempts to retain structures that maintain their privilege.

Several French alumni, for instance, described the contemporary globalizing environment as a threat to them and to France. While many students admitted to me that they were no longer afraid of the future and shared that the likelihood of unemployment - or even underemployment - would be extremely rare for them, students and alumni also shared fears of losing the possibility of being “set for life.” Polytechniciens without jobs exist, but are very rare; as one French alumnus and member of the administration shared with me, sometimes this might happen to someone for a couple of months, but it has not been too much of a problem. Despite their near guarantee of security, they cited the contemporary climate of risk and uncertainty as a source of concern about their economic futures. The possibility of unemployment is worrisome for the polytechnicien community, however, because it challenges members’ reputation and legitimacy as “elite,” not to mention their material power and influence.

Additionally, amid the massification of higher education, a strict control of access to elite places still exists. Higher education, once reserved for the elite, is now more available than ever, and is seen as the primary key to employment in solid middle class jobs, much less the most elite positions (Musselin 2004; Rivera 2011). At the same time, the elite sector of higher education demonstrates important control over the number of places available to this level (Draelants 2010;
2012). This limit thus maintains the “elite” nature of these institutions. Because these institutions rest within the control of their students and alumni, it is difficult to envision substantial changes. Particularly when the alumni of l’X, who are in very protected positions, expressed concern and fear of the future for their children, we cannot necessarily anticipate major changes and augmentation in the number of elite. As naturalized alumnus Gabir shared with me about the institution’s internationalization and admission of foreign students:

So, I think it’s not bad because it permits the institution to open up abroad; the risk is that it becomes a little bit less elitist, that it is less the “high end” than it was before (...) because there are more people. The rarity makes it so…When we know that there are 400 students in each cohort and that they have all passed the concours, it is different from when there are 600, 700, or 800, and that they have been admitted by a dossier, or that they have not done the concours or the classes préparatoires.

The elite, in his estimate, needs to remain a small number; the concept conflicts with more democratic notions of broader access. Moreover, his perspective continues to privilege the traditional entry – the concours – as a meritocratic selection tool. As an alumnus who entered l’X prior to the development of the concours voie 2 and thus passed the traditional concours as a foreigner, he clearly participates in the reproduction of conservative sensibilities that do not question the current educational structure and the tools that support its elite.

Over the past 40 years, the number of places has augmented from approximately 300 to 500. In part, this augmentation corresponds with a general increase in the number of students who participate in higher education, as well as the opening of the concours to women and the addition of the concours voie 2 for foreign and university students. While this could be interpreted as a colonial expansion – particularly with the concours voie 2 – in the international field of higher education, it also represents a practice that seeks to reduce confrontation and fears about taking away from the traditional elite. Rather than potentially reducing the number of
places that have been habitually occupied by native-born French men, this augmentation adds places, and is thus possibly less threatening. Similar policies related to gender equity have been implemented in Nordic countries (Husu 2009).

Furthermore, a greater sense of individualism permeates the student body. This sense of individualism relates to shifts witnessed in the economic sectors, propelled by larger structural shifts of global neoliberalization (Brenner, Peck, and Theodore 2010; Harvey [2005] 2007). It is also characteristic of broad and widespread discourses championing individual rights and democracy from the elites to the poor (Khan 2012; Postero 2006). As described earlier, students now largely pursue careers outside of the corps de l’Etat; careers in industry, business, research, and finance are more individually oriented and less directly tied to state service. When asked to depict the changes that he had noted since his time as a student at l’X in the 1970s, one administrator explained that this sense of individualism is notable and pervasive. He observed that students are aware of the atmosphere of greater risk and individualist spirit; students feel that they are obliged – and able – to control their own destinies. As he described:

The relation to the world is different now. I was in a generation just after May 1968, so they were periods when we thought we could rebuild the world. I think that the generations that arrive now are generations that have seen (...) periods of high unemployment, situations where the individual should affirm his or herself with respect to the environment...It is more - I wouldn’t say conflictual - but things are less sure.

Students are now demanded to see and comport themselves as individual actors, responsible for their successes and failures (Renkens 2006). As Nancy Postero (2006) has shown, neoliberalization and multicultural political discourses have engendered new rationalities among the Bolivian population, shaping their political subjectivities and participation, and how they claim rights as individual citizens. In the Bolivian context, the infiltration of neoliberalism has
resulted in aggravated ethnoracial structural disparities and emphasis on individual responsibility. In France, with concerns about the stability of employment, dwindling retirement resources, and shifts toward private responsibility, greater pressure exists on individuals to rely on themselves for their security, rather than the state; as such, global neoliberalism – interpreted through the education system - is fostering more entrepreneurial individual subjectivities. Although the French welfare state is comparatively more generous than other states, such as the United States, it is currently undergoing budget cuts to services such as family allocations, which adds pressure on working individuals to provide for themselves and their families. Moreover, despite efforts to inculcate loyalty and service to the French nation-state, this service is not necessarily through public office or in the corps de l’Etat, as fewer positions currently exist than in the past; thus, the attachment to serving a national collectivity is more ambiguous.

Attending l’X represents an important security in face of these risks, however, as it offers students a generalist education that prepares them for a wide variety of careers; it does not limit their future opportunities. Several alumni shared with me how this education allowed them to transition professionally between highly different sectors; for instance, French alumnus Théophile noted that he has changed:

From agriculture to urbanism; from the national scale to the local scale; from being the leader of a small team of engineers to that of a service of over fifty people with very few engineers...

He credits the education he received at l’X to help him work and lead in these diverse environments; he was able to learn how to learn rapidly, take in and synthesize the applicable information, and respond appropriately. As such, having a broad generalist education and experience in extracurricular activities offers a protection to polytechniciens, allowing them to

48 While polytechniciens do and have served in public office, public service in this sense is more likely after attending l’ENA, the École nationale d’administration, a grande école designed expressly for this purpose.
shift in their careers, if necessary, to better preserve their professional place. While not all students preparing for the concours of l’X fully envisioned the possibilities that the institution would allow them or even what they would pursue professionally, many told me that l’X appealed to them because it would allow them flexibility to explore their interests and choose their career paths farther along in their education; indeed, I commonly heard that the l’X would not “close any doors” for them.

Conclusion

Overall, such concerns expressed by alumni and students about their security as elite make the solidarity and support maintained by the polytechnicien community even more important. The forces of globalization that not only potentially disperse this community widely over the globe, but also change their professional attachment to the nation-state, pose potential threats to their solidarity. As Harvey ([2005] 2007) has shown, educational institutions help construct and foment neoliberal subjectivities, emphasizing entrepreneurial activity, individualism, and liberty, particularly when alliances made between political and economic elites exist. The construction of these subjectivities has allowed privatization, deregulation, and dissolution of union power take root and spread. Such practices have begun in France, in spite of the strength and centrality of the state relative to more decentralized states, like the United States; however, emphasis on cultivating neoliberal subjectivities at the elite level of l’X suggests that such development will not wane, but instead potential increase.

The shift towards greater influence by business, industry, and finance through alumni also potentially holds implications for class relationships. In the United States, trustee and director boards are often composed of local influential business elites, and higher education
trustees now often sit on corporations supported by government agencies, such as the National Science Foundation in the United States, thus influencing their direction, value setting, and mission. College and university leaders who come from the corporate world, rather than the academic sector, raise the question of their ability to put forth a vision and lead an academic institution (Giroux 2010). Alumni are key members of influence in the polytechnicien community, and as more and more work in industry, business, and finance, the values associated with such fields will likely be more and more incorporated into the vision, management, and educational program of l’X.

There is generally less security and stability in the private sector than in the public corps de l’Etat. The social and cultural capital cultivated at l’X – through the development of an elite habitus and the nurturing of the réseau – are understood as precious elements to which great attention and value is attributed. They offer potential resources that can secure stability in risky environments, such as business and finance, into which more and more polytechniciens enter as careers. As Rivera (2011, 2012a, 2012b) and Ho (2009) have explored in the United States, elite universities serve as a calling card that provides immediate recognition and can give preference in recruitment processes, thus offering privileged paths to employment. Rollbacks of the welfare state, coupled by shifting or lessening attachments to the “national” as polytechniciens assume posts abroad or careers with international employers, make the value of social capital even greater. Personal connections – sanctioned by the symbolic value of l’X – create a possible lane of preference for polytechniciens, countering risky or unstable employment situations. As such, their power to attain key material and symbolic resources becomes even more entrenched, even in an environment in which meritocracy is valorized (Rivera 2010; Bourdieu 1986).
Concomitantly, the development of the international network of *polytechniciens* offers a potential resource for France. Along with Chapter 4, this chapter suggests that the French nation-state prizes l’X and considers it an important resource to maintain its dominant position in the world. *Polytechnicien* students who work abroad represent privileged connections for France; these students, whether French nationals or foreigners, serve as diplomats or agents for France, particularly if they have been inculcated with the notion to serve France.
CHAPTER 6 - The Contours of Meritocracy

L’X is a witness to that, (that we are) in a society where social reproduction is, all the same, very strong. L’X, is a good symbol of this. Education - in any case, non-religious and free - it is the best way to escape one’s social surroundings (…..) even if in practice, it doesn’t work, at least today does not work…We cannot say that l’X is the meritocratic model within which one who works succeeds – that is not true. (Luc, French student)

Legitimizing the System and Individualizing Meritocracy

As described in the previous two chapters, l’X has undertaken substantial changes in order to both maintain its elite place nationally as well as secure an international reputation of excellence. Through its shifts, the institution seeks to protect its reputation and the polytechnicien “product,” with its graduates secure in their places in the technical elite. This intense, precise, and calculated – one might say scientific - attention strives to guarantee their success in their work following their degree at l’X. Thus, the institution itself is successful in its production of these elite workers, and its own elite place is assured. These substantial efforts placed on achieving international notoriety and “excellence” concentrated on 500 entering students, however, diverts attention from fulfilling the ideal of a meritocracy built upon republican universalism throughout the entire French education system, and offers an excuse to place the “blame” for inequalities on earlier levels of education – as well as on individuals and families.

As a state-funded institution conceived around the proclaimed principles of republican universalism and meritocracy, the social profile of students at l’X should ideally resemble that of the French population. Moreover, several administrators and students emphasized that l’X is “un etablissement citoyen” (“citizen’s institution”): its goal is to be an establishment of and for its citizenry and thus should attempt to represent and serve this citizenry. “Equality” or “republican
universalism” were cited 39 times during my 53 interviews as undergirding values of the education system of which l’X is the epitome. However, this is far from the case. While 30 percent of students in the grandes écoles should be boursiers (scholarship students) according to the French state’s minimum social class representation guideline for institutions of higher education, scholarship students composed only 16.75 percent of the student population of l’X in 2011. The disparity materializes following the classes préparatoires, where approximately 30 percent of students are boursiers; this percentage is halved upon the completion of the written portion of the concours for l’X. With nearly 80 percent of the student population at l’X originating from elite and professional socioeconomic classes that make up 20 percent of the broader French population, the polytechnicien student body does not socioeconomically represent the student population in the classes préparatoires, much less the general population in France. Similarly, although representing roughly half of the population in France, women make up between 12-17 percent of entering classes.

How do these disparities come about? In this chapter, I identify and illuminate the social factors and institutions that serve as gatekeepers to l’X. Unacknowledged as such, these factors shape understandings of meritocratic achievement in classed and gendered ways, indicating that symbolic violence continues amid diversification efforts at the national level. As Bourdieu (1984) demonstrated, the education system and family engagement are key elements of this symbolic violence; and while these elements remain important amid the changes in student recruitment, curriculum, and organizational structures that the internationalization and

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49 Euriat and Thélot (1995) have found that over the past 40 years, there has been a decrease in the percentage of students from the “popular” classes in the grandes écoles (l’X, l’ENS, l’ENA, and HEC), although a different evolution in class representation has occurred in the universities.

50 INSEE data, 2009

51 As a point of comparison, women were not allowed at the West Point Academy in the United States between 1802 and 1976. They compose 22 percent of the 2014 cohort.
diversification strategies entail, they take on a slightly new meaning in the contemporary era. The emphasis placed on education by privileged families as a source of social and economic security not only entrenches their advantage in the national system, but also further legitimizes it. This, thus, places, primary responsibility on individuals to conform to these structures, stymying social mobility and moderating political will and effort for major reform.

**What Is l’X? How Do I Get There?**

Beyond its illustrious surface image, discussed at length in previous chapters, what l’X is and how one becomes part of it remain fuzzy for most French people. Several interviewed students noted that they never had the goal to become a *polytechnicien*, and that it was only through their high school instructors and sometimes their parents that they found out what it was. A few others explicitly mentioned that l’X is not really known by the majority of their fellow citizens, which seemed bizarre to them, in light of the meritocratic goals of the education system. As this exceptionally aware French student, Nicolas, described:

> It is very complicated, when people are not familiar with it and I try to explain it to them... It is very complicated because (l’X) is many things at the same time. (...) It is at once an engineering school, a school that forms the administration, and also a military school. (...) It is also a school where one can learn to do research, so it is a lot at the same time. (...) We say that it forms the elites, and indeed, I think it forms engineers, scientists of a very high level, and also without a doubt, managers, notably through the *corps de l'Etat*. (...) At the same time, it is rather restrictive because not everyone in France is familiar with *l'Ecole polytechnique* (...) especially people who are not from Paris.

The restricted image of l’X behind the ambiguous notion of “elite” obscures the variety of positions and opportunities to which an education at l’X opens the door. Despite the stated goal to be open to everyone, recruitment is instead limited, as only those who are familiar with l’X
and how to enter have a chance to pursue it. Familiarity with the school thus is an access criterion.

**Classes Préparatoires**

One of the principal channels of information about l’X is the education system itself, and namely, the *classes préparatoires*. As suggested in the quote above, the primary feeder institutions for l’X are in the Parisian\(^{52}\) region, and as such, urban students are more likely than those in rural France to have access to information about l’X. The majority of students who attend l’X enter after having attended the best *classes préparatoires* in France, many of which are concentrated in the Parisian region. A member of the administration expressed that great variation exists between the *classes préparatoires* in France, even those preparing students for the same *concours*:

> All of the *classes préparatoires* are not worth the same in France; we recruit from about six institutions; from two institutions – *Louis-le-Grand* and *Sainte-Genevieve*\(^{53}\) in Versailles – we end up with 40 percent, just from two.

This does not necessarily come at a surprise, as studies show that the *classes préparatoires* play an important role in the production of elites in a system structured to whittle down the number of students (Bourdieu [1989] 1996; Adangnikou and Paul 2004); furthermore, only a few institutions offer the high level of instruction necessary for one in order to pass the *concours*. While students do not necessarily attend the *classes préparatoires* in their home city or even region – which would be impossible because not every city and region offers the *classes*

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\(^{52}\) As well as a couple of other major urban centers; one must note that Paris largely surpasses other cities in France in terms of size, population, and other urban indicators.

\(^{53}\) Although many prestigious *lycées* in France are public and therefore without tuition charges, Sainte-Geneviève, nicknamed “*Ginette*” is private and does require tuition payments.
préparatoires that prepare students for entry into l’X - the fact that 40 percent come from two institutions concentrates the cultural and social capital necessary to enter l’X in the Parisian region, which is also a major center of economic capital. Several students and even a member of the administration suggested that high schools outside of Paris place less emphasis on attending the classes préparatoires for their students because they sense that they are not for “their students.” Adèle, who grew up in rural Brittany, explained that she felt intimidated to move to a large city, away from her hometown, in order to attend a classe préparatoire that would be sufficiently rigorous to prepare her for l’X. Because she initially remained in a local classe préparatoire, she did not have a successful outcome the first time she attempted to pass the concours:

And so I entered the classe préparatoire in my high school, in fact, while many of my friends – almost all of my friends – left for a school a bit more prestigious that was in Rennes, the capital of Brittany, because, well…I did not feel, because I had heard that there was a lot of competition there, that it was more difficult, and since I wasn’t that far from home, I wanted to stay there, in fact. And so, at this time, I entered the classe préparatoire, still wanting to be a researcher, but I didn’t know anything, in fact, the engineering schools, I didn’t know what they were – Polytechnique, l’ENS – I didn’t know that they existed. (…) And what happened, is that I was not at all prepared, I did not have confidence at all in myself, and I had to go to Rennes to take the written exams, and I didn’t know anyone, and that did not go well at all, so I failed it, I failed the concours…

Lacking familiarity with the education system and the necessity to attend a more demanding classe préparatoire in order to be well prepared – both educationally and in terms of her self-confidence - for l’X, she was not successful. Her story also suggests a gendered dimension to her educational path. Women students receive less encouragement, particularly in the math and

54 And consequently, the grandes écoles
55 l’Ecole normale supérieure, another highly elite grande école in France that trains researchers
science disciplines (Vouillot 2007; Kondrick 2003; Costes et al, 2008; de Cheveigné 2009a, 2009b), and thus tend to demonstrate less inclination towards competition than men, even when performing as successfully as men (Niederle and Vesterlund 2007). Nevertheless, Adèle decided to retry the *classes préparatoires* the following year, switching instead to the institution in the major city of Rennes, where she received much more guidance, including research assistant experience in a lab, and was able to pass the *concours* the following year.

Overall, the channels of information regarding entry to l’X remain relatively restricted. Students at l’X return to their former *lycées* and *classes préparatoires* to share about their experiences with the students there; however, they solely return to the *lycées* that they had attended, not to the *lycées* that did not generate any polytechnicien students. As such, the students attending the latter *lycées* do not benefit from this sharing of information. Of course, the logistics of ensuring that each *lycée* in France is visited by a student from l’X would be rather burdensome, yet in the complicated French system of education, where familiarity of this system is key for advancement, such discrepancies perpetuate the social reproduction that they nominally aim to break. Information about l’X thus depends heavily on students’ educational pathways. Alternatively, high school instructors could potentially provide a more comprehensive overview of the *grandes écoles* to students and better explain possible academic pathways; however, this does not seem to occur in the *lycées* and *classes préparatoires*.

*Filtered Encouragement*

The education system also plays a gate-keeping role by encouraging or discouraging students from participating in the *classes préparatoires* relatively early in their scholarly routes. One former member of the administration suggested that many potential entrants to l’X are dissuaded
too early in their educational paths from participating in the *classes préparatoires*. Individual teachers tend to distribute encouragement very unequally, often drawing from assumptions based on personality, social class, or gender to channel students into certain tracks, even if these assumptions funnel out potential candidates by diminishing their confidence levels and thus their ability to do well in the *concours*. Early in the educational path, distinctions are made between students, rooted in their dispositions and habitus. As the administrator portrayed:

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The professors of the *lycées* are terrible; I mean to say that if people don’t have an average of 18-19 (N.B.: out of 20, grading system in France), they say that they are not very good and that there is no need to try for l’X – they don’t encourage very much. (…) Yet, no one can know for a child – even during the final year of high school – what will happen afterwards. Will he be better? Will he be worse? We don’t actually know.
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She continued to describe that among the students who take the *concours*, it is never a “given” that they will enter l’X, and students change and evolve enormously during their two years of the *classes préparatoires*, which offer the key formatting experience necessary to pass the *concours* for l’X. Thus, cutting off entry early on the scholarly path automatically deprives her or him of this chance. And while fewer than 40 percent of students who attend the *grandes écoles* enter through the *classes préparatoires*, successfully passing through the *classes préparatoires* guarantees students a place in a *grande école*, even if it is not a place at l’X.

While some students characterized their entry as “*un peu de chance*” (“a bit of luck”), others explained to me that they had received the type of encouragement illustrated above from their teachers, not only to elucidate the pathways for l’X, but also to boost their confidence. As this French student, Clémence, calmly illustrated:

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56 The majority now enters through parallel admission tracks or directly from high school after attaining the high school *bac* (for the latter, this reaches 21 percent in engineering schools).
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In fact, the people that surrounded me – my teachers and also people from l’Ecole polytechnique who advised our academic curriculum – told me that I should clearly pass the concours. So, I passed the concours.

In particular, interviews surfaced experiences during students’ educational pathways that potentially discourage women from participating in STEM and pursuing the concours for l’X. Students recalled moments when teachers in primary and secondary school seemed to encourage men more than women; they were often less likely to visualize and encourage women to be polytechniciennes. Because familiarity with the education system is crucial for entry into l’X, teachers’ advocacy and discouragement play essential roles in shaping the pathways of students. Furthermore, as much research shows (Vouillot 2007; Good, Aronson, and Harder 2008), students are sensitive to stereotype threat in their performance; for example, women students face the stereotype that women are not highly skilled at science and math, which can raise their anxiety to perform well in these areas and, as a result, undercut their performance. French student Nicolas shared about how he witnessed the encouragement of gender disparities within the French education system. During his civil service internship, he offered science and math enrichment sessions in a primary school in an underprivileged community. He recalled the reaction of the teacher – a woman - when he arrived:

I went into elementary schools during my stage, for instance – elementary schools! – and when I said, “I’m here to give a science lesson,” the (woman) teacher said to me, “The boys are going to be happy.”

Rather than seeing science as a gender-neutral discipline, this teacher – who is in the position to transmit this attitude to her students – understands science as a discipline for the boys.
To explain women’s underrepresentation, students also suggested that many women censure themselves; that women students did not necessarily see themselves as “the best” or as potential polytechniciennes. As French student Sophie disclosed:

In the classes préparatoires, I saw it a lot. They boys were like, “I work, and I don’t care (about the results); I will see what I will have at the end; I don’t pose any questions about it.” And the girls were like, especially during the first year, “Why am I here? What has motivated me to do this?” And many question themselves deeply, “Why don’t I end up with better grades? What isn’t working?” (…) At the end of high school, among the five best students, there were three girls and two boys, and the two boys applied for the classes préparatoires, and the girls said, “No, I am not capable.” They chose other subjects more feminine, rather than the classes préparatoires in math. (…) Even a girl that was as strong as I am in math, who liked math (…), she applied for the classe préparatoire in business, and I didn’t really understand why…Because we always loved math, and she wasn’t especially strong in history-geography…

She saw women questioning themselves and their performance, doubting that they could go for what is classified as “the best” and instead choosing paths that conform to gendered expectations. On the contrary, many of the students and alumni who were men described their path to l’X as simply going for “the best.” As French alumnus Gilles shared, echoed by many others:

When you have your baccalaureate degree and you don’t know what to do, you go for the best.

This strong self-confident statement corresponds to the masculine spirit of l’X, which, is linked, in part, to the institution’s military history and status, as described in Chapter 4. In addition to the institution’s focus on STEM, the military image and aspects of l’X are widely considered deterrents for women. Several women students with whom I spoke admitted that this initially discouraged them from considering l’X. A few also mentioned that their parents (notably their
mothers) were hesitant about encouraging their daughters to pursue l’X, without familiarity about what the military engagement at l’X means and what students would do during their military internship. French alumna Louise shared:

In the beginning, I hadn’t really identified l’X as a school where I could go. The military aspect - that made me a little afraid. (…) Afterwards, my father encouraged me when I had to take the oral exams. I took the oral exams – I was in the first wave of orals so I did not yet know the written results, and I had to be in Paris three days after the written exams for the orals – and I didn’t think that I would be admissible; I did not feel ready to begin the orals, and I hesitated with the military side of Polytechnique…So he pushed me a little, advised that I try to see what would happen. And at the last moment, my mother was a bit scared about the military aspect, so when I was accepted and I said that I would go there, she said, “Are you sure?” She asked me 3 times to be sure that it was what I wanted and not another school.

At the same time, this military aspect is much milder than for people who directly enter the armed forces, particularly as polytechnicien students have the option to engage in a civil service internship, rather than the military assignment. Yet, while very few polytechniciens today end up pursuing a military career following their studies, the masculine element of adventure continues to undergird the institution’s spirit. Several men students with whom I spoke, who were yet undecided about their future paths, shared that they debated between continuing in the military and becoming an entrepreneur. Although these two paths diverge enormously in terms of structure and task, both share the heavily masculine character of adventure (Connell and Wood 2005). And while the military element seeks to level certain social differences, overall, students at l’X are encouraged to attack big problems and challenges without fear. As this French student, Michel, explained why entrepreneurialism seemed attractive to him:

(It’s) the aspect of adventure. (…) I mean, to create one’s own job, to actually create something…
At the same time, this path seems less open to women students, as French student Colette, who is heavily engaged in preparing for a career in business after her studies at l’X shared:

> Why not? After, I think to be an entrepreneur, one needs an opportunity. So, if the occasion presents itself, why not? Afterward, that will also depend – well, there is something that is important to me, and that is to be able to have a family – and it’s true that to set up one’s own business, that could be less comfortable than to be in a big company where parental leaves already exist, and sometimes even childcare…So, in terms of being a woman, I think I would reflect on it if the occasion presented itself in terms of where I am in my family life.

Although having succeeded to enter l’X, as a woman, she does not necessarily see an entrepreneurial career as compatible with her aspiration to become a mother. The welfare state in France has encouraged the development of relatively generous maternity leave and childcare structures, which are particularly accessible when one works for an established firm (or for the state). As she perceives, entrepreneurs, who would be tasked with creating such structures or links to official structures themselves, would face greater challenges in enjoying the benefits established through the welfare state. Yet in a nascent stage, entrepreneurship is increasingly encouraged in France and particularly at l’X as neoliberal discourses that urge individual responsibility and creativity further take hold (Rose 1999; Foucault ([1978] 1991); as noted earlier, entrepreneurs – like state employees - may be exempt from reimbursing their student stipends to l’X. Overall, the masculine association of the military character of l’X curbs the social profiles of students who pursue education there.

**The Weight of Family**

*Parental Professions and Involvement*
While administrators brought up the education system to explicate the class and gender disparities at l’X, students often referenced another factor to explain their educational trajectories: “family.” Students shared that someone with the potential intellectual capacity to arrive at l’X might not make it because they did not grow up in a family environment that encouraged higher education or studies, in general. As this French student, Mathieu, depicts:

> It is above all the family context that encourages us to work hard in school, like we can imagine a mom overseeing homework. That remains an incentive that really depends on families.

While also communicating a gendered image of family, with carework undertaken by a mother, this response offers a window into the importance of social origins in order to access l’X. Certainly, there are “polytechnicien families” - several students and alumni with whom I spoke had family members – parents, brothers, sons, and daughters – who were polytechniciens. As Bourdieu (1984) has shown, such relationships transmit the cultural capital that serves to reproduce social stratifications. (See Table 3 in Appendix A.) The percentage of students who have at least one polytechnicien parent ranged from 1.43 percent to 10.41 percent between the years 1970-2007. This Table also details the breakdown of having an alumni parent by gender. For the majority of years, there is a slightly higher percentage of women students who have an alumni parent than men students, which suggests this familial relationship has played a particularly important role to encourage women students to seek admission at l’X. This resonates with the findings of Zweigenhaft and Domhoff (1998) who discovered that women who made their way into the American “power elite” (the corporate, political, and military elite) tended to have privileged backgrounds and family members in high-ranking positions who helped cultivate the skills and connections necessary to follow suit. In the context of France, however, this
representation of alumni’s children is remarkable. As a course rendering of the broader system of higher education in a hypothetical example, during academic year 2011-2012, 49,747 students participated in the scientific track of the classes préparatoires (Quéré 2012). If half of this number - 24,873 – took the concours for l’X for the approximately 400 places open to students from the classes préparatoires, there is a 1.6 percent chance of entry, all other conditions being equal. That members of the 1.6 percent who gain entry to the school also have polytechnicien parents is thus notable.

However, beyond the polytechnicien families, there is a broader sort of social reproduction demonstrated at l’X. Currently, children of engineers or teachers - those who understand the education system and not only encourage their children towards higher education, but also can support their academic development and know the steps their children must take for advancement – demonstrate privileged access to l’X by their overrepresentation: over 80 percent of students come from families whose socio-professional class is considered the intellectual and technical elite, which represents approximately 20 percent of the broader French population57. Colette depicted her family background and its relation to l’X:

I don’t have any polytechniciens in my family, in contrast to quite a few other students – often, there are father-son or father-daughter polytechniciens. It is not my case; however, both of my parents are engineers, so I was bathed in a scientific environment.

Even more striking is Etienne’s portrayal of how he learned about l’X and made it his goal to attend – with his parents’ support and encouragement - which highlights the prestige of the institution and the social milieus in which l’X is known:

The reason is kind of silly: when I was about 6 years old, I had asked my mom – my father is an engineer – what was the best French engineering

57 INSEE data, 2009
school, and she responded, “l’Ecole polytechnique.” I had asked if I would be able to do it, and she said, “Yes, you can do it if you want.” So, it was kind of the fixed idea I had in my pursuit of higher education.

Additionally common are students whose parents are teachers or professors: parents who have experienced and benefited from the education system in France and also have intimate familiarity with it. As French alumnus, Pascal, shares:

My mother is a teacher, and my father went to Arts et Métiers. So, they had the means and a perfect command of knowledge of the French education system and its codes in order to know where to go and what to do. I have to say that my parents live in a city where the lycée has a good reputation. They had chosen that place to live so that their future children would go to that school and do well. There was a route for me that was already designed. So, when everything is designed for that, it happens rather naturally.

This trend is fundamental to understand how students arrive at l’X. First, parents in these professions have experience the higher education system. Teachers and professors, while not necessarily having attended the classes préparatoires, understand the structure of the system in France, its hierarchies, and the pathways necessary to pursue in order to succeed within it. They are also aware of the importance of timing for students to consider their choices and pursue applications. Familiarity with the education system is an important advantage of these groups. As Hélène Buisson-Fenet and Hugues Draelants (2013) have shown, school linking exists, with feeder pathways between lycées and classes préparatoires; however, given the particularities of the school linking configurations, it is necessary to be familiar with the schools and their personnel. Additionally, one must have initial access to the elite feeder school through geographic proximity and sufficiently strong early academic performances.

58 L’École nationale supérieure d’arts et métiers, another prestigious grande école engineering school
Secondly, these parents place legitimacy in the system. They are not only employed within the education system, but through this career choice, they also demonstrate that they value education and its outcomes, whether for intellectual, cultural, or economic achievement (or all three). Sophie, a French student whose parents are medical doctors – yet whose father has returned to school in a Ph.D. program in sociology – explained how her well-educated parents encouraged her in her studies:

My family supported and helped me a lot during my classe préparatoire, even though no one had attended Polytechnique. (…) And in fact, they were very involved throughout high school. (…) They followed what I was doing in class, they asked me how everything was going in the evening; they really wanted me to succeed, so they pushed me during high school, and when I was away for the classe préparatoire, they called regularly for news, they boosted my confidence when I was feeling down…

These parents are in positions to fully comprehend the advantages that come from attending a grande école, and to cultivate the aptitude and desire within their children to invest in education and even arrive at the summit of this system in France, particularly when l’X requires a strong generalist education (Draelants 2010).

Finally, while teachers, professors, and even engineers may not be employed in the most lucrative positions in France, they still hold solidly comfortable places, which have historically been able to benefit from France’s state structure. They hold relatively important cultural and political weight, and thus have access to power that they want to preserve. Major changes to the system not only question their place in it, but also their ability to navigate it. Particularly during the contemporary environment of economic crisis, families are even more aware of the importance of education for economic security, as French alumnus Gabir offers his aspirations for his daughter to attend l’X:
I hope that my daughter will go to Polytechnique. I don’t know if she wants to, but she is smart enough, so we will see. Because I think that given the current context of unemployment, etc., that remains all the same an assurance to easily have work.

Despite the rising rates of enrollment in higher education in France over the past 40 years, there has not necessarily been a more democratic broadening of access to all types of higher education (Bourdieu, Grignon, and Passeron 1973; Convert 2003). As Michel Euriat and Claude Thélot (1995) have described, the proportion of young people originating from the popular classes has diminished in the most selective grandes écoles that they studied (l’Ecole polytechnique, l’Ecole normale supérieure, l’Ecole nationale d'administration, and l’Ecole de hautes études commerciales) from 29 percent in the 1950s to 9 percent in the 1990s, whereas the popular classes make up 50 percent of the university population. Taking into account the overall shifts in the social and employment structure in France, however, there has been a slight opening, even if they have not radically augmented their admissions numbers: for l’X, for example, there was 28 times less of a chance for working class students to enter in the 1990s, as opposed to 37 times less chance in the 1950s. Nevertheless, families from the professional classes, particularly the cadres and teachers who are familiar with the education system and its rules, are overrepresented.

*Normalizing Tradition*

When asked about whether or not these types of social reproduction seemed curious to alumni and students, most responded that while it does not necessarily correspond to the ideals of republican universalism and meritocracy, it was nonetheless understandable and somewhat “normal.” It seems only logical that students whose parents are familiar with the education system fully take advantage of it. Similarly, it seems logical that students who grow up in a
particular environment feel comfortable in that environment and thus pursue their education and career within that same environment. As depicted in the perspective on social reproduction of French alumnus, Pascal:

After, is it a serious problem or not, I wouldn’t know. But it’s true that a poor black kid living in *la Courneuve* in a two-room apartment with six or seven other people without any cultural means, surely, with respect to two kids in the rich suburbs of Lille with all of the necessary means. (…) It’s true that it would be more difficult for a black kid from *la Courneuve* than for a French white person from Versailles – well, I take back the word “French” – a white person from Versailles born into a family who has been French for several generations and knows the social codes.

Not only does this perspective intimate that *polytechniciens* come from wealthy economic origins, but also that they share common cultural and racial characteristics. The image of the French elite still remains white, masculine, and wealthy.

Some alumni further suggested that “tradition” remains very important among families, and that students honor their parents by continuing in the same field; this is a characteristic that runs through the education system and is not necessarily limited to the alumni of l’X. As Pascal continues:

It is not curious, it is normal. (…) To begin with, because there is a lot of family tradition, a legitimate pride – but this pride also exists in other schools. Les *gadzarts* in particular – the guys of *Arts et Métiers* – really want their sons to follow in their footsteps. So there is this aspect in which one is raised from childhood when one has *polytechnicien* parents or *polytechnicien* families (…), children are raised from the start to hear, “You will be an X and that is that…And after, you can do what you want.” And so everything is structured from the beginning so that they attend l’X: intensive courses, selection of the best education…These children are formatted for it, so that they can do it.

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59 A neighborhood in the outskirts of Paris with a large immigrant population
60 While few explicit references to family wealth were made, one notable exception was a foreign student, Amal, who admitted that his parents paid for him to stay in a hotel for an entire year so that he could participate in a prestigious *classe préparatoire* in France, with the goal to enter l’X.
According to these respondents, one can only expect that students will follow in the footsteps of their parents; on the contrary, someone who breaks out of the mold would be more surprising. This recourse to “tradition,” however noble it may be, is a form of symbolic violence that masks the power that comes with these professions, as they are among the national technical and cultural elite. Furthermore, resting upon family and tradition, it normalizes the social reproduction of the elite, casting them as naturally dominant. Conversely, efforts to break social reproduction are considered invasive and “unnatural.”

**Essentializing Disparities**

Moreover, this normalization through family and tradition, coupled with the particular distinguishing characteristics of l’X, tend to essentialize and embed the idea of natural, biological dominance of its students and alumni. Some alumni tended to argue that as an engineering school, l’X is among the most open of the *grandes écoles* and the best disposed to showcase “natural” talents and meritocratic achievement. They argued that math and science are “universal,” thus requiring little more than one’s intellectual capacities and access to the education system in order to learn and advance. As one French alumnus, Philippe, rationalized, l’X is not a humanities institution or business school, where students who have had many cultural experiences and opportunities to travel abroad (requiring financial resources) would have a potential advantage in terms of language and cultural skills.

At the same time, others acknowledge that the STEM fields present a particular barrier. Although *polytechniciens* are undeniably intelligent and capable in the STEM fields, having demonstrated high achievement by passing the rigorous concours to enter l’X, this capacity has been developed through the particular structures of the French education system, such as the
dissertations (oral exams) that begin in middle school, and the weight given to the math and science disciplines in the most prestigious tracks in high school. As described by this member of the administration:

To enter here, it is necessary to be among the best. (...) Here, there are students that were very, very good during their final year of high school. And in addition, they had the system of classes préparatoires for 2 years – or 3 years, for those who attempt the concours twice – where they endured a scholarly curriculum that was horribly heavier than that which is in the universities. They already were very good in the education system through high school, and then during 2 years, we force them, so inevitably, they arrive at a very elevated level. So, it’s true that to have students from underprivileged groups here, that will always be difficult.

Regardless of their “universality” of the STEM disciplines, the entrance exams to l’X demand that students have reached a particularly high level of fluency and competence; this can only arrive though intense advanced training. Remediation for students who have not have access to this education at the particular opportune moments is not an option.

At the same time, the gender disparity that exists at l’X is not necessarily perceived or constructed around academic and intellectual capacities. In 1972, when women were first allowed to participate in the concours, the highest-ranking student was a woman, Anne Chopinet-Duthilleul. This glass-ceiling breaking performance erased most doubts about women’s intellectual capacities to enter and succeed at l’X. Despite such blatant examples of women’s intellectual capacity to succeed in the concours of l’X, several members of the polytechnicien community still fall back on arguments around what is “natural” in order to rationalize women’s underrepresentation. One widely spread argument is that women students are more mature than men when they finish high school. Aware of the enormous extent of work required to successfully pass through the classes préparatoires and then the concours, which often demand
that students remain in a “bubble,” with minimal social engagement outside of their fellow students, women students accordingly opt out. Another common argument is based upon the notions that women are inherently nurturing, and that women simply do not like the STEM disciplines or the type of science that is emphasized at l’X; rather, they prefer sciences – like the biological and medical sciences – that demand more interaction with people. Thus, the underrepresentation of women is linked to their choice, which is rooted in nature (Charles 2011; Charles and Grusky 2004; Charles and Bradley 2009).

The naturalization of students’ place at l’X is further complemented by the institution’s focus on athletics. To enter l’X, students must pass physical exams. While weighted very lightly in comparison with the written and oral STEM exams, these physical exams compose the full exam dossier for entrants. And, once at l’X, athletic participation plays an incredibly important role in the socialization of students. Students live in dorms together within their sporting units, and they engage in sport practice six hours per week. Altogether, the element of sport - linked to the military nature of l’X - contributes to the aura of natural dominance that surrounds this elite, which are tied to the image of the school; for instance, when asked about the distinguishing values of l’X, French student Clotilde responded:

High-level scientific and polyvalent excellence, and also the fact of having a healthy body; we’re not only intellectuals, but also athletes.

Thus, not only are its students intellectually impressive, but they are also physically fit, competent, and athletic. Thus, it seems “natural” that they should be in a dominant position – it is practically biologically determined. Such conceptions recall remnants of the Ancien Régime and the conception of the king whose place was “natural” and whose force was tied to physical brute
dominance; today, however, they depict a very gendered image of dominance and further entrench faith in the meritocratic nature of the French education system.

The naturalization of the path of polytechniciens and of good students obscures the reality that one requires access to understanding the system of higher education and the role of parents in this process. The automatic and natural aspect of their paths occurs because of the familiarity they and their parents have with the system.

**Pockets of Meritocratic Success**

At the same time, the meritocratic path does offer some notable “success stories.” Adèle came from a working-class family in rural France; her parents had not obtained a high school diploma, yet were very invested in her academic progress. During the interview, she reflected on how she encountered people in her civil service internship in the outskirts of Paris who were not familiar with l’X, apart from its name, or even with what an engineering school is, and she notes that her family background was similar. She shared that she was more or less on her own to navigate and progress through the education system with the support of teachers and friends:

> I did not have this type of socialization around that. (…) In relation to my family, what was important was that I go to school; my parents wanted me to go to school, but for them, if I have a bachelor’s degree, that is super, and if I have a master’s degree, that’s really awesome, and beyond that, it’s truly extraordinary.

Such stories, though, were very rare among my interviewees. Among alumni, 7 of the 11 respondents had at least 1 parent who had completed at least a master’s degree; this was the case for 24 of the 31 students with whom I spoke[^61].

[^61]: I note that these numbers are not generalizable, but rather depict the familial educational background of my interviewees.
Institutional Conservation of Elite Image and Power

Administrators at l’X concede that the institution’s student population does not reflect the general population in France: that it is, on a whole, from more privileged socioeconomic strata and that it has yet to achieve a more equal gender representation. In light of the stated ideals of republican universalism and meritocracy, highly disproportionate socioeconomic representation\(^{62}\) poses a threat to the legitimacy of the institution. This remains a concern for l’X, because its image as elite is often perceived as “elitist,” which can undermine the respect that the French hold for it and its alumni. To counter this perception, l’X allocates resources to achieve a more equitable social representation through efforts under the l’Égalité des Chances (Equality of Chances) program, an initiative involving primarily volunteer outreach programs, such as tutoring, to spread the word about l’X and encourage motivated students in under-resourced communities to pursue a higher education. When asked to explicate the interest in efforts toward l’Égalité des Chances, one administrator responded:

There is a double interest. On one hand, for the image of l’École because it is important…From the outside, one has the impression that we educate the elites within a really closed environment, and in addition to that, we are in a geographic space that is closed and separated. (…) Of course you saw, it is difficult to ascend all the stairs to reach us\(^{63}\), so the students come across as closed; they live on the plateau; they live among themselves…We have to get rid of this image, as it is a very open school, as we were saying, so it would be good that other institutions see the polytechniciens positively and the interest that each has for the other. So, the image of l’École…And in the end, to participate a little in this initiative to try to privilege a little, or at least to give the most possibility to all of the youth who can and want it, their chance in life…And at the same time, we esteem that in return, it is very enriching for the polytechnicien students because it allows them this type of contact with people from different environments, for those who

\(^{62}\) More than the gender imbalance

\(^{63}\) To access l’X from Paris, one can arrive by car; by train and then by bus; or by train and then an ascent of over 300 steps.
will, later in life, need to lead teams, direct, recruit...They know that – and even in the environments that don’t seem that attractive – that there is a lot of rich variety and that they are very courageous people, full of merit, and that one not hesitate to call on them...They will have less apprehension, preconceived notions about certain groups.

As he shared, even more than an initiative to ameliorate disparities, l’Egalité des Chances is primarily a cosmetic effort, principally addressing the institution’s image by showing that it is doing something. The extent of meaningful social change, however, remains limited. For instance, as part of its contribution to l’Egalité des Chances, the Fondation offers 40 scholarships to promising high school students in underprivileged neighborhoods to prepare for higher education. While the majority pursues a higher education, none of the recipients have ever attended l’X. Nevertheless, as students identified as intelligent as promising, their energies and intelligence have been captured and canalized in the existing system, reducing the chance that they could radically question and rebel against a system that has benefited them. These initiatives thus help control the image and visibility of l’X for the French population, as its connotation as elite – but not elitist – is important to generate respect and to legitimize the system. One of the alumni with whom I spoke expressed that the efforts that the institution undertakes in the area of l’Egalité des Chances are important in order to preserve the system; it would be dangerous to have opponents to the system who are intelligent. For l’X and the elite, as well as for the state more broadly, it is preferable that its citizens do not question the structure and systems that are in place; rather they should acquiesce and participate. A radical change of the system – through militant activism or other means – which would result in the loss of power for the elite, is not an option.
Moreover, these comments suggest that the initiatives of l’Égalité des Chances actually offer primary benefit to polytechnicien students, those who have already succeeded in the system. Thus, as Annabelle Allouch and Agnès van Zanten (2008) have found in their study of tutor programs as part of the efforts of the grandes écoles and the classes préparatoires to work against social inequality, such efforts actually re-legitimize the system, encouraging and disseminating models for emulation as socialization agents. Rather than modifying the social structures at the root of educational inequalities, they simply seek to familiarize more people with the system in an “add and stir” fashion. In turn, the model of how to succeed in the system is actually valorized, rather than questioned.

Similarly, efforts to ameliorate the gender disparity remain primarily socialization initiatives, such as small events addressing gender equality and women in science, mentoring, and talks by alumni. While there is currently no administrator who focuses efforts on women’s issues or women’s representation on campus, the administration at l’X maintains documentation of the gender disparities and when they occur along the pipeline. Women are represented in the STEM classes préparatoires at approximately 30 percent; however, after the written exams, this falls to 15 percent, even if overall in France, women composed 28.1 percent of the students in engineering schools in 2011-2. The filter is at the level of the written exams, rather than at the oral exams; thus, there is not necessarily a visible preference for men students during the oral exams, which potentially renders designing a remedy more difficult. Because the concours is considered gender-neutral, the administration places the responsibility of the gender disparity at earlier levels of education. As this administrator explained:

The problem is earlier; I don’t think that it is related to the questions of the concours – I am sure of it – it is not the questions of the concours that discriminate against girls. (…) In any event, it is more related to what
happens well before the entrance to the school, rather than its entrance process.

Furthermore, as the *concours* rests upon notions of meritocracy and republican universalism, the institution cannot and certainly does not want to force quotas. Several alumni also argued strongly against quotas, like French alumnus Gilles – whose wife, son, and daughter were *polytechniciens*:

My spouse and my daughter, they never felt inferiority or pity. (…) They had a scholarly path that unfolded by their hard work and success. That is all. In fact, if everyone had comported himself or herself like that, we wouldn’t need the politics of quotas, and that would be a lot better. Because if tomorrow we make quotas for girls, then the next day there will be quotas for everything, for whites, for “yellows,” for blacks, for folks whose parents are Alsatian, for folks whose parents are Jewish. (…) It’s not normal. (…) We shouldn’t oblige people to do things. Because tomorrow, if we demand that there are so many women in Councils of Administration, so many women in such-and-such a post, we’re going to oblige white men to marry black women…

Rather than acknowledging the material and positional disparities that exist across France, he attributes academic success solely to effort and natural abilities, which are the only elements that should theoretically count in a meritocracy. According to his perspective, such element should also be able to erase or render meaningless structural and cultural differences. Nevertheless, his insistence belies a sort of paranoia that any sort of effort to change the current system would encroach upon his freedom – his privilege – and the legitimacy of his position and the way he sees the world. Among the 39 references to “equality” or “republican universalism” as the values of the French education system, 25 were made by alumni, 8 by students, and 6 by the direction, possibly suggesting deliberate effort on the part of alumni and students to legitimate and justify their success and place in a system which, nonetheless, demonstrates large disparities.
Yet, while claiming that the education system in France needs to make greater efforts for students to find out about l’X and how to enter, in its place at the very top of the system, it is all too common to pass the blame down to the primary and secondary levels of education for failure to properly prepare students and let potential candidates slip out of the pipeline. Administrators argued that it is neither their objective nor their responsibility to change the social representation at l’X.

Furthermore, l’X does not want to change or compromise its selection process, attached to the value of the supposedly meritocratic *concours*, too much. As this administrator justified the institution’s extent of efforts to ameliorate socioeconomic representation of students:

> So, we try, but the task of l’École is not that easy because it doesn’t want to change the system of selection, as we believe that to be able to follow and benefit from the teaching that is very vast and that advances very quickly, as we do here, we really need to be selective, because if we have students enter who are not as strong, they (...) are not going to follow.

The institution cannot compromise its association with meritocratic excellence and cannot afford to have students who do not meet the highest levels of achievement in the subject areas given priority by the institution.

While the opening of *the concours voie 2* and the TSI *concours voie 1* subject area were seen as efforts to increase the percentage of scholarship students, they remain limited. At the same time, administrators readily cited individual examples of students who came from humble origins: some “farmers’ sons,” a couple whose mothers clean homes, and last year’s valedictorian who came from a modest family\(^64\). Such examples, nevertheless, remain rare.

### Individualization of Meritocratic Advancement

\(^64\) Described as being a case that was “*assez sympathique*” or “kinda nice”
Despite class and gender disparities in representation at l’X, faith in the meritocracy of the system remains strong, pointing to continued symbolic violence. As French alumnus Théophile expressed:

> For me, l’Ecole polytechnique is really the success of the French education system. We say that the system is in trouble at the moment – and that is not necessary false – but this school, it is really the school of the Republic. That means that (...) in theory, we give everyone the possibility to access the best. When I say everyone, I mean everyone that is motivated - the criterion is motivation. The criterion, it is not belonging to a particular social category or wealth. (...) The excellence is a possibility for everyone.

According to this respondent, despite some levels of inequality across the education system, the path is still open; all that is required is personal motivation and hard work. Thus, responsibility for the concours as the standard excellence and the question of meritocracy are pushed down to the levels of individuals and their families, rather than viewed in relation to larger social structures. As French alumnus Gilles emphasized:

> It is true that today that I sincerely think that there are a lot of families (...) and many children that don’t make the effort to give themselves the chance. That is to say that neither the parents, nor the children make the effort needed for these types of studies. And that is really too bad…And yet they wait for the society, teachers, the state, other people – the taxes and the money of others – they look for others to take care of their children. That, I am very much against!

This perspective thus displaces attention from structures and processes of stratification embedded in the education system, centering the onus for achievement squarely on individuals and families, and their “choices” (Howard 2010). As Khan (2011) has described, this individualization cloaked under the name of “meritocracy” process further essentializes elements of human capital, like intelligence and discipline, supposedly divorcing them from social context.
A Note about Religion

Despite the relatively high percentage of Muslims among the French population – approximately 7.5 percent in 2010\textsuperscript{65}, Muslim women enjoy virtually no representation among on the campus of l’X. During my interviews, I met and spoke with Muslim men, several of whom were French naturalized (having arrived at l’X without French citizenship), and a few who were foreign citizens. Seeking to speak with a variety of segments of the polytechnicien community, I asked these students if they knew of any Muslim women on the campus. While the majority said no, one thought that there were a couple, but that all of them were foreign women; none were French.

Given the espoused republican values of France, statistics concerning religious practice are not necessarily collected and shared; many people privilege a solid divide between the private elements of their lives - such as religion - and their public and professional aspects. Thus, obtaining a clear picture of religious belonging and practice at l’X is not necessarily feasible and accordingly rests upon interviewee exchanges. Yet, given the relatively circumscribed and insular community at l’X, these data offer a small insight into the question of religion.

The absence of French Muslim women at l’X likely relates to the conflictual history around religious visibility in France, culminating with the image of the “headscarf.” Banned in public, the headscarf has become an important symbol of belonging to a religious community. Young Muslim women who value religious practice and wearing of the headscarf are likely discouraged from extensive advancement in the French education system, as they cannot wear it during their studies, just until higher education, thus eliminating them from certain sectors of

\textsuperscript{65} Pew Research Data, 2011
French society (Barras 2010). The minimal to non-existent representation of French Muslim women at l’X suggests that France has not yet fully realized the ideal of republican universalism. Differences, such as religious culture, do matter and likely relate to the stratifications in French society. As this dissertation does not probe deeply into this question, it cannot provide additional details and evidence; however, this represents an important subject for future research.

**Conclusion**

As this chapter suggests, amid the changes it has undertaken through its internationalization and diversification strategies to respond to globalization, l’X (and by extension, the French nation-state) seeks to assert its national legitimacy as elite. This national legitimacy, as Robinson (2011) argues, is necessary for the social reproduction of national elites, which continues during the contemporary age of globalization. It does so by clinging to its long-held, widely touted notion of meritocracy, which, while problematic, has been referenced as the key value for the French education system and the construction of French society. By emphasizing the meritocratic qualities of the selection process for entry at l’X, the French state continues to exercise symbolic violence, portraying the unrepresentative characteristics of the *polytechnicien* student body as natural and a result of individual achievement and hard work.

Yet, discourses at the global level privilege notions of “meritocracy” and “diversity” in education and society, even advocating the construction of a global meritocracy of minds (Wildavsky 2010). Increasing the numbers of women and racial/ethnic minorities in higher education, and particularly the STEM disciplines, is a common mantra around the world (David 2009; Ghosh 2012). While engaging with these discourses on the surface, the French nation-state still clings to its own model of “merit,” thus refraining from major structural changes in the
traditional paths that lead to l’X. The social factors that privilege elite access to elite paths are thus maintained. Accordingly, we see that “merit” is a social construction, with notions of what counts as merit varying by social context; as Khan (2012) has described, “meritocracy is a form of social engineering, aimed at identifying the talents of members of society so that individuals can be selected for appropriate opportunities” (8). Yet more profoundly, how individuals can access and engage with the appropriate social structures and processes to develop their talents is very uneven across society.

Additionally, with the greater contemporary emphasis on meritocracy and open access, the imperative for elite and privileged groups to maintain dominance within the academy becomes heightened. Family connections are no longer guarantees; thus, these classes place special emphasis on their attainment and maintenance of cultural capital (McDowell 1997); in France, there has been a noted increase in the engagement of parents with institutions of higher education to ensure their children secure profitable places (Van Zanten and Robert 2000), and at l’X, we see that parental involvement in education is considered one of the fundamental gatekeepers for students to pursue the path to l’X.

Academic organizations engaged in internationalization are often complicit in this. For example, colleges and universities in many Anglo-Saxon systems develop extensive international recruitment strategies particularly because foreign students are generally required to pay full tuition and fees at their hosting institutions (Aronowitz 2000; Carroll and Beaton 2000; Wildavsky 2010). The foreign students thus serve as a funding source, which is especially valuable if budgets are tight or if other funding sources wane. Nevertheless, such practices potentially shut out all but the elite social classes, notably if tuition and fees reach levels seen in the United States, thus perpetuating elite reproduction. As institutions of higher education are
public, this is not yet the case in France; however, there is little evidence that the majority of foreign students at l’X originate primarily from underprivileged backgrounds.

Similarly, although international exchange and mobility curricular requirements by institutions of higher education, like l’X, may offer educational benefits to students through experiences in other cultures and settings, they require substantial resources for participation. When the student rate of participation in international exchange or mobility is considered an outcome and measure of internationalization, institutional emphasis on this activity tends to distract from underlying structural factors that allow institutions and individuals access to participate in such opportunities (Ackers 2008; Cass, Shove, and Urry 2005; Hazelkorn 2009). In addition to possessing sufficient economic capital for mobility, students who engage in international educational experiences already tend to hold relatively high levels of social and cultural capital, as they often have previous travel experiences and speak multiple languages; they are thus able to navigate the different systems and structure involved (Garneau 2007; Brooks and Waters 2010). As such, the mobility and exchange programs as part of higher education internationalization strategies might not actually open up international experiences more broadly, but rather add to the basket of experiences of privileged students.
CHAPTER 7 - *Integration According to the Polytechnicien Ideal*

Well, at the end of the day, *l’Ecole polytechnique* - we don’t sufficiently give thought to it, but it is really important to say – and that is that each cohort is a little miracle. It is a little miracle because you’re going to put together not only people who have had the same education– who have gone to the same good preparatory schools – but also a large percentage (...) – 20 percent of foreigners who have had other types of training, other cultures, other languages, other ways of living. (...) And the general idea is that at the end of 4 years, you have a homogenous cohort, (...), so at the end, you have one cohort who will be X2010, X2009, X62, X…And so that – that is an extremely strong element that is not shared by many schools in France. (Member of the Direction)

**Introduction**

With the entrance of women in 1972 and the admission of foreign students in 1996, the student body of l’X has changed in notable ways over the past 40 years. Yet, the institution’s goals of fostering the creation of a cohesive and supportive network of alumni who will enter elite professional positions, along with cultivating a sense of responsibility towards the French state among these students remain the unchanged. While measuring the attainment or success of these goals remains an important but complex question to address, one of their fundamental stepping stones is the integration of students on campus: without a collective *esprit de corps* developed on campus, maintaining and capitalizing on a robust alumni network afterwards would be challenging. As part of its emphasis on internationalization, enormous efforts are undertaken to recruit and integrate students of other nationalities at l’X. Yet, what does this integration mean? What does it mean to integrate across structures and processes of difference, such as gender, class, and nation? What sorts of hierarchies are created, and what is their relation to the internationalization of l’X?
In this chapter, I examine what it means to integrate at l’X and identify and describe the symbolic boundaries that distinguish between groups of students on campus at l’X. According to Lamont (2002), symbolic boundaries are “conceptual distinctions made by social actors to categorize objects, people, practices (…that) separate people into groups and generate feelings of similarity and group membership (…and) are an essential medium through which people acquire status and monopolize resources” (168). When widely shared, they can orient social interaction and thus produce social differences by generating unequal access and distribution to resources (ibid). At l’X, boundaries form around students’ backgrounds or provenance, while others mark the perceived degrees of students’ integration as a polytechnicien; all bear significance on possible solidarity – on campus and afterwards – among students and thus the potential continued strength of the polytechnicien network, both within and beyond France.

Looking more closely at these boundaries, however, I suggest that hegemonic masculinity represent one of the primary contours around which boundaries form at l’X. At l’X, the hegemonic masculinity, or normative pattern of practices conceived around the most honored manner of being a man (Connell and Messerschmidt 2005), involves intellectual and physical domination, which flows from this institution’s elite academic and military history and values, intimately tied to masculine notions of the nation-state. In the context of global flows and pressures that challenge and potentially change elites’ attachment to the nation, in addition to the declining military career focus at l’X, the contour of hegemonic masculinity at l’X deserves critical attention as a conservative, nationalist element that reveals the flaws in the historical

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66 Connell (1989) elucidates how the state-sponsored public school is a site of the construction of hegemonic masculinities through its processes of sorting, competition, credentialing and the structuring of professional power. Moreover, the military strongly influences the types of masculinities that are celebrated and encouraged by the state (Connell 1993; Barrett 1996).
ideal of republican universalism and challenges more diverse and multicultural representation in France in the contemporary era of international mobility.

**Previous Education: Les Classes Préparatoires vs. les Universités**

In general, prior training in the *classes préparatoires* or in the universities generates distinctions between students. As intense formatting tools, the *classes préparatoires* teach a particular type of reflection, rigor, and work pace. Students become adept at analyzing and synthesizing large amounts of complex information rapidly; they learn how to prioritize information; and they develop the capacity to learn and work very quickly. As participation in the *classes préparatoires* has been the historic access route to the prestigious *grandes écoles*, and notably l’X, its association with intellectual prowess is still strong. Students from the universities, however, have not necessarily had this type of training, and thus tend to work at a less intense but perhaps more steady pace. Thus, students who have entered through the *concours voie 2* – the majority of whom are foreign – bring a different educational background. As this foreign student, Laurent, who entered through the university *concours* explained:

> When one comes from the university, in any case, I had more difficulty than people who came from the *classes préparatoires*. Because it is difficult! At the university in France, it is not the same level in terms of scholarly rhythm. It is not the same background when we come to l’X.

He, clarified, though, that students who enter through university *concours* still can be successful at l’X, even if it demands a bit more work to become accustomed to the structure and rhythm of work:

> But I believe that when one works really hard – whether one comes from the university or the *classes préparatoires* – we can make it, even really well. So the major (first ranking student in a class), he is from the

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67 Having first come to France to attend a university and attain his undergraduate degree
university; he didn’t go through the classes préparatoires, but he really worked hard.

For Laurent, a distinction exists between students who have experienced the French classes préparatoires and those who have not; yet, by working extra hard on academics, this distinction can be moderated.

Members of the administration also mentioned the distinction between students who had attended the classes préparatoires and those from the universities, as explained by this administrator, who also teaches:

So, a Chinese student explained to me that the class that I give during the first year, in China, it lasts 6 months, or something like that; I teach it all in 2 ½ months.

According to this respondent, students who have gone through the French classes préparatoires are formatted for very intense courses at l’X that move through the material very quickly. Yet, he emphasized that most students still get through it:

But, what is still notable, it is that in 2½ months, there are foreign students who understand everything. So, it really isn’t a problem.

For these respondents, individual hard work can overcome differences in educational preparation. For other students, though, this difference is difficult to surmount and a considerable challenge to integration. As this foreign student, Leandro, explained:

I think that I forgot to say this, but regarding these problems of integration at l’Ecole (…), it is also to be integrated on the scientific level. Because the French methodology, in general – and in particular, the organization of the curriculum, the organization of grades, the courses, in general – is very particular, and even more particular at l’Ecole polytechnique. It is not necessarily easy for the foreign students, I think. One sees that the majority of foreign students do not have very high grades. It depends, but I think that, in general, it is not that the foreign students have a low level; I think that it is more that we do not know the system. We are not used to the system like the French are.
As such, a slight distinction is made between students who have participated in the *classes préparatoires* – largely French – and those who have entered via the university *concours* – largely foreign, with the former group seen as intellectually dominant, even if this distinction boils down to familiarity and previous experience with the French system.

At the same time, despite developing the capacity for rigorous and rapid work, the *classes préparatoires* tend to create a protective bubble for students. While students who have attended the *classes préparatoires* share a sense of solidarity, they often come across as less mature and independent than university students. As this member of the administration shared:

> Regarding the students coming from the universities, (...) we take a very, very small fraction: they are really the best of the best. (...) But that does mean that they are not different, if I dare say it, from students coming from the *classes préparatoires* because they have not passed by the filter of the *classes préparatoires*, so they don’t have this character to do tons of exercises, a little bit of hazing, learning by heart, etc. They are more independent students, who are more mature, in fact, in a certain manner…

In relation to the *classes préparatoires*, students coming from universities sometimes bring a less intense theoretical preparation; however, they may be more advanced in applied or specialized areas, thus bringing broader variety to the student body. Foreign students readily shared concerns about these differences, sometimes indicating they were not familiar enough with the French education and grading systems, which are perceived as second nature to the French students, and thus always felt “behind;” being unfamiliar with the system, they might not even recognize when they do meet its expectations. Some also noted that their different academic backgrounds were not necessarily valued or recognized as being as valuable as the preparation of French students. French alumnus Pascal shared his experience with a foreign student, who was ranked first among
the foreign students, but who wanted to be ranked with the French students in order to prove his academic mettle\textsuperscript{68}:

He was frustrated to not have been measured with the French, because he wanted to know what he was in relation to the French. He wanted to be ranked first in \textit{l’Ecole}, above all. And honestly, I think he would have been second, but he really wanted to be measured globally, without distinction between the French and the foreigners. (…) But, it’s true that it is a military school, so it is necessary to have two statuses.

Although students and administrators tended to downplay any sense that training through the \textit{classes préparatoires} is better than training in the universities, this positioning still exists, ranking the specifically French training ahead, which students – both French and foreign – tend to internalize.

Additionally, students cited distinctions between the manners of studying and working that these groups have. Structured by the experiences in the French \textit{lycées} and particularly in the \textit{classes préparatoires}, French students are accustomed to working intensively and learning quickly. Several French students who had gone through the \textit{classes préparatoires} became especially aware of the way they had learned to work during this period of training when they participated in the group projects at \textit{l’X}. Each project team includes a foreign student, which forces the students to cross boundaries, and also put into relief their different manners of working. These French students mentioned they were used to working on projects more at the “last minute,” whereas the foreign students, who were accustomed to a different, often more sustained work rhythm that would allow for in-depth exploration, would begin their projects

\textsuperscript{68} Brigitte Darchy-Koechlin and Hugues Draelants (2010) have argued that foreign students in the French \textit{grandes écoles} emphasize their “foreignness” in order to detract from sentiments that suggest that they are in the French school having completed a different, less “meritocratic” and rigorous \textit{concours}; yet with people outside of the school, they are happy to assume their affiliation, given the reputation of national schools within the national context. They recognize and seek to capitalize upon the symbolic capital that they have as \textit{polytechniciens}. 

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earlier. Sometimes, this raised certain tensions between students when engaged in group projects, as French student Sophie evoked the shared preference for working with like-formatted peers:

I think that in the classes préparatoires, we learned to do a lot of things very quickly, within a short amount of time, and we become accustomed to this rhythm afterwards. I have friends in the U.S. this year who say it is the same for them: they prefer to work among French students because it is the same method of thinking. They tell me that it’s not as if we don’t like foreign students or that we do not want to work with them, but with other French students, we have the same reflexes, we think of the same thing at the same time…

As she describes, it is more comfortable for her and her fellow students with people who think in similar ways. Several foreign students, however, shared their impression that the classes préparatoires produced a rather closed spirit among the French students, who, in addition, were young and seemed to have little experience in diverse environments. French students and alumni referenced the formatting of the classes préparatoires as an intense bonding experience that made it difficult to open up to foreign (and French) students who had entered l’X via the university concours. At the same time, some administrators and alumni who are heavily involved in the internationalization of l’X emphasized that the presence of foreign students and the possibilities of international exchange are essential to counter this apparent closed spirit fostered by the traditional French education system.

Although participation in certain classes préparatoires demand elevated social resources, students did not reference social class differences in relation to the classes préparatoires. In general, students shared that differences in social class remained relatively

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69 As noted earlier, during the classes préparatoires, students do not have time to engage in outside work that could result in remuneration for them or their families. Entrance fees are minimal for public classes préparatoires, although private ones also exist, which require tuition payment. The Lycée Sainte-Geneviève (nicknamed “Ginette”) is a private institution that is a major feeder school for l’X.
discreet on campus. While some said a handful of wealthy students – often alluded to as “Parisians” – stood out, social groups did not necessarily form around this wealth. Students shared that the fact that all students received a stipend helped level the playing field, and all French students noted that they were happy to contribute a little bit of their allocation towards the stipend for the foreign students in order to minimize differences and show solidarity. Moreover, the presence of diversity and difference is considered “proof” of a meritocratic system, thus polytechniciens declared that they were happy to “do their part” to minimize differences between the polytechnicien experiences of foreign and French students. Nevertheless, however well-intentioned these efforts, they create a relationship of patronizing benevolence between the French and foreign students, as it is thanks to the largesse of the French, the foreign students can attend and participate at l’X. Furthermore, they contribute solely to the veneer of meritocracy, as they imply no great structural change.

Students additionally shared that the STEM disciplines and campus community helped mask some of the differences in economic background among them. Engineers are not necessarily encouraged to distinguish themselves with stylish clothing; thus, as campus uniforms are no long required, campus attire is relatively neutral and casual. As French student Adèle said, it is not like being at Sciences Po (elite higher education institution specializing in political and social sciences) in Paris, which is practically a fashion show. Nevertheless, social contours between les Parisiens (the Parisians) and les provinciaux (the provincials) exist. During weekends, the Parisians often return to their homes in Paris or the city region, while the students from the other regions of France, as well as foreign students, remain on campus. Similarly, if

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70 As described in the previous chapter, this is also likely because the student body is overall very homogenous in terms of social class.

71 Its main Paris campus is located in the chic Saint-Germain-des-Prés neighborhood.
large cohorts of students from particular *classes préparatoires* enter l’X, they sometimes tend to remain together and demonstrate particular solidarity on campus.

Overall, successful entry to l’X through the *classes préparatoires* still represents the hegemonic masculine ideal of intellectual dominance. As French alumnus Gilles describes:

> So, there are effectively two completely different entry paths, the classic path that is also linked to the history of the school – in which everyone passes the same *concours* (...) and accordingly, all who enter do so with the same merit. And that makes sense, because the diploma from the school needs to mean something (...) so that when graduates are recruited, we can be sure of their level of intelligence…It’s important. (...) It’s not because I have a *polytechnicien* family today that I say it - objectively, the (*polytechnicien*) people I recruit are objectively very good, and so we can’t just have anyone at the school because we need to internationalize.

Evoking the history of l’X – predominantly masculine – in describing the objective quality of the traditional path of the *classes préparatoires*, followed by the *concours*, this alumnus points to the hierarchy that exists at the institution, which ranks the historic French educational path as known and superior to other educational paths. From the perspective at l’X, the traditional *concours* following the *classes préparatoires* is the entry route by the majority. At first glance, it does not seem to be a coveted practice shared by only a few; however, with a view that encompasses the entire French education system – as well as other systems worldwide, it does become a characteristic shared by very few. These very few represent an elite student ideal, who still is white, French, and male. Accordingly, students who do not fit this ideal – and their educational paths – are seen as intellectually weaker.

**Campus Socialization**

*Initial Stages*
As described in Chapters 4 and 5, l’X is much more than a site of academics; it is an institution of formation and consecration of the technical elite. Thus, its extracurricular components serve as an important medium to integrate and develop social solidarity among students. This begins with the military or civil service internship for the majority of students; foreign students who do not originate from a francophone country and/or do not speak French with academic proficiency engage in a language internship. Specifically for the students who participate in the military internship, these first few months offer a dramatic bonding experience of engaged, intense team-building situations. Foreign students also develop an initial group of friendship with the other foreign students who participate in the language internship.

Students shared that participation in the military internship is fundamental to initial social integration. Several suggested that the fact to have not participated in the military internship presents a major boundary for foreign students, especially those who did not attend the classes préparatoires and thus share neither bonding experience around which the hegemonic masculinity of physical and intellectual domination is cultivated. As French alumnus Alain shared:

Another point about the foreign students, it’s just that the military part that they do not do is an enormous catalyst of integration. It is really the moment when everyone who was not in the same classe préparatoire, we meet them, we hang out, we do ice-breaker exercises, long marches, things like that…But it really bonds the cohort, and after, when there are the foreign students who haven’t experienced that, it is very difficult. For me, the integration of foreign students is a total failure…They want to give a real spirit of the cohort, and that works very well with the military part where we are all together for a month and a little cut off from the rest of the world – that is super and it reinforces the links. And after, we have the foreign students arrive who haven’t experienced that. (…) And it doesn’t work. Either we make them do the same thing as us from the very beginning, and, voilà, they are integrated like all the others. Or, we continue like we are doing, but we will never reach the same level of
relationship between those who have experienced moments like we have in
the military internship and those who have not.

Similarly, other alumni suggested that the double common bonding experiences of the classes préparatoires and the military internship tended to close off French students from foreign students, particularly because of the particularities of these experiences. Many foreign students lack intimate familiarity with the classes préparatoires, and most do not participate in the military internship. Indeed, some foreign students arrive at l’X without really realizing or giving thought to its military history and aspects. As this foreign alumna, Angela, explained:

There is not really an opening towards the foreign students who arrive at the school and who in the end, know nothing about the system. They do not know at all that it a military school, and they are a bit shocked because with respect to what generally happens in universities where one can choose what one does, (at l’X), there are a lot of things that are imposed…

As with the French academic system, foreign students often lack familiarity with the historical particularities and military elements of l’X, which can cause tensions and unintentionally create hierarchies among students.

In general, the military aspect of l’X poses contradictions around the presence of foreign students. While sometimes admiring, foreign students were often indifferent to this aspect of l’X. Some mentioned that they found it incredibly meaningful to be able to participate in the military demonstrations of the school, such as the July 14th (Bastille Day) parade; they recognized the monetary value of their uniforms, hats, and sabers, and they felt honored to be provided with this material. As Leandro, who had been required to participate in military activity in his home country before coming to France, shared:

In any event, I am content – thrilled – to be here because it’s true that this isn’t just anywhere; it is a place with a lot of history. I am proud in some way to be a part of it all. Even if the history of France does not necessarily touch me personally, I am happy to be in the middle of all of these riches.
Misunderstandings, however, were not infrequent, as some foreign students were simply not aware of the weight of tradition in which l’X and its military components were rooted. Several students – both French nationals and foreigners – noted that foreign students arrived without any sort of collective briefing on the military aspect of the school, which sometimes engendered tensions. As French student Etienne said:

> Sometimes, there are tensions, and the French students say that the foreign students don’t make any effort to respect the uniform. That’s silly. But maybe there is a lack of information beforehand. I think the concept of totally integrating foreign students by making them participate in all of the military traditions is a good thing. But perhaps they also need a little information to explain it to them…Because when we arrive in the first year, we have 8 months of military exercises. They arrive and they have nothing of that sort, and we ask them to sing “La Marseillaise,” but they aren’t French, and in addition, no one taught it to them. We learn it when we arrive, but no one teaches it to them! There are strange discrepancies like that. So, it’s like expecting the will to integrate without the means.

This perceived lack of attention to the discrepancies around these integrating experiences related to the military aspect of l’X potentially suggest inconsistencies around the national symbolism, responsibilities, and relationships of l’X to the French nation-state, in light of its internationalization efforts. Whereas foreign students’ non-participation in military exercises may be coherent, the institution’s perceived failure to sufficiently inform them on its military nature and history reveals a lapse in its integration efforts and perhaps the value accorded to full integration of these students. With privilege accorded to the distinctly French classes préparatoires and the French military experience, foreign students – both men and women – who do not or cannot participate fully in such activities, are seen as second-tier members, not fully “polytechnicien(ne)s.”
Related to the military and masculine aspects of l’X, athletic participation also serves as means for integration. Student housing is organized by athletic activity, and students are required to participate in their sport six hours per week. Investment in the athletic community – dining with their wing, getting to know the other students in their sport, spending time in the common room, etc. – is considered a primary manner for students to integrate at l’X. Foreign students spoke about how their integration progressed in this environment. This foreign student, Dewei, shared a poignant example of his challenges to feel integrated upon arrival at l’X:

To begin with, the first thing is language. In fact, I felt a little isolated in the common area (...). Sometimes, my French comrades laugh or tell jokes (...). Maybe I can understand the text in class or the courses, but it is very difficult to understand the jokes...If I don’t understand, I cannot laugh with them, and if I cannot share this type of experience, it is difficult to be able to integrate.

Particularly if they originated from non-francophone countries, foreign students often initially struggled to engage in conversations, although noting that the effort they made to learn and speak French allowed them to more fully participate over time; this was particularly the case for students who were among the sole representatives from their countries.

On the contrary, foreign students who had many other people in their cohort from the same country were sometimes perceived as remaining too much in their own groups, and cleavages thus formed between these foreign and French students on the sports floors. This notably occurred around mealtimes. In general, students are expected to cook and eat dinner with the other members of their floor; however, if there were several foreign students from the same country, they sometimes dined among themselves at a different time, which does not foster exchange and integration. As one French student, Joseph, shared, it sometimes seemed to him
that the foreign students remained in their time zone of origin, as they did not partake in meals at
the same time as the French students.\footnote{Sharing the mealtime is one sign of cultural integration and competence of foreigners and immigrants (Lhuissier, et al 2013).}

Overall, in terms of culture and language, students originating from francophone
countries are considered to have the easiest time integrating, followed by students originating
from countries in Europe and those where romance languages are spoken (Brazil, for example,
with Portuguese). Students from non-francophone Asian countries are considered to have the
most difficult time to integrate, with a completely different language and with customs and
cultures that stand in stark difference to the French; this sort of integration hierarchy was cited
multiple times during interviews. Several students noted that the size of the national communities
also played a role, as some national groups, such as the Chinese, are sufficiently large to create a
distinct and coherent community on campus. As shown in Tables 4 and 5, students from Asia
have composed approximately 30 percent of the foreign students of recent student cohorts.
Overall, however, this means that they represent approximately 5 percent of the total student
body.

While students referenced cultural elements that separate students, they also often
returned to cite willingness and efforts of the individual. In terms of the responsibility for
integration, many students and members of the administration shared that both foreign and
French students have responsibility as individuals to make efforts to exchange together and help
each other to integrate. Reflecting the emphasis given on individual responsibility and
achievement discussed in the previous chapter, personal effort to integrate is often cited as the
principal reason why foreign students do not seem assimilate: they simply do not make the effort.
Similarly, from the perspective of the foreign students, French students are perceived as not making sufficient efforts to be open to the foreign students. As Leandro said:

> It is necessary that we make an effort towards the French students because it is necessary to learn the language, to be interested in the culture, to try to spend time with them, to invite them to do things with you. But they also have to make a move towards us. So, it is complicated, because sometimes we don’t want to take a step towards them. And there are quite a few French students that don’t approach us, that don’t want to be patient with us when we speak… I think that is really what is at stake, to make an effort to not be on the sidelines. (...) And there are students that do not make the effort. I make an effort. But, in the end, I am a little disappointed personally because I do not feel as integrated as I wanted to be in the beginning.

French alumnus, Gilles, also placed the onus on foreign students and their lack of efforts to integrate, linking it to their individual character:

> After, it’s very personal because there are good people like me who are open: I don’t make any difference between a Lebanese, a Brazilian, or a French person. We are in the same school, we talk with each other, there isn’t any difference. Afterwards, if one is French or foreign, if one doesn’t make a step toward the others… One can try once or twice, but after that, if the guy wants to remain alone, he remains alone. It’s not a problem; we’re not obliged to be friends with everyone, and if they don’t want to, they don’t want to. We’re not going to lose time at all cost trying to integrate everyone, and if they don’t want to, they don’t want to… It’s not a question of being French or not; it’s not a question of language. It’s really a question of character.

As with the possibility to progress through the French education system and eventually pass the *concours* to attend l’X, the responsibility to integrate here is placed at the level of the individual, rather than considered in light of larger organizational and institutional structures and processes.

**Engaging in Clubs and Associations**

As described in the literature review and Chapter 4, the military’s role in exerting force and national defense has changed. Business, industry, and research now are considered sites of
investment in order to preserve national domination. Accordingly, in order to form elite managers and directors who can engage in “combat” in such fields, participation in the student activities and clubs on campus is also considered an essential means of integration at l’X. Approximately 180 student clubs exist at l’X, and students are free to create their own club according to their interests. Student activities not only allow students to engage in leisure activities and hobbies, but also provide an important opportunity to develop interactional social and cultural skills. As one French student, Honoré, told me, having been well ranked by his results in the concours at the entry of l’X, he asked himself how he would spend his time on campus at l’X, debating between continued intense focus on his academic studies, or more relaxed but purposeful engagement in campus activities, which he recognized would help him develop other skills. He made the calculated choice to participate in the activities and thus cultivate his leadership and social skills. Such a decision demonstrates his awareness of the formidable opportunity he has to develop his cultural and social capital in a supportive environment and at an opportune moment in his academic and professional career. As Colette explained, participation in the student activities at l’X is considered part of the general training at the institution:

People who participate in the associations consider that the training at l’X is also to be part of the associations, to take responsibilities, to do things for the cohort. (…) We worked before in the classes préparatoires during two years, so here, it’s not a question of not doing anything, of course – we work regularly – but we know that it is also important to develop and sustain social relationships with others, to go out, to develop a network of friends…maybe a professional network later…To participate in the association in order to have the experience, to manage events, etc.

Amid the encouragement to engage in campus activities, French students revealed how they were lucky to have such exceptional courses available to them at l’X, particularly because the
academic element was not necessarily the most important to them at this stage. As French alumnus Alain said, these courses were “like giving marmalade to pigs” because the majority of French students preferred to concentrate their energies in campus activities in order to relax a bit after their two years of intense work in the classes préparatoires and look toward their professional futures. They were thus not at l’X to fully benefit from the academics.

At the same time, (French) students who want to work for the state and seek a prestigious academic path to the corps de l’Etat focus more intensely on their coursework in order to achieve a high rank upon their exit from l’X. While less involved in extracurricular activities, they are also considered integrated on campus through the enormous efforts they put in academically; however, they are not considered as well rounded and holistically integrated because the exit ranking, which has a long history of controversy, is seen less and less important for students, as relatively few choose to work directly for the state after l’X but instead look more broadly and are able to profit simply from the symbolic capital of being a polytechnicien. Some students shared that they sensed a bit of scorn or distrust between students who participated heavily in campus activities and those who were heavily invested in their studies, although they also noted that there was often a bit of overlap between the two.

Nevertheless, many foreign students seek to attend l’X precisely because of its academic prestige and quality of its programs. As this foreign student, Ruolan, shared about her motivation to attend l’X:

In fact, before coming to France, I wanted to go to the United States, and in fact, all of my friends went to the U.S., and I wanted to choose something different…And above all, I wanted to do math, so France, it’s the place for math; there is a very good tradition, and the manner to study math is different from that of other countries.

73 “Donner de la confiture à des cochons”
While some envision returning to their home countries to work for their respective states, many plan to continue their studies in research by pursuing a doctorate in France or elsewhere. They often thus place heavy emphasis on their academic progress and become frustrated when they feel that they lack familiarity with the system of grading, which sometimes plays a particularly important role for them in relation to their home countries. Some foreign students shared that the requirement to participate in 6 hours of sport per week and the encouragement to engage in other extracurricular activities seemed bizarre to them, as they had applied to l’X for the intellectual aspects and the classes that they would take with renowned professors – these students often shared that they would continue in research. While several noted that athletics presented an opportunity to bond with others, many indicated that this requirement felt heavy and that it took them away from the academic demands that they had and preferred to pursue. As organized sport serves to construct gender identities and hierarchies (Messner 1989), however, non-participation potentially sets students apart in the hierarchy as not meeting the hegemonic masculine ideal.

In addition to holding the perception that club participation ranks as secondary to academic engagement, less fluency with the French language further hinders non-francophone foreign students’ participation and integration through campus activities. Engagement in club activities requires rapid reaction and assertiveness, not to mention appropriate interpretation of signs and messages, which may not be possible with more limited language skills. As French student Geneviève conveyed to me:

For foreign students, it is not necessarily easy to participate in the clubs because as they are not necessarily very at ease with the language in the beginning, and things in the associations happen really quickly. (…) It is necessary to be in the loop when things happen, and upperclassmen influence and choose new students, so it is necessary to always be around, participate from the beginning, maybe put aside the studying a little. And it is often true that for the international students, as they have a little bit
more work to understand the coursework, while we have no problem with the language, it is a lot easier (for us), and we have more time to invest in the associations.

Furthermore, in the selective and club-like nature of l’X more generally, a particular vocabulary exists, which can demarcate insiders from outsiders. French student Colette commented:

The difficulty is that at l’École polytechnique, there is also a very special vocabulary, words for everything that are not at all the normal French words, and so that is also something that (foreign students) need to learn, even though some, in the beginning, do not speak French very well. There are some who arrive and do not speak French at all! But it is kind of funny, because there are foreign students who become very integrated and “fluently speak polytechnicien,” and they have learned that more than French!

Beyond campus activities, however, l’X has instituted other means for foreign students to integrate. Alumni undertake a key role in their integration through a mentorship program called le parrainage (mentoring). Foreign students shared that this was generally a positive experience in their introduction to France and l’X. Not only did they note it helped them experience fun leisure and cultural aspects of France, but they also commented that they learned about elements of the French culture that were not necessarily as pleasant, yet aided their integration and understanding.

Gendered Academic and Moral Stringencies…and Solidarities

While the hegemonic masculinity of l’X sets up hierarchies linked to national, cultural, and scholarly backgrounds, it also has implications for the integration of women on campus. Most students and administrators suggest that little distinction between men and women exists in the classroom; however, some students admit observing that greater pressure exists for women on campus, both in academic and social contexts. Encountering the hegemonic masculinity of
intellectual and physical domination, deeply rooted in the institution’s military history and values, women face double standards and have to be better or just as good as the men students to be taken seriously. As Geneviève shared:

It’s true that we sometimes have the impression that we should further prove ourselves that the men. And, it’s true that I know certain girls who have a hard time while studying at l’X. I don’t have any worries, but I know that - as there are no secrets at l’X, everyone knows everything, and the girls take it a lot more personally than the guys - the girls are judged a lot more harshly than the guys. But I think that’s the case in all engineering schools.

As this respondent implies, not only are women students expected or demanded to be just as strong or stronger as the men students academically in order to be regarded as legitimate students, but they also must comport themselves according to higher and more stringent moral standards in order to remain respected. Another woman, Laetitia, shared that women students do not enjoy as much social – and sexual - freedom as men students. If a woman student is flirtatious or gives the impression – whether it is true or not – to have had several partners, she is easily labeled as promiscuous. Men students, however, do not face this judgment:

I would say that there are tensions – and it’s more vicious, because it’s hidden – in the relationships between men and women. (...) If a girl has some “aventures” (an affair or amorous relationship), regardless of the length of time, with several polytechniciens, she would be really badly seen, while a man can have plenty of relationships. (...) And no one would say anything because it’s normal, in fact. (...) I know that for certain girls, that was really cruel, and they had a bad experience on campus because of that. (...) No one makes a remark when a man does what he wants. Why the girls? They are treated in really disgusting manner.

In the context of a nationally oriented, military institution, men’s amorous conquests are considered normal and proof of their masculinity. Women, however, long associated with being the “mothers of the nation” (Yuval-Davis and Anthias 1989; McClintock 1993), have less sexual

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74 Similarly, Sabatier, et al. (2006) has found that in academic careers, women require a higher involvement in networks to be promoted.
freedom, as multiple partners conflict with long-held notions of a patriarchal nuclear family (Engels 1884).

Although many respondents dismiss notions of gender difference at l’X, gender is visible in particular ways at l’X, as these students reveal. The students, alumni, and administrators who consider l’X in gender-neutral terms are likely accustomed to being in an environment where the gender balance is not only heavily weighted toward the masculine, but also in which notions of hegemonic masculinity are largely prized. Many women students said that while their percentage may be a bit lower at l’X, they had been underrepresented during the classes préparatoires or in their previous university training; thus, they do not notice much of a difference in the type of environment they experience at l’X. Furthermore, the careers they envision entering – in the STEM, industry, and finance fields – lean toward a heavily masculine representation. Some students and administrators – all of whom happened to be men – actually suggested that the polytechniciennes will be advantaged in their careers because of their underrepresentation in the STEM fields. According to these respondents, women who have passed through the prestigious X will be particularly attractive candidates, especially in firms seeking to achieve gender parity, as they bring both the symbolic capital of l’X and their gender to the table. Additionally, students shared that on campus, women enjoy some advantages in terms of choice of athletic activity and participation in the student associations, which seek to increase the representation of women. As Colette shared, women often are treated with special attention on campus because there are so few:

\[75\text{While the data I found on gender representation in the polytechnicien athletic activities was sparse, it suggested that women and men are represented unevenly. In 1998, a year for which data was available in the Rapport d’Activité, women made up approximately }\frac{1}{3}\text{ of the participants in equitation and in swimming. No women participated in rugby or soccer, however. The sports with the greatest numbers of participants were swimming (43), soccer (43), and rugby (49), which suggests that a number of men on campus remain largely among men in their living environments.}\]
I think that globally, it is rather advantageous to be a girl at l’Ecole polytechnique. For a number of reasons: in terms of having choices, as they want to have girls everyone, we are favored. For example, when we choose our sports, the girls, in general, have their first choice, while the guys don’t necessarily have theirs. (...) People think that it is good that we are here, that we have a different vision of things. And it’s the same to enter clubs that are rather closed. (...) We’re also perhaps a little *chouchoutées* (spoiled or treated with special attention) by our military leaders and fellow *polytechniciens*; when we need help, they are nice. I think it is rather good to be a girl at l’X.

While likely not intentional, these “advantages” experienced by women students at l’X is reminiscent of Hester Eisenstein’s (2009) study of the “femocrats” of the Australian government. Eisenstein has argued that the liberal feminist movement and its ideals have been co-opted by policy elites to foster a “free-market feminism” that uses women’s productive, reproductive, ideological, and political labor to advance neoliberalization by equating work with liberation.

Similarly, students noted that women’s underrepresentation and thus heightened visibility on campus potentially makes it easier for them to be “known.” Women students are known by name, and also very much solicited with social attention by men students as girlfriends. Several foreign women students commented on this aspect and how it helped them to integrate on campus. As this foreign student, Reva, shared, men students were quite attentive to her and helped her, which aided her integration:

> I participate in (sport), and even with the boys, I participated a lot. And they were very, very kind because I am a just a little girl, and the boys are all so big. They are all so kind with the girls. (...) That helped me to integrate.

This woman’s explanation seeks to neutralize any negative aspects of gender difference that might be negative to women. At the same time, her example presents a paternalizing behavior by the men students toward women, who are “big,” “strong,” “capable,” and willing to help the enfantalized “little girl” who needs their assistance. Such perspectives and relationships, when
occurring more broadly on campus, create hierarchies of value and capability between men and women, which become internalized, as the example above shows, so that women believe that they are not as accomplished, autonomous, serious, and strong as men.

At the same time, the women at l’X are not necessarily considered “typical” women. Accustomed to the masculine atmosphere of their classes préparatoires and the generally masculine STEM environments, many have assumed the hegemonic masculine characteristics expected of them to succeed. They are seen as women who have strong personalities, as they have been formatted to learn how to talk and be heard among men. Adèle shared how they are not “average” women:

In fact, I think that the girls who are here (…), they are not the average girls, I want to say, because in fact, they are girls that - quote-unquote - know how to impose themselves, don’t let themselves be pushed around, and that have a very strong personality. (…) In fact, the girls impose themselves very strongly at l’Ecole. (…) In fact, you can find more fragile people among the guys than the girls. (…) And because the girls have a strong personality, the relationships among girls are often a little tense. (…) I have essentially guy friends…

Moreover, the women students sometimes adopt and deploy “macho” attitudes, even reproaching each other according to the hegemonic masculine schemas that suggest that women are less intellectually capable and should exercise less sexual freedom than men.76 As depicted by Laetitia:

I think that there are certain girls at l’X who are macho, too, who have the same attitudes, as they are in the same environment as men, they begin to have their reflexes. For example, they begin to treat other girls as whores, while normally, girls don’t do that – we should have solidarity among us – but that’s because we adopt the reflexes that surround us, and so maybe we become masculine, too…

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76 Powell, et al (2009) has documented how women engineers take on anti-women stances, positions, and activities, which do not challenge their gendered professional environment, as coping strategies to be accepted.
Like the polytechnicienne above, several women students noted that they were more likely to be friends with men students. Foreign women students, in particular, shared this feeling. They tended to develop relationships with men students or with other foreign women students because the French women often came across as arrogant “princesses,” as foreign woman student Diana remarked:

To be an “Xette” is a little complicated. Generally, the girls at l’Ecole polytechnique are a little particular. These are girls who have studied primarily science, and were locked in the classes préparatoires during 2 or 3 years. They are - how can I say it? - they are not the easiest girls to talk with, that’s for sure. They have succeeded to enter Polytechnique, and they believe themselves to be little exceptional “françaises.” I can say that finding friends among the girls, it is a lot more complicated than among the guys, that is for sure.

By privileging hegemonic masculine norms and even achieving success in this context, women students at l’X thus participate in a reproduction of these norms and accordingly the boundaries associated with them. At the same time, such pressures and associated attitudes embraced by these women students thus offer mixed prospects for solidarity among the women students, much less changes in the system that would break down the hegemonic norms. The competition, individualization, and self-development championed by the hegemonic masculinity of intellectual dominance are portrayed as the ultimate goals for women, although stymying opportunities for collectivity.

**Normalizing Gendered and Sexualized Images**

While few students discussed it as such, integration at l’X can also imply negotiating specifically gendered and sexualized environments that feed into the institution’s hegemonic masculinity,
particularly as part of its extracurricular and social activities. As one French student, Luc, shared when asked if he thought there were gendered differences in the experience on campus:

Oh, yes! Oh, yes! By the way, that is one of things that I can stand the least – and it is also one of the reasons why I am not in the clubs. Regardless of the association, in fact, there is, in permanence, a sexist ambiance – that is what I find. (…) I think that there is a comportment, a manner of thinking, that is so deeply anchored, that is so natural, that in fact, we are no longer aware of it. For example, if there is a woman who comes to speak in the amphitheater, people whistle when she gets on stage. And people say, “Well, maybe it’s not normal,” when it is really something revolting.\footnote{Several French men students commented on the masculine atmosphere and how a woman (political) minister had been received when she came to the campus to give a presentation. Apparently, her presentation was not necessarily well done, and thus during her talk, the students were noticeably disrespectful and engaged in whistling, laughing, and commenting loudly. The respondents pointed out that if it had been a man who had presented, this type of reaction would never have occurred; rather, the response would have been more subdued. Yet, for the woman, they were without pity.}

Luc went on to describe the very gendered images and relationships drawn upon to publicize student organizations:

For example, the association that is in charge of making video clips, there are tons of clips that are sexist. I have one in mind: it was in the beginning of the year when they presented different sporting groups. They presented tennis, and we see a girl in the tennis section that was in her room, and then there are four guys from the tennis section that enter in the room, and then there is the commentary: “Yes, because tennis is also a team sport\footnote{Hinting at group sex}.”

Several members of the polytechnicien community also shared observations of \textit{“limites pornographiques”} (“nearly pornographic”) club posters displaying scantily clad women in order to advertise events. Furthermore, a couple of students shared that they fall in to gender-typed roles and relationships within the functioning of clubs, with women students often taking on service roles – such as the secretary - or as cheerleaders for the men\footnote{In his study of the \textit{grandes écoles}, Gilles Lazuech (1999) also found that women tended to be involved in the associations with the smallest budgets.}. Yet, as the student above noted, these gendered relationships are anchored so deeply as part of the hegemonic masculinity
that they are often considered “normal;” this respondent was among the very few to point out such instances where women are subordinated.

Similarly, like in many environments of young people, student parties also often have heavily masculine atmospheres, where students drink lots of beer, use vulgar language, and tell sexist jokes; as foreign student Li Wei put it, “half of the clubs are for partying, and the other half for drinking, as is the ambiance in engineering schools.” As is the case for many young people, attending parties on campus offers an important social outlet; however, these moments are often “heavy” for women students. A few administrators suggested that this atmosphere is to be expected, as this member of the administration described here:

There is, all the same, an element of “boys’ school,” that is maybe a little difficult, with jokes that are more or less tasteful during the activities and moments of integration. (…) And even in the little weekly student journal that is diffused, it is true that there are things that are not very flattering for these poor ladies, and that is a little unhappy.

Yet, he continued by imagining that women are strong enough to cope with this type of atmosphere:

But, in the end, well, I think that they are sufficiently astute to pass above it…

Overall, women are expected to be sufficiently strong enough to pass above comments that point to their subordination. Rather than changing this masculine atmosphere, it is assumed that women will just have to deal with it by ignoring it or not letting it bother them; they are expected to “conform” to the system in place that privileges notions of masculine domination, thus engaging in the reproduction of the norms of this hegemonic masculinity.

Accordingly, gender equality initiatives are minimally visible and attended to at l’X. While some cohorts of students demonstrate greater interest than others, there is not a strong
initiative among the women students to enhance the gendered atmosphere and equity at l’X. Some students attend seminars on gender equality, particularly those featuring alumni who talk about how to balance work and family; however, most women students have thus far have not felt disadvantaged in terms of their gender and thus feel little need to address the issue. As a woman professor intimated, having grown accustomed to being in masculine environments as students, it is more likely that as alumni – when polytechniciennes enter the workforce and face work-family conflicts – that these concerns will become more real to them.

**Violence and Secrecy**

One of the especially heavily masculine aspects of l’X, which has experienced a controversial history, is the Khômiss. While different sorts of hazing activities have occurred throughout the history of l’X (Callot, et al 1993), the Khômiss is particular. The Khômiss is a select, fraternity-like association, led by the “GénéK,” elected by the polytechnicien students. This individual then chooses twelve other student members, who follow the “Code X” series of rules; their identity remains secret throughout the year, and when they appear in public, they wear masks that ironically resemble the headdresses of the American Ku Klux Klan. Overall, through “jokes” and hazing activities, Khômiss seeks to perpetuate the “values” of l’X, as foreign student, Hualing, illustrated:

> The mission of this association is to defend the interest of the students in relationship to l’Ecole. I can give you an example: there was an augmentation in rent by the housing office, and this association, the

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80 The Ku Klux Klan is a secretive, fraternity-like hate group that has existed in various iterations in the United States since the Reconstruction years following the Civil War, although membership has decreased dramatically in recent decades. Members wear white masks and robes. Self-described as nationalist, it carries out violent acts against non-white groups, namely blacks, often leaving burning crosses as a sign of their involvement. While polytechniciens acknowledge that the Khômiss uniform resembles that of the Ku Klux Klan, they resolutely refuse to change it, claiming that the Khômiss existed prior to the KKK and is thus thoroughly different and exempt from any sort of association.
Khômiss, thought that it was against the interests of the students, so they went and broke the door of the housing office; they ripped up all of the files; they broke the table…They did things that were a little violent to show their displeasure, to defend the interests of the students. What is particular is that they do things that are a little extreme, often violent or related to sex.

During my interviews, a couple of women students recounted a disturbing occasion involving a high-ranking member of the administration. In the midst of a ceremony marking the beginning of the academic year, the Khômiss arranged a stripper to appear on stage during the presentation of this polytechnicien official. As the students explained, this joke was to show the solidarity and strength of the student body in face of the administration. This “joke” was initially well taken by the administration, and the general atmosphere of the auditorium was one of laughter and whistles. However, several of the women students were profoundly disturbed by the event and the administration’s lackadaisical response, particularly as an image of the institution and its environment for incoming women students. A couple of the women students actually went to speak with the high-ranking official about the incident; while he sent an email to the student body to “apologize” for the occasion and its apparent lack of repercussions, his email was interpreted as a joke by these women students.

While only a minority of students participate in the Khômiss, its presence as potential symbol and champion of the students presents an image rooted in values of violence and defiance, which do not necessarily encourage inclusivity of all students and instead foment the institution’s hegemonic masculinity rooted in domination and violence. Following recent hazing activity that included a kidnapping incident in 2013, the Khômiss was disbanded by the institution’s administration (Brafman 2013). The historical presence of this group, however,
illustrates the deep-rooted, hegemonic masculine nature of l’X, in which women are expected to conform, rather than to challenge.

**Conclusion**

Overall, behind the “polytechnicien” label exist several cleavages that pose potential challenges to the creation of a homogenous *esprit de corps*. Prior to the admission of women and foreign students through the *concours voie 2*, integration at l’X occurred primarily though engagement in campus life – in the clubs and associations on campus. While this still remains an important tool for integration on campus, meaningful distinctions emerge with the addition of women and foreign students through more informal mechanisms, notably according to the contours of hegemonic masculinity. Primarily concerning foreign students, differences in academic background, expectations for the *polytechnicien* experience, and engagement in campus activities create distinction between *polytechnicien* students. Women, however, face other challenges to integrate in a masculine environment that thus ironically hampers their own collective solidarity and their attention to gendered relationships and inequalities. Rather than challenging the hegemonic masculinity of l’X that promote violence and denigrate women, women students are instead encouraged to downplay these problems and accept them as normal, which thus contributes to their perpetuation.

This chapter thus points to the importance of contextualizing hegemonic masculinities amid the flows of globalization. While neoliberal global capitalism promotes a particular cosmopolitan “business masculinity” (Connell and Wood 2005), national notions of masculinity still exist and may serve as the dominant reference, even being emphasized to ensure continued legitimacy in relation the presence of others, such as women and foreigners. At the same time,
the culture of masculine-dominated clubs, associations, parties, and secrecy is not circumscribed solely in France. Studies have documented similar environments, such as “fraternities” and heavily masculine military academies in the United States (Snyder, et al 2012).

While this chapter has not set out to measure the effects of the distinctions it identified, it does call attention to their potential importance, particularly if their weight affects network solidarity among alumni. As shared values, cultures, and lifestyle markers have been found to be key factors in hiring decisions and professional advancement, the distinctions made among polytechniciens on campus may bleed into their trajectories following their studies (Lamont 1992; Rivera 2012), thus creating hierarchies even within the elites. In an environment characterized by growing individualism and risk, these cleavages challenge the continued solidarity and power of the polytechnicien network. Additionally, this chapter suggests that the internationalization and diversification of l’X reveals the flaws in the notion of republican universalism. Women and foreigners are clearly considered as different and not equal to the hegemonic masculine ideal.
CHAPTER 8 – CONCLUSION

In this project, I have examined how the modern contract between the nation-state and higher education is changing in the contemporary era of neoliberal globalization by focusing on how national systems of elite reproduction are challenged by neoliberal globalization. Focusing on the case of France, it offers an empirical window into how national elite higher education grapples with the tensions of competing values and discourses of “meritocracy.” It suggests that the French nation-state and its elites endeavor to preserve legitimacy nationally and secure legitimacy internationally by seeking to protect their advantaged positions and distinctive “French” values – notably the French notion of meritocracy - and by ensuring continued access to privileged resources, notably knowledge-creation resources of institutions of higher education and well-trained minds, not only in France, but beyond its borders. In doing so, however, the citizenship ideal of “republican universalism” remains largely unachieved, as important gatekeeping mechanisms, such as the school and the family, perpetuate social reproduction, and a nationalistic hegemonic masculine ideal contributes to stratifications along the lines of gender, class, race/ethnicity, and nation.

France has served as a particularly illuminating context for this study. The French elites are ostensibly the paragon of meritocratic achievement in the nation state’s citizen-forming education system. Yet, the processes of contemporary globalization and neoliberalization, which complicate the sovereignty of nation-states, the role of higher education, and the exclusive ties between common notions of “nation” and “citizenship,” consequently unsettle and question the values and structures that undergird the nation-state and the construction of its elites.
Spread of “Meritocracy”

As neoliberal globalization returns to the abstract concepts of “individual” and “freedom” privileged in Liberal Enlightenment theory, discourses of meritocracy are becoming more and more prominent across national borders. Social organization, access to work and material resources, and achievement according to notions of meritocracy are increasingly understood as legitimate, natural, and just. Similarly, notions of human rights, democratic equality, and citizenship have also been in the circulation of global discourses, particularly with the development of supranational organizations and transnational networks (Boli and Thomas 1997; Thayer 2010), even if these are locally adapted. Theoretically, this increased attention brings greater focus on existing national education systems, even those defined as “meritocratic,” yet in which social reproduction occurs rampantly, such as France.

Nevertheless, much of the discourse around “meritocracy,” “equality,” and “citizenship” remains largely abstract, both at the national and international levels. Deep critical attention is rarely given to the particular social structures that construct, understand, foment, and/or hinder these values. Furthermore, the power to define such structures and criteria largely remains in the hands of the national elite and privileged classes. Thus, such discourses around meritocracy serve as a form of symbolic violence. The misrecognition of the power dynamics surrounding the criteria and structures that define meritocratic achievement and, accordingly naturalize this achievement, identified by Bourdieu ([1989] 1996, 1984), still exist in France, as this study demonstrates. Elite recourse to the discourse of meritocracy continues to legitimate and entrench the structures that privilege their position.

However, in this study, we see the national contours of this meritocracy. The notion of “meritocracy” has long undergirded the French education system and the ideal construction of its
elite. L’X, serving as the apogee of the French education system constructed around the notion of meritocracy, is intimately attached to this notion. As I have showed, acknowledgement of other types of meritocratic achievement or excellence through a separate *concours* for foreign students was approached with caution, hesitation, and skepticism by administrators and alumni so that the historic value of l’X and its excellence would not be questioned.

In the context of neoliberal globalization, multiple discourses of meritocracy, attached to internationalization strategies, potentially unsettle this misrecognition by bringing to the fore different criteria, measures, and structures of excellence and achievement. Accordingly, the nation-state of France and its elites seek to remain legitimate by emphasizing their own discourse of meritocracy and by controlling their international engagement. Through strategies of internationalization, French institutions of higher education, such as l’X, appropriate and define global discourses of “meritocracy” and “internationalization”\(^81\), and thus structure international engagement – for themselves and for others. As we see with the case of l’X, this international engagement is seen as necessary to be considered elite at the global level. Yet, amid this international engagement, to guard its national particularities and legitimacy, l’X continues to tout the notion of meritocracy through the traditional *concours*, primarily according to its particular structures and criteria in France. As such, discourses of meritocracy in France continue to privilege the elite, particularly those who have the social, cultural, and economic capital necessary to understand, access, and thus take advantage of the education system, and even, paradoxically, international and global opportunities. It serves as a conservative force to maintain its current education system that they are able to navigate well.

\(^81\) And “diversification”
While the *concours* to enter the *grandes écoles* has certainly adapted along with broader advancements of knowledge over the past two centuries, this filtering and sorting tool has remained in place, along with the prestige accorded it. Moreover, as the *concours* is considered a tool of “meritocratic” selection, its existence is not necessarily questioned; instead, it may even be conferred greater confidence as a tool that assures and legitimizes French meritocratic achievement. As this study suggests, the furor and concerns around the possibility of a different *concours* in order to allow students who had not passed through the particularities of the French education system – notably, the *classes préparatoires* – enter l’X suggest that these elements of the system hold a rather sacred value in the context of the French nation-state. The *concours* is still considered a valuable and legitimate tool that can identify the best students; from this perspective, other entry routes could potentially reduce the quality associated with *polytechniciens*. Perhaps more importantly, however, national elites continue to cling to it as “proof” that they deserve their elite position in the framework of a system that is considered legitimate and meritocratic, claiming individual achievement and not other forms of capital. Questioning the system would instead question their place and threaten the legitimacy of their elite position.

With France’s colonial history, this international engagement – notably the efforts to “skim the cream” and attract talented students from abroad to benefit the French nation-state – raises questions about potential reconfigured colonial endeavors. While the colonial and postcolonial legacies of France still remain, new relationships and dynamics are also at play. The extraction of talent from regions considered less developed to benefit Western developed nations like France through the internationalization of higher education does resemble colonialism. France does continue to exploit its ties to former colonies, particularly in North Africa, as
sources of talented students. At the same time, its focus has shifted to other regions of the world, such as Asia and South America, seen as regions with important potential talent. New relationships are being created and exploited.

At the same time, while global competition was a factor of previous colonial dynamics, the contemporary global competition is different. Additional actors, and centers and flows of power are engaged, wherein the nation-state is only one actor – albeit strong – among many, seeking to negotiate its place and power (Sassen 2001, Castells 2001, Beck 2008). Additionally, individual subjectivities have changed in important ways. National attachment, while still relatively robust in France, is less central in individuals’ identities (Power, et al 2013; Brooks and Water 2010), as other attachments – professional, religious, social movement – also play important roles. Despite its importance for the nation-state, attachments and identities beyond the nation and linked to the “global” are in fact emphasized in the internationalization of higher education. Furthermore, the individual actor, in fact, is intimately tied to the project of higher education internationalization, as s/he must be motivated to cross borders for research, study, or work.

**Hegemonic Masculinity and Globalization**

The French notion of meritocratic achievement in relation to l’X is also interwoven with gender and nation. As this study shows, integration at l’X occurs around a model of hegemonic masculinity of intellectual and physical domination, which, as a consequence, privileges native-born French men who are active in campus clubs and athletics. Such privilege is bound up in the hegemonic masculinity tied to the notion of the French technical and military elite, which resonates beyond French geographic borders. The intellectual and physical dominance held up as
the polytechnicien ideal bestows the greatest value on those who have succeeded to pass the French concours; it further consecrates their achievement as being legitimate and just. Polytechniciens who have not entered via the traditional concours are considered less elite, thus creating hierarchies even within the elites. The existence of such hierarchies in an institution claimed to be at the epitome of a republican universal and meritocratic system highlights the flaws of the ideal concepts of republican universalism and meritocracy.

Additionally, this study points to the importance of contextualizing hegemonic masculinities amid the flows of globalization. While neoliberal global capitalism promotes a particular cosmopolitan “business masculinity” (Connell and Wood 2005), national notions of masculinity still exist and may serve as the dominant or competing reference, even being emphasized to ensure continued legitimacy in relation the presence of others, such as women and foreigners. Calling attention to hegemonic masculinities in this context demonstrates the importance of bringing an intersectional analytic perspective to the study of globalization and higher education. The presence of a hegemonic masculine ideal in the context of this study further confirms that the binaries of gender (woman-man), class (poor-wealthy), and nation (foreigner-national) are insufficient to understand the contemporary dynamics of globalization. Such dimensions are constructed in relationships and in complex hierarchies.

More broadly, the culture of masculine-dominated clubs, associations, parties, and secrecy found at l’X is not circumscribed solely in France. Studies have documented similar environments, such as “fraternities” and heavily masculine military academies in the United States (Snyder, et al 2012). Women from minority groups at West Point, for instance, have highlighted their surprise at how the racial and ethnic diversity diminished dramatically for them upon entry (Winter, et al 2014). Much literature has also explored questions of diversity in
institutions of higher education (Bacchi 2001; David 2009; Sabbagh 2011). Studying diversity in France poses particular puzzles and challenges due to the republican universal ideal, as claiming identity beyond one’s national citizenship and gender is frowned upon. Affirmative action-like strategies, which are comparatively more common in the United States, are quite rare in France, save for the ingenuity in the efforts of Sciences Po, which tried to get at race/ethnicity through social class and geographic location (Sabbagh 2011). Across both national settings, however, we see that transformational change is rather limited and would instead require greater intentional efforts and systemic change. Even at a more modest scale at l’X, opening to greater diversity would require more deliberate effort and change within the institution, including from the military and academic leaders themselves. Because the institution remains primarily in the hands of men and the military, which brings a very conservative character to the institution, there is minimal incentive or threat of major change to the masculine traditions, atmosphere, and attitudes that enrobe l’X.

**Higher Education and the Nation**

As this study shows, the concept and discourse of “meritocracy” involve social contours of class, gender, race/ethnicity, as well as nation. Systems and institutions of higher education that tout “meritocratic” recruitment are deeply implicated in these discourses and thus in the symbolic violence attached to meritocracy. For employment opportunities that feed into or compose elite and individually lucrative professions, attending an institution of higher education is considered vital. Such professions are increasingly found in the “knowledge economy,” such as in the fields of engineering, technology, scientific innovation, and finance, considered vital for contemporary economic development and national defense.
While also offering opportunities, the democratization and globalization of education potentially pose apparent threats to developed nation-states, who now find greater global competition for resources. Education is still largely understood in the context of national systems, and higher education is seen as a crucial resource for nation-states. Higher education is understood as the key industry to enhance national competitiveness through its knowledge generation and sale of services, which has overshadowed its conception as a “public good” (Naidoo 2003). As there is no supranational organization that oversees the coordination of international flows of higher education, nation-states and individual institutions of higher education remain the key actors in international processes and exchanges. Nation-states organize, govern, and exert control over institutions of higher education in myriad ways. Nation-states considered developed and wealthy generally have relatively extensive educational resources and advanced minimum educational requirements for their populations. Such nation-states seek to generate wealth through material and immaterial resources created by a well-educated population; and those that have already developed advanced educational infrastructures have a certain “head start” on others.

Despite discourses encouraging international mobility and cooperation, in addition to meritocratic achievement, many nation-states still endeavor to maintain their power and sovereignty (Calderone and Rhoads 2005; Kwiek 2008; Robertson and Keeling 2008), at least economically, and concurrently approach the forces of contemporary globalization hesitantly. France, in particular, as a powerful, centralized nation-state, seeks continual international recognition and distinction for its history, culture, and language, and is thus wary of forces that would dilute this recognition, even if these elements are rather mythical and/or have been achieved by force. Very tellingly, Altbach and Salmi (2011) explicitly state in their World Bank
handbook that research universities cannot be democratic if they are to pursue excellence in order to produce the global knowledge sector – the “top tier” in each country (16).

As we see, the internationalization and diversification strategies of l’X are about ensuring the continued preservation of an elite that will benefit France and maintaining its economic, political, and cultural dominance in the global field. Such strategies are structures and practices undertaken by the French nation-state to guard its legitimacy, dominance, and advantaged position as a site of STEM excellence in the world. The notable changes undertaken by l’X in terms of its internationalization and diversification strategies concern elite levels of education, research, and professional insertion; they do not specifically aim to broaden access to who can participate, whether in France or elsewhere in the world. As Alison MacKinnon and Ann Brooks (2001) have described the internationalization initiatives in several Anglophone settings, the focus on wealth generation tends to push questions of equity aside. Additionally, the practices and processes that compose internationalization and diversification strategies thus shape how globalization occurs and who participates in which kinds of flows. France demonstrates both deliberate, targeted recruitment abroad, linked to foreign policy issues, as well as more arbitrary recruitment efforts based on previously established connections.

Although state-mandated initiatives to increase the number of scholarship students and foreign students signal attempts to increase student diversity and the accommodation of nontraditional students, these remain primarily symbolic, resembling efforts in the United States in which Civil Rights and other reforms have been perverted to become tools of performance and capital generation, or ultimately diluted in relation to their original conceptions in terms of Civil Rights legality (Slaughter and Rhoades 2004, David 2009; Dolgon 1997; Edelman, Fuller, and Mara-Drita 2001; Kalev, Dobbin, and Kelly 2006). Such strategies and changes are primarily
used to fulfill diversity requirements and narratives to ensure institutional competitiveness. While Carmen Luke (2001) has suggested that the demands for performance and meeting diversity measures can actually benefit women and other underrepresented groups of people by ensuring their inclusion as a measure of institutional quality, I argue that this ignores the further entrenchment of neoliberal governmentality in higher education institutions.

**Meritocracy, Symbolic Violence, and Globalization: France vs. “the World”**

At the same time, the primacy of individual achievement attached to French “meritocracy” tends to mask the importance of social context within industrialized and developed nation-states. With well-anchored discourses of meritocracy, achievement often becomes attributed to individual effort, rather than one’s social location. In this context, Bourdieu’s notion of symbolic violence continues to be apt; the capital necessary to understand educational pathways and access routes, develop talents, and cultivate a habitus appropriate for educational advancement is masked by the notion of the individual. National elites still exercise symbolic violence, clinging to discourses that naturalize achievement. In France, this discourse serves as a conservative force to further legitimize its own education system, particularly in face of global flows that potentially question the particularities of this system. As Robinson (2011) has argued, national elites depend upon the social reproduction of national popular and working classes for their own reproduction. They thus require continuation of the social structures and processes that make this reproduction possible, such as the national education system.

We see in the case of l’X that the majority of students originate from families who possess important cultural, social, and educational capital. Families who know how to navigate the education system, particularly the scientific disciplines, serve as important gatekeepers for
l’X. While Bourdieu (1984, [1989] 1996) also found social reproduction among families, this social reproduction takes on another meaning in the contemporary age of globalization. With rollbacks of the welfare state, families place even greater emphasis on educational attainment and maintenance of cultural and social capital (McDowell 1997; Brooks and MacKinnon 2001). In France, there has been a noted increase in the engagement of parents with institutions of higher education to ensure their children secure profitable places (Van Zanten and Robert 2000; Daverne and Dutercq 2008). Students at l’X emphasized their parents’ engagement in helping them structure their academic paths and encouraging them to go for “the best” so that they will have optimum future security and choice. More broadly, with such tight links between the elites of the state, industry, business, and research, in whose interest it is to engage in structural or systemic changes only when it will benefit them, there is little chance that change initiatives will benefit the most disadvantaged at either the national or international level.

On the other hand, globalization does potentially pose questions to the notion of “meritocracy” embraced in France. The popularly accepted decontextualized and neutral notion of meritocracy bumps up into several complications in the context of contemporary globalization with respect to the nation-state. As it privileges the idea of individual achievement, efforts to democratize educational opportunities and resources also become imbued with neoliberal entrepreneurial sentiments of discovering and unleashing individual talents and creating the *homo economicus* (Foucault in Read 2009). According to this logic, it is considered necessary and preferable to allow all individuals, around the globe, to participate in education so that the innate talents that they possess can be harnessed and well employed. Wealthy nation-states take advantage of poorly developed national education systems and willingly accord mobility to individuals considered talented in such systems so that they can fulfill their potential elsewhere.
Demonstrating important attachment to national borders and advantages, wealthy nation-states aim to position themselves as attractive destinations for foreign talent in order to take advantage of the talent outside of their geographic borders, thus both giving talented foreign individuals access to their relatively more advanced educational opportunities, as well as creating a privileged attachment and access to these foreign students’ talents for the nation-state. Despite its hesitation around diluting its prestige and attachment to French “meritocracy,” l’X opened another concours for foreign students. Upon entry, l’X assists foreign students who wish to pursue French citizenship with the necessary procedures, accordingly facilitating their attachments and contribution to France. The presence and success of foreign students who have had other training at l’X opens a small window that suggests that the sacred elements of the French system that attempt to assure a “meritocracy” are not ultimately perfect; there may be other structures, processes, and even ways of knowing that are valuable. These nuances suggest that located, process-based analyses of neoliberal globalization – or “neoliberalization” (Brenner, Peck, and Theodore 2010; Peck and Tickell 2002) - are important and better offer attention to context in order to challenge monolithic and universal understandings of globalization.

Concurrently, privileging of the individual poses questions in relation to national attachment. Nation-states, of course, differ in their extent of centralization, “neoliberalization” (Brenner, Peck, and Theodore 2010), and “internal denationalization” (Sassen 2010) in the face of globalization. Relative to other advanced, wealthy nation-states, the French nation-state remains strong, particularly with respect to its education system – its tool for cultivating national citizens (Power, et al 2013). Global forces and international careers that potentially encourage individualized career trajectories, for instance, potentially pose threats and question their elites’ sense of belonging and attachment, and thus their willingness to invest themselves in ways
beneficial to the nation-state. As this study shows, the Direction of l’X expressed concerns around international mobility, emphasizing that students should engage in careers that contribute to France, rather than entering the more “global” careers of finance and banking.

In this context of shifting attachments and augmenting risks, the fortification of elite networks, such as the *réseau polytechnicien*, become even more precious sources of support during the contemporary era of neoliberal globalization in which there is a greater perceived sense of general risk, as well as broader competition due to international mobility (Prokou 2008; Beck 2008). Members of these networks offer important social capital for each other; the “*polytechnicien* calling card” provides privileged access to professional (and personal) connections, time, and assistance. As there is generally less security and stability in the private sector than in the public *corps de l’Etat*, the social and cultural capital cultivated at l’X – through the development of an elite habitus and the nurturing of the *réseau* – are understood as valuable elements to which great attention is attributed. They offer potential resources that can secure stability in risky environments, such as business and finance, into which more and more *polytechniciens* enter as careers. Rollbacks of the French welfare state, coupled by shifting attachments to the “national” as *polytechniciens* assume posts abroad or careers with international employers, make the value of social capital even greater. Personal connections create a possible lane of preference for *polytechniciens*, countering risky or unstable employment situations.

Certainly, the existence of these networks does not imply an absence of change; as the case of l’X demonstrates, active members in the alumni network have been key promoters of change. They have been avid promoters of internationalization strategies, particularly the opening of l’X to foreign students, the encouragement of foreign language study, as well as the
development of international stages and study opportunities for all polytechniciens – elements that help cultivate a contemporary elite habitus in the global era. As access to elite professional positions in industry, business, and STEM research require these elements in an educational background, such changes are necessary in order for l’X and its students to remain among the elite players in the struggle for global dominance. Concomitantly, the development of the international network of polytechniciens offers a potential resource for France, and it has been in the interest of the polytechnicien network to encourage such changes. Less effort, however, has been made to institute equally extensive changes that would actually encourage a meritocracy that breaks with social reproduction in France.

**Final Reflections and Suggestions for Future Research**

Methodologically, this study suggests that scholars need to approach the study of higher education by going beyond “add-and-stir” models that assume that all of the underlying conditions that affect the institution of higher education and entry into it are neutral. It corroborates studies suggesting that diversity initiatives often serve as primarily cosmetic organizational exercises that do not question underlying structures or explicitly challenge other structural and systemic qualities that impede access. Higher education programs, services, and initiatives that seek to assist with diversity issues or cultural differences are often poorly funded, which impedes their effectiveness and points to a lack of sincere institutional support and legitimacy (Bacchi 2001; David 2009).

Additionally, this project targets an acknowledged gap in the English language literature on elite higher education, as much previous work in this area has focused on Anglophone settings or non-Anglophone countries where English was nonetheless embraced as the primary
academic language (Stensaker, et al 2008; Trondal 2010; Vidovich 2004; Tomusk 2002). The French case offers an insightful comparison to other national settings. As French higher education is relatively highly centralized, its public institutions provide a window into the French nation-state, rather than remaining primarily organizational studies. Moreover, as a foreigner conducting research in an elite setting in France, I have not only brought a unique perspective to the field, but was also able to gain access to a site where many local researchers may encounter more resistance. As such, it offers a unique contribution to this body of scholarship and interest to a broad spectrum of scholars.

At the same time, this study focuses on a very small and elite group of people in the world who have access to the “master’s tools” - and more (Lorde 1984). The boundaries they create are important, as they impact who is visible and invisible in internationalization, particularly in relation to discourses about developing a “global meritocracy” (Wildavsky 2010). While investing in this class of people is important, as their participation in the generation knowledge is valuable, the attention given to their advancement contrasts with that which is made for the majority of people in the world. Thus, the evocation of radical enhancement of contemporary meritocratic development and capital repartition around the world through higher education is largely off-mark.

Although this study involved multiple methods, future studies could further advance the work in this area. Survey research could potentially reach greater numbers of students and alumni. This research involved interviews, which are a useful tool to uncover the variety of perspectives among a group of people, as well as discrepancies between official discourse and subjective experience. Nevertheless, they also constitute second-hand information; I did not witness all that interviewees described or experienced. While full access to elite settings poses
numerous challenges for researchers, ethnographic work could more effectively capture and analyze the empirical, on-the-ground realities and experiences in elite settings.

Additionally, this study did not focus on the faculty at l’X. Internationalization and diversification strategies also impact the constitution of this group in higher education, their working conditions, and their mobility, not to mention the content that they teach or are encouraged to teach. Their engagement with and responses to such strategies would also be valuable to explore in order to further understand the types of knowledge created and shared in elite institutions and their importance in elite education. Similarly, the more organizational aspects of the internationalization and diversification of l’X were not fully explored in this research, but could also offer interesting insights.

The career trajectories of elite students deserve greater exploration. Given the relatively high frequency of job transitions and career advancements, collecting comprehensive data would pose challenges; however, with the development of institutional alumni associations and data collection capacities, such data may become available. Tracking the career trajectories of elite students would shed light on how elite careers evolve and the differences that may exist in terms of gender, race/ethnicity, nationality, and social class origins. In a related sense, examining alumni networks could also illuminate the potential strengths – and weaknesses – of elite solidarity and how this may or may not change over time.

Furthermore, this study focused on the case of l’X in France. While a particularly appropriate site to study the implications of internationalization and diversification on elite reproduction, it is also limited in its scope. Other grandes écoles exist in France, which train elite students for different careers and sectors of the economy; while universities train a larger swath of the French population, they do still touch academic elites. Comparative studies involving
multiple institutions could provide a fuller picture of contemporary changes in the elite and their institutions of higher education. Alternatively, comparative studies branching outside of France could better capture national nuances and points of contrast to understand more macro trends.

Returning to the French context, studies targeting different points of elite education, such as the collèges, lycées, and classes préparatoires, would also be useful. Common discourse conveys the understanding that inequalities begin early, and that students embark on particular educational trajectories quite early in France, with little opportunity for flexibility and change. Research could better interrogate such discourses and offer empirical evidence to confirm, disprove, or offer nuance to them, as well as to better understand students’ pathways. While some research has targeted these younger populations (Allouch and van Zanten 2008, Buisson-Fenet and Draelants 2013; van Zanten 2010; Adangnikou and Paul 2004), additional studies that focus on parental influence at these educational levels, student aspirations, and environmental encouragement, particularly with attention to gender, class, and national origin, would be welcome. Certainly, this would require appropriate access to these institutions and thoughtful attention and respectful research protocol with minors.

**Concluding Remarks - Why Does This Matter?**

Within the educational process exists an important tension. While cultivating certain norms and adherence to common ideas and practices, education also potentially fosters independent and critical thought, which may conflict with such norms, common ideas, and practices. The ideal balance between these “Janus-faced” tensions remains debatable; however, to achieve democratic civic education, education is essential (Bryan and Vavrus 2005: 183). As John Dewey (1966) has argued, education creates the “voluntary disposition and interest” necessary in
democratic society (87); it fosters the capacities to think critically and engage successfully in society, which gives meaning to elected governments. Indeed, studies show that the well-educated segments of societies tend to be the most politically engaged (Brooke Straughn and Andriot 2011; Nie, et al 1996; Rosenstone, et al 1993), notably if perceived legitimate democratic structures exist (Bolzendahl and Coffe 2008). As such, despite its engagement in the production and reproduction of social inequalities, the public education system also holds the key to democratic participation in society. And especially with the risks that (neo)liberal globalization poses to continue to pervert the sacred value of human beings and nature by conceptualizing them as objects on the market, or fictitious commodities, instead of recognizing their non-market values (Polanyi [1994] 2001; Marx [1867] 1978), democratic participation is an important goal. Nevertheless, it is fundamental to recognize the multiple, conflicting aspects and possibilities in education.

This project has attempted to speak to the conflicting elements of education. It has sought to illuminate how elite higher education institutions – and their constituencies - grapple with the contemporary tensions of neoliberal globalization and negotiate potentially competing institutional, national, and even global demands. It suggests that through its national educational policy, France and its elites seek to ensure their legitimacy and prominence, both nationally and internationally in the context of neoliberal globalization. Hence, the nation-state remains an important actor in the contemporary era of globalization. It shows how higher education policy directly impacts who has access to education, training, and resources, and thus the patterns of global educational and scientific development, the distribution of capital, and the reproduction and/or reconfiguration of the national and global elite during the contemporary neoliberal era.
Table 1: Changes in Polytechnicien Student Body by Gender and Nationality, 1970-2008

<table>
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<tr>
<th>Year</th>
<th>Students</th>
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<th>% Women</th>
<th>Foreign</th>
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Table 4: Changes in Polytechnicien Foreign Student Body (Percentage of Foreign Students by Region of Origin, 19702008
Year
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002

Number
306
313
315

%Foreign
2.61
4.79

287
269

4.44
2.09
2.60

311
315
314

3.86
4.13

325
322
330
326
331
345
354
365
358

3.18
5.85
4.35
6.67
5.21
6.65
6.67
6.21
8.49

0.00
6.67
0.00

% S Europe
25.00
13.33

0.00
0.00

7.14
0.00
14.29

8.33
15.38
20.00

8.33
0.00

21.05
21.43
0.00
0.00
4.55
4.35
4.55
3.23
0.00

0.00
0.00
7.14
0.00
0.00
4.55
4.35
4.55
3.23

330
331

6.15
5.15
6.34

5.88
14.29

4.55
0.00
0.00

361
390
408

5.82
5.90

9.52
17.39
8.00

0.00
0.00

420
431
421
427
428
432
460
464
443

6.13
4.52
7.66
4.99
5.85
7.48
8.56
12.83
14.01

501
497

11.29
20.56
23.54

2003
2004
2005

465
488
498

2006
2007

481
491
468

2008

% NW Europe

0.00
9.09
9.52
12.00
9.38
0.00
5.08
1.54
6.00

4.00
0.00
6.06
9.52
8.00
0.00
5.41
10.17
3.08

1.94
4.27

0.00
1.94
1.71

13.98
19.06
20.08

1.54
3.23
3.00

18.71
19.35

0.00
4.21
2.13

20.09

% E Europe and
Eurasia
0.00
0.00
0.00

% Asia
0.00
0.00

0.00
0.00

0.00
0.00
0.00

8.33
0.00
0.00

0.00
0.00

0.00
7.14
0.00
5.88
0.00
0.00
4.55
0.00
0.00

0.00
0.00
0.00
4.55
11.76
9.09
8.70
9.09
0.00

0.00
0.00

0.00
0.00
0.00

0.00
0.00
0.00

4.76
4.35

0.00
6.06
0.00
4.00
15.63
16.22
10.17
23.08
28.00

4.00
0.00
3.03
4.76
0.00
3.13
10.81
10.17
9.23

% SE Asia

% Mid East

% N Africa

% Africa

% N America

% S America

0.00
26.67
14.29

12.50
0.00
21.43

62.50
40.00
50.00

0.00
13.33
7.14

0.00
0.00
0.00

0.00
0.00

0.00
42.86

83.33
14.29

16.67
14.29

0.00
0.00

0.00
0.00
14.29

8.33
23.08
0.00

16.67
7.69
20.00

50.00
38.46
60.00

0.00
15.38
0.00

0.00
0.00
0.00

0.00
0.00

0.00
0.00
13.64

26.32
28.57
22.73

42.11
21.43
40.91

10.53
14.29
13.64

0.00
0.00
4.55

0.00
9.09
0.00

17.65
13.64
8.70

64.71
50.00
60.87

0.00
9.09
8.70

0.00
0.00
0.00

4.55
3.23
0.00

18.18
22.58
40.91

54.55
54.84
45.45

0.00
9.68
9.09

0.00
0.00
0.00

0.00
0.00

11.76
4.76

58.82
71.43

5.88
0.00

0.00
9.52

0.00
17.65
0.00

0.00
4.35
0.00

14.29
8.70
4.00

66.67
60.87
80.00

4.76
0.00
0.00

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0.00
0.0

0.00
4.35

0.00
3.03
0.00

15.79
9.09
9.52

78.95
54.55
61.90

5.26
9.09
4.76

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46.88
54.05

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37.29
41.54
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18.45
12.82

5.83
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19.42
31.62

6.80
2.56

3.88
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14.56
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22.33
14.53

4.00
4.85
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1.54
5.38
3.00

3.08
11.83
12.00

12.31
16.13
22.00

18.46
12.90
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3.08
7.53
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46.15
21.51
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2.00

9.23
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14.00

4.44
4.21

16.67
8.42
8.51

30.00
26.32

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8.42
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8.89
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14.44
26.32
22.34

5.56
2.11
2.13

1.11
1.05
1.06

14.44
18.95

2.13

34.04

20.21

216


Table 5: Changes in *Polytechnicien* Student Body (Percentage of Total Student Body) by Foreign Student Region of Origin, 1970 – 2008

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<th>%NEurope</th>
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<td>0.00%</td>
<td>0.71%</td>
</tr>
<tr>
<td>1993I</td>
<td>4313</td>
<td>7.66%</td>
<td>0.70%</td>
<td>0.46%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.23%</td>
</tr>
<tr>
<td>1994I</td>
<td>4219</td>
<td>4.99%</td>
<td>0.48%</td>
<td>0.48%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.48%</td>
</tr>
<tr>
<td>1995I</td>
<td>4273</td>
<td>5.85%</td>
<td>0.70%</td>
<td>0.47%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.47%</td>
</tr>
<tr>
<td>1996I</td>
<td>4287</td>
<td>7.48%</td>
<td>0.70%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.23%</td>
</tr>
<tr>
<td>1997I</td>
<td>4329</td>
<td>8.56%</td>
<td>0.00%</td>
<td>0.46%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.46%</td>
</tr>
<tr>
<td>1998I</td>
<td>4603</td>
<td>12.83%</td>
<td>0.65%</td>
<td>1.30%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.78%</td>
</tr>
<tr>
<td>1999I</td>
<td>4645</td>
<td>14.01%</td>
<td>0.22%</td>
<td>1.30%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2000I</td>
<td>4439</td>
<td>11.29%</td>
<td>0.68%</td>
<td>1.29%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2001I</td>
<td>5019</td>
<td>20.56%</td>
<td>0.40%</td>
<td>0.45%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.45%</td>
</tr>
<tr>
<td>2002I</td>
<td>4973</td>
<td>23.54%</td>
<td>1.01%</td>
<td>0.10%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.18%</td>
</tr>
<tr>
<td>2003I</td>
<td>6539</td>
<td>13.98%</td>
<td>0.22%</td>
<td>1.72%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2004I</td>
<td>4883</td>
<td>19.06%</td>
<td>0.61%</td>
<td>2.25%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2005I</td>
<td>4987</td>
<td>20.08%</td>
<td>0.60%</td>
<td>2.01%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2006I</td>
<td>4818</td>
<td>18.71%</td>
<td>0.00%</td>
<td>1.69%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2007I</td>
<td>4913</td>
<td>19.35%</td>
<td>0.81%</td>
<td>1.63%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
<tr>
<td>2008I</td>
<td>4689</td>
<td>20.09%</td>
<td>0.43%</td>
<td>1.71%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.43%</td>
</tr>
</tbody>
</table>
APPENDIX B

Table 6: Career Insertion by Selected Promotions (Percentages)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
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<tbody>
<tr>
<td>Corps de l’Etat</td>
<td>40</td>
<td>41</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>Technical Formation</td>
<td>33</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Industrial Business</td>
<td></td>
<td>30</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Bank/Insurance/Consultancy</td>
<td>21</td>
<td></td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Engineering Service</td>
<td></td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Other/Direct Career</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Unknown/No response</td>
<td>10</td>
<td>7</td>
<td>6</td>
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</tbody>
</table>

Source: Archives of l’Ecole polytechnique and Rapports d’Activité
Note: Approximate distribution in percentages, as numbers based on self-report alumni surveys and career field aggregates designated by l’Ecole polytechnique.
### APPENDIX C

**Table 7: Polytechnicien Alumni Interviewee Profiles**

<table>
<thead>
<tr>
<th>Name</th>
<th>Region/Origin/ Nationality*</th>
<th>Age</th>
<th>Gender</th>
<th>Father’s Occupation &amp; Degree</th>
<th>Mother’s Occupation &amp; Degree</th>
<th>Foreign Experience</th>
<th>Languages Spoken</th>
<th>Generations In France</th>
<th>Political Orientation+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angela</td>
<td>Eastern Europe/ Foreign</td>
<td>30</td>
<td>F</td>
<td>Accountant (High School Bac)</td>
<td>Accountant (High School Bac)</td>
<td>France</td>
<td>French, Romanian</td>
<td>N/A</td>
<td>No Indication</td>
</tr>
<tr>
<td>Gabi</td>
<td>Middle East/ Naturalized</td>
<td>43</td>
<td>M</td>
<td>Chemist/ Teacher (Baccalaureate)</td>
<td>Homemaker (High School Certificate)</td>
<td>USA 2 months</td>
<td>French, English, Arabic</td>
<td>First</td>
<td>No Indication</td>
</tr>
<tr>
<td>Gilles</td>
<td>Alsace/ French</td>
<td>47</td>
<td>M</td>
<td>School Principal (Baccalaureate)</td>
<td>School Assistant (High School Certificate)</td>
<td>Asia 2 months</td>
<td>French, English, German</td>
<td>Many</td>
<td>Liberal (Right)</td>
</tr>
<tr>
<td>Louise</td>
<td>Bretagne/ French</td>
<td>28</td>
<td>F</td>
<td>Engineer (Master’s)</td>
<td>Engineer/ Professor (Doctorate)</td>
<td>USA 1 month, Spain 2 months</td>
<td>English</td>
<td>French, English, Spanish</td>
<td>Many</td>
</tr>
<tr>
<td>Alain</td>
<td>Basse-Normandie/ French</td>
<td>27</td>
<td>M</td>
<td>Teacher (Master’s)</td>
<td>Teacher (Baccalaureate)</td>
<td>Asia 2 months</td>
<td>French, English</td>
<td>Many</td>
<td>No Indication</td>
</tr>
<tr>
<td>Pascal</td>
<td>Nord-Pas-de-Calais/ French</td>
<td>51</td>
<td>M</td>
<td>Engineer (Master’s)</td>
<td>Teacher (Baccalaureate)</td>
<td>Many short trips</td>
<td>French, English</td>
<td>Many</td>
<td>No Indication</td>
</tr>
<tr>
<td>Théophile</td>
<td>Basse-Normandie/ French</td>
<td>37</td>
<td>M</td>
<td>Artist (Baccalaureate)</td>
<td>Teacher (Baccalaureate)</td>
<td>Many 2-3 month trips in Americas and Asia</td>
<td>French, English, Spanish</td>
<td>Many</td>
<td>No Indication</td>
</tr>
<tr>
<td>Valérie</td>
<td>Champagne-Ardenne/ French</td>
<td>33</td>
<td>F</td>
<td>Entrepreneur (High School Bac)</td>
<td>Teacher (Master’s)</td>
<td>Germany 1-4 month, Spain 1 month</td>
<td>French, English, German, Spanish</td>
<td>Maternal, Many, Paternal</td>
<td>No Indication</td>
</tr>
<tr>
<td>Xavier</td>
<td>Bretagne/ French</td>
<td>39</td>
<td>M</td>
<td>Financial Director (High School Bac)</td>
<td>Teacher (Master’s)</td>
<td>Many 2-4 month trips in Asia, Americas</td>
<td>French, English, German, Spanish</td>
<td>Many</td>
<td>Right</td>
</tr>
<tr>
<td>Mathilde</td>
<td>Paris/ French</td>
<td>48</td>
<td>F</td>
<td>Engineer (Master’s)</td>
<td>Lawyer (Baccalaureate)</td>
<td>Many 2-4 month trips in Asia, Europe, and USA</td>
<td>French, English, German</td>
<td>Many</td>
<td>No Indication</td>
</tr>
<tr>
<td>Philippe</td>
<td>Paris/and abroad/ French</td>
<td>49</td>
<td>M</td>
<td>No Indication (Master’s)</td>
<td>No Indication (Doctorate)</td>
<td>Many 2-5 year trips in Asia and Americas</td>
<td>French, English</td>
<td>Second, third</td>
<td>No Indication</td>
</tr>
</tbody>
</table>

*Designates students who entered l’X via the concours voie 2 (alternative concours primarily created for foreign students)
The political party l'UMP (Union pour un Mouvement Populaire) is a right-leaning party in France that embraces classical liberal and neoliberal economic ideals. Given France’s developed welfare state and other leftist historical influences, the UMP has supported social policies that would be considered “leftist” with respect to the United States. Thus, as the main political parties in the United States fall farther right on the political spectrum than in France, the UMP would be most similar to the American Democratic party. The Parti Socialiste is a center/left-leaning party; the Front de Gauche is considered a far-left party.
<table>
<thead>
<tr>
<th>Name</th>
<th>Region/Region of origin/ Nationality*</th>
<th>Age</th>
<th>Gender</th>
<th>Father’s Occupation &amp; Degree</th>
<th>Mother’s Occupation &amp; Degree</th>
<th>Foreign Experience</th>
<th>Languages Spoken</th>
<th>Generations in France</th>
<th>Political Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michele</td>
<td>Corse/French</td>
<td>21+</td>
<td>M</td>
<td>Lawyer (Master’s)</td>
<td>Doctor (MD)</td>
<td>None</td>
<td>French, English, Corsican</td>
<td>Many</td>
<td>PartiSocialiste</td>
</tr>
<tr>
<td>Mattieu</td>
<td>Rhône-Alpes/French</td>
<td>20+</td>
<td>M</td>
<td>Dentist (Master’s)</td>
<td>Insurance Agent (Master’s)</td>
<td>2 weeks at each summer</td>
<td>French, English</td>
<td>Maternal</td>
<td>No Indicator</td>
</tr>
<tr>
<td>Honoré</td>
<td>Paris/French</td>
<td>20+</td>
<td>M</td>
<td>CEO (Master’s)</td>
<td>Professional Coach (Master’s)</td>
<td>Switzerland each summer, USA, 2 months</td>
<td>French, English</td>
<td>Third</td>
<td>No Indicator</td>
</tr>
<tr>
<td>Joseph</td>
<td>Paris/French</td>
<td>23+</td>
<td>M</td>
<td>Architect (Master’s)</td>
<td>Engineer (Master’s)</td>
<td>Asia 2 years, Africa 6 months</td>
<td>French, English, Italian, Spanish</td>
<td>Many</td>
<td>UMP</td>
</tr>
<tr>
<td>Jules</td>
<td>Provence-Alpes-Côte d’Azur / DOM-TOM / French</td>
<td>23+</td>
<td>M</td>
<td>Banker (Master’s)</td>
<td>Homemaker (Master’s)</td>
<td>Asia 1 month, South America 6 months, Currently in USA</td>
<td>French, English, Spanish</td>
<td>Many</td>
<td>PartiSocialiste</td>
</tr>
<tr>
<td>Adèle</td>
<td>Bretagne / French</td>
<td>24+</td>
<td>F</td>
<td>Electrician (High School Certificate)</td>
<td>Secretary (High School Certificate)</td>
<td>Americas Several months</td>
<td>French, English, Spanish</td>
<td>Many</td>
<td>Frontiére Gauche</td>
</tr>
<tr>
<td>Luc</td>
<td>Paris Region / French</td>
<td>20+</td>
<td>M</td>
<td>Doctor (MD)</td>
<td>Executive (Master’s)</td>
<td>England 1 year, 6 months</td>
<td>French, English</td>
<td>Second</td>
<td>Frontiére Gauche</td>
</tr>
<tr>
<td>Amalì</td>
<td>North Africa/ Naturalized / French</td>
<td>23+</td>
<td>M</td>
<td>Engineer (Master’s)</td>
<td>Literature Teacher (Baccalaureate)</td>
<td>Canada 2 years, months</td>
<td>French, English, Arabic</td>
<td>N/A</td>
<td>No Indicator</td>
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<td>Laetitia</td>
<td>Nord-Pas-de-Calais/French</td>
<td>24+</td>
<td>F</td>
<td>Engineer in Business (Master’s)</td>
<td>Science Teacher (Master’s)</td>
<td>Many 4-5 months, trips throughout the world</td>
<td>French, English</td>
<td>Many</td>
<td>UMP</td>
</tr>
<tr>
<td>Name</td>
<td>Region/ original Nationality*</td>
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<td>Gender</td>
<td>Father's Occupation &amp; Degree</td>
<td>Mother's Occupation &amp; Degree</td>
<td>Foreign Experience</td>
<td>Languages Spoken</td>
<td>Generations*</td>
<td>Political Orientation*</td>
</tr>
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<td>------</td>
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<td>------------------</td>
<td>----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Paolo</td>
<td>Southern Europe; Foreign*</td>
<td>24+</td>
<td>M</td>
<td>Manager (Master's)</td>
<td>Homemaker (Master's)</td>
<td>Many (1-12 months) trips in Europe &amp; USA</td>
<td>French, English, Italian, German</td>
<td>N/A</td>
<td>No indication</td>
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<tr>
<td>Marce</td>
<td>Languedoc-Roussillon, Central America; French*</td>
<td>20</td>
<td>M</td>
<td>Engineer (Doctorate)</td>
<td>Engineer and professor (Master's)</td>
<td>Central America; years</td>
<td>French, English, Spanish</td>
<td>Maternal</td>
<td>Particle Socialist*</td>
</tr>
<tr>
<td>Clotilde</td>
<td>Centre; French*</td>
<td>23</td>
<td>F</td>
<td>Veterinarian (Master/Doctorate)</td>
<td>Veterinarian (Master/Doctorate)</td>
<td>Many (3-5 months) trips in Asia and Americas</td>
<td>French, English</td>
<td>Many</td>
<td>No indication</td>
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<tr>
<td>Sabine</td>
<td>Midi-Pyrénées; French*</td>
<td>23</td>
<td>F</td>
<td>Engineer (Engineering degree)</td>
<td>Computer Analyst (High School Baccalauréate)</td>
<td>England; 1 year; USA 2 months</td>
<td>French, English</td>
<td>Many</td>
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<tr>
<td>Khalid</td>
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<td>M</td>
<td>Engineer (Master’s)</td>
<td>Science Teacher (Baccalaureate)</td>
<td>France</td>
<td>French, English, Arabic, Spanish</td>
<td>N/A</td>
<td>No indication</td>
</tr>
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<td>Hualing</td>
<td>Asia; Foreign*</td>
<td>24+</td>
<td>F</td>
<td>Not response</td>
<td>Not response</td>
<td>France; India 2 months</td>
<td>French, English, Chinese</td>
<td>N/A</td>
<td>No indication</td>
</tr>
<tr>
<td>Lit We</td>
<td>Asia; Foreign*</td>
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<td>M</td>
<td>Executive (Master’s)</td>
<td>Functionary (High School Baccalaureate)</td>
<td>France</td>
<td>French, English, Chinese</td>
<td>N/A</td>
<td>No indication</td>
</tr>
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<td>Marc</td>
<td>Rhône-Alpes; French*</td>
<td>23</td>
<td>M</td>
<td>Computer Technician (High School Baccalaureate)</td>
<td>Teacher (Baccalaureate)</td>
<td>Germany 6 months; Chile 13 months</td>
<td>French, English, German, Spanish</td>
<td>Second</td>
<td>No indication</td>
</tr>
<tr>
<td>Sophie</td>
<td>Nord-Pas-de-Calais; French and Polish*</td>
<td>22</td>
<td>F</td>
<td>Doctor (MD)</td>
<td>Doctor (MD)</td>
<td>Poland 2 months; Many 1-4 month trips in Europe and Australia</td>
<td>French, English, Polish, German</td>
<td>Polish mother; Paternal</td>
<td>Left-leaning</td>
</tr>
<tr>
<td>Name</td>
<td>Region of origin</td>
<td>Nationality</td>
<td>Age</td>
<td>Gender</td>
<td>Father’s Occupation &amp; Degree</td>
<td>Mother’s Occupation &amp; Degree</td>
<td>Foreign Experience</td>
<td>Languages Spoken</td>
<td>Generations in France</td>
</tr>
<tr>
<td>------</td>
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<td>----------------------</td>
</tr>
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<td>Foreign*</td>
<td>26</td>
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<td>Engineer (Doctorate)</td>
<td>Teacher (Baccalaureate)</td>
<td>France; Switzerland; 2 months</td>
<td>French, English, Chinese</td>
<td>N/A</td>
</tr>
<tr>
<td>Rafe</td>
<td>South America</td>
<td>Foreign*</td>
<td>23</td>
<td>M</td>
<td>Judge (Master’s)</td>
<td>Pharmacist (Baccalaureate)</td>
<td>France; England; 10 months</td>
<td>French, English, Portuguese</td>
<td>N/A</td>
</tr>
<tr>
<td>Nicolas</td>
<td>Paris</td>
<td>French</td>
<td>20</td>
<td>M</td>
<td>Researcher (Doctorate)</td>
<td>Researcher (Doctorate)</td>
<td>Spain; 0 months; USA; 2; Germany; 10 months</td>
<td>French, English</td>
<td>Many</td>
</tr>
<tr>
<td>Diana</td>
<td>Eastern Europe</td>
<td>Naturalized French*</td>
<td>25</td>
<td>F</td>
<td>Functionary (Master’s)</td>
<td>CEO (Master’s)</td>
<td>France; Germany; 1 month</td>
<td>French, English, Russian, Ukrainian, German</td>
<td>N/A</td>
</tr>
<tr>
<td>Etienne</td>
<td>Centre France</td>
<td></td>
<td>NR</td>
<td>M</td>
<td>Engineer (Master’s)</td>
<td>Master’s</td>
<td>Not more than a week</td>
<td>French, English</td>
<td>Beyond Third</td>
</tr>
<tr>
<td>Geneviève</td>
<td>Paris</td>
<td>French &amp; Italian</td>
<td>23</td>
<td>F</td>
<td>Executive Engineer (Master’s)</td>
<td>Master’s</td>
<td>Italy; 1 month/year; Many trips; Switzerland; 1-3 months in Europe; USA; Spain; 5 years</td>
<td>French, English, Italian, Spanish</td>
<td>Maternal First; Paternal; Many</td>
</tr>
<tr>
<td>Colette</td>
<td>Paris</td>
<td>French</td>
<td>21</td>
<td>F</td>
<td>Computer Engineer (Master’s)</td>
<td>Engineering Professor (Master’s)</td>
<td>Germany; 10 months; Additional trips</td>
<td>French, English, German</td>
<td>Many</td>
</tr>
<tr>
<td>Leandro</td>
<td>South America</td>
<td>Foreign*</td>
<td>22</td>
<td>M</td>
<td>Accountant (Baccalaureate)</td>
<td>Homemaker (Baccalaureate)</td>
<td>France</td>
<td>French, English, Portuguese</td>
<td>N/A</td>
</tr>
<tr>
<td>Name</td>
<td>Region/Foreign*</td>
<td>Region of Origin/Lorraine, DOM-TOM, Africa/Foreign*</td>
<td>Age</td>
<td>Gender</td>
<td>Father’s/Occupation &amp; Degree</td>
<td>Mother’s/Occupation &amp; Degree</td>
<td>Foreign Experience</td>
<td>Languages Spoken</td>
<td>Generations in France</td>
</tr>
<tr>
<td>------</td>
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<td>---------------------------------------------------</td>
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</tr>
<tr>
<td>Clémence</td>
<td>Centre/Lorraine, DOM-TOM, Africa/European</td>
<td>22</td>
<td>F</td>
<td>Military</td>
<td>Homemaker</td>
<td>Africa (2 years)</td>
<td>French, English</td>
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<td>Dewe</td>
<td>Asia/Foreign*</td>
<td>24</td>
<td>M</td>
<td>Storekeeper (No High School Degree)</td>
<td>Storekeeper (No High School Degree)</td>
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<td>French, English, Chinese</td>
<td>N/A</td>
<td>No indication</td>
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<tr>
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<td>F</td>
<td>Entrepreneur in Computing (Master’s)</td>
<td>Researcher in Computing (Doctorate)</td>
<td>France</td>
<td>French, English, German, Russian</td>
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<td>“Logical reasoning”</td>
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<tr>
<td>Reva</td>
<td>Asia/Foreign*</td>
<td>25</td>
<td>F</td>
<td>Engineer (Baccalaureate/Master’s)</td>
<td>Engineer (Baccalaureate/Master’s)</td>
<td>France</td>
<td>French, English, Hindi</td>
<td>N/A</td>
<td>No indication</td>
</tr>
<tr>
<td>Laurent</td>
<td>Africa/Foreign*</td>
<td>23</td>
<td>M</td>
<td>Vendor (No Schooling)</td>
<td>Homemaker (No Schooling)</td>
<td>France</td>
<td>French, English, Spanish, Local Languages</td>
<td>N/A</td>
<td>No indication</td>
</tr>
</tbody>
</table>

* Designates students who entered l’X via the concours voie 2 (alternative concours primarily created for foreign students)

+ The political party l’UMP (Union pour un Mouvement Populaire) is a right-leaning party in France that embraces classical liberal and neoliberal economic ideals. Given France’s developed welfare state and other leftist historical influences, the UMP has supported social policies that would be considered “leftist” with respect to the United States. Thus, as the main political parties in the United States fall farther right on the political spectrum than in France, the UMP would be most similar to the American Democratic party. The Parti Socialiste is a center/left-leaning party; the Front de Gauche is considered a far-left party.
<table>
<thead>
<tr>
<th>Title</th>
<th>Nationality</th>
<th>Age</th>
<th>Gender</th>
<th>Foreign Experience</th>
<th>Degree</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director, Teaching</td>
<td>French</td>
<td>48</td>
<td>M</td>
<td>USA: 1988; Argentina: 1996</td>
<td>High School Bac, Baccalaureate, Master’s, Doctorate</td>
<td>L’Ecole polytechnique, Ponts et chaussées</td>
</tr>
<tr>
<td>Director Adj.</td>
<td>French</td>
<td>60</td>
<td>M</td>
<td>None</td>
<td>Master’s</td>
<td>Ecole navale</td>
</tr>
<tr>
<td>Director, <strong>Formation Militaire et Humaine</strong></td>
<td>French</td>
<td>47</td>
<td>M</td>
<td>Military service</td>
<td>Master 2,</td>
<td>Universités, Sorbonne, Saint-Cyr</td>
</tr>
<tr>
<td>Director, Concours</td>
<td>French</td>
<td>53</td>
<td>M</td>
<td>USA: 1987-1994</td>
<td>High School Bac, Baccalaureate, Master’s, MD</td>
<td>No response</td>
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<tr>
<td>Former Director, Office of Foreign Relations</td>
<td>French</td>
<td>49</td>
<td>F</td>
<td>USA: 1994-1995</td>
<td>Doctorate</td>
<td>L’Ecole polytechnique</td>
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<tr>
<td>Former <strong>Directeur Général</strong></td>
<td>French</td>
<td>59</td>
<td>M</td>
<td>USA, Kosovo</td>
<td>Master’s</td>
<td>L’Ecole polytechnique, University of California, ENSTA, Ecole supérieure de guerre, Command and General Staff College</td>
</tr>
</tbody>
</table>
APPENDIX D – Interview Schedules

La Direction – Questions d’entretien

Objectifs et Expériences

• Si vous allez décrire l’Ecole polytechnique avec trois mots, quels mots utiliserez-vous et pourquoi ?

• D’après vous, est-ce qu’il y a des stratégies de diversification à l’Ecole polytechnique ?
  o Pourquoi est-ce que l’Ecole polytechnique a pris les stratégies d’internationalisation et le reforme X-2000 ?
    ▪ Quel est le lien avec la politique de l’Etat ? Comment est-ce que ça s’inscrit dans la politique de l’Etat ?
    ▪ Quels sont les défis notables de ces objectifs ?
    ▪ Quelles sont les réussites ?

• Est-ce qu’il y a des défis par rapport à l’intégration des élèves internationaux ?

• Pourquoi est-ce que les français ne sont pas obligés de partir à l’étranger pendant leurs stages ?

• Est-ce que vous croyez qu’il y a une différence si on est homme ou femme à l’Ecole polytechnique ? Comment ?

• Pourquoi est-ce que l’Ecole polytechnique participe aux programmes comme l’Egalité des chances ? Comment est-ce que le concept de « l’égalité des chances » fonctionne avec la notion de « l’élite » ?

Organisation et Processus

• Pourriez-vous me décrire les buts et objectifs de votre bureau ?

• Quelles sont les réussites de votre bureau ?

• Quels sont les échecs ?

• Est-ce que vous avez eu des expériences particulièrement intéressantes ? Ou des surprises ?

• J’ai noté que plusieurs élèves étrangers sont devenus français. Est-ce qu’il y a une politique de citoyenneté ?
La Direction – Informations démographiques

Votre nationalité :

Votre âge :

Votre sexe : □ Masculin  □ Féminin

Est-ce que vous avez travaillé hors de la France ?

Si oui :

Pays              Dates

Quel est votre niveau de diplôme ?

□ Baccalauréat

□ Licence (Indiquer institution et spécialité): ____________________________

□ Master (Indiquer institution et spécialité): ____________________________

□ Doctorat (Indiquer institution et spécialité): ____________________________

□ Autre (Indiquer institution et spécialité): ____________________________

Commentaires:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
Elèves – Questions d’entretien

Motivations

- Pourquoi est-ce que vous vouliez devenir polytechnicien(ne) ?
- Quand est-ce que vous avez décidé que c’était votre but ? Dans quelles conditions ?
  - Est-ce que vous avez des membres de votre famille qui sont des polytechnicien(ne)s ?
  - Est-ce que votre famille vous a encouragé ?
- Pour vous, qu’est-ce que « être polytechnicien(ne) » veut-il dire ?
  - Quelles sont les valeurs de l’X ?
  - Pourquoi est-ce que l’X est importante pour la France ?

Pour les français :

- Quel type de métier est-ce que vous pensez faire après l’X ?
  - Est-ce qu’il y a des attentes pour vous ?
  - Si l’entreprise, est-ce que vous souhaiteriez être entrepreneur ?
- Est-ce que vous imaginez toujours habiter et travailler en France ?
- Qu’est-ce que vous voyez pour votre promotion ?
  - Professions
  - Influence culturelle et politique

Pour les étrangers :

- Vous serez polytechnicien(ne). Qu’est-ce que cela veut dire dans le contexte de votre pays de naissance ?
- Quel type de métier est-ce que vous pensez faire après l’X ?
  - Est-ce qu’il y a des attentes pour vous ?
  - Si l’entreprise, est-ce que vous souhaiteriez être entrepreneur ?
- Est-ce que vous imaginez habiter et travailler en France ?

Expériences

- Quelles sont les qualités importantes pour être bien intégré(e) à l’X ?
  - Est-ce qu’il y a quelqu’un qui n’est pas bien intégré ? Pourriez-vous me le décrire ?
- Quand est-ce que vous vous sentiez bien intégré(e) ?
- Quels types de groupes sociales est-ce qu’il y a à l’X ?
- À quels types de groupes est-ce que vous participez ?
- Est-ce que vous avez des amis des autres pays à l’X ?
- Est-ce que vous croyez qu’il y a une différence d’être élève étranger à l’X ? Si oui, comment ?
- Est-ce que vous avez noté des problèmes ou des défis avec l’intégration des élèves étrangers ?
- Est-ce que vous croyez qu’il y a une différence d’être homme ou femme à l’X ?
• Comment sont vos amis à l’X ? Pourriez-vous me les décrire ?
  o Est-ce que vous les connaissiez avant ?
• Parmi vos amis, est-ce qu’il y a quelqu’un avec lequel que vous vous entendez bien ?
  Pourriez-vous le décrire ?
  o Qu’est-ce que vous aimez chez lui/elle ?
• Qu’est-ce que vous faites ensemble ?
  o Étudier
  o Loisirs
  o Débats
• Qu’est-ce que fait votre meilleur(e) ami(e) qui n’est pas à l’X ?

• Est-ce que vous croyez que la façon dont les gens s’habillent et se comportent est importante à l’X ? Pourriez-vous me décrire « du bon goût » ?

**Valeur de l’Education**
• Pourquoi est-ce que l’éducation est importante pour vous ? Pour votre famille ?
• Si vous avez des enfants, quels seraient vos espoirs pour eux concernant l’éducation ?

• Est-ce que vous vous sentez différent des jeunes qui ne participent pas à l’enseignement supérieur ? Les grandes écoles ?

**Une question que vous n’avez pas besoin de répondre :**
• Est-ce que vous êtes pratiquant(e) ? Si oui, quelle religion ? Comment est-ce qu’elle influence votre vie ?
Anciens Elèves – Questions d’entretien

**Actualité**
- Pourriez-vous me décrire votre métier actuel ?
  - Comment est-ce que votre formation à l’X vous a préparé pour ce travail ?

**Motivations**
- Pourquoi est-ce que vous vouliez devenir polytechnicien(ne) ?
- Quand est-ce que vous avez décidé que c’était votre but ? Dans quelles conditions ?
  - Est-ce que vous avez des membres de votre famille qui sont des polytechnicien(ne)s ?
  - Ou est-ce que votre famille vous a encouragé ?
- Pour vous, qu’est-ce que « être polytechnicien(ne) » veut-il dire ?
  - Quelles sont les valeurs de l’X ?
  - Pourquoi est-ce que l’X est importante pour la France ?
- Est-ce que vous gardez contact avec les polytechniciens ? Si oui, comment ? De votre promotion ?
- Est-ce que vous avez rencontré des autres polytechniciens après votre sortie ? Si oui, comment ?

**Pour les Parrains**
- Je comprends que vous faites le parrainage. Qu’est-ce que vous faites comme parrain ?
  - Pourquoi est-ce que vous participez à ce programme ?

**Expériences**
- Comment étaient vos amis à l’X ? Pourriez-vous me les décrire ?
- Est-ce que vous les connaissiez avant ?
- Parmi vos amis, est-ce qu’il y a quelqu’un avec lequel que vous vous entendiez bien ? Pourriez-vous le décrire ?
  - Qu’est-ce que vous aimiez chez lui/elle ?
- Qu’est-ce que vous faisiez ensemble ?
  - Étudier
  - Loisirs
  - Débats
- Quelles étaient les qualités importantes pour être bien intégré à l’X ?
- Est-ce qu’il y avait quelqu’un qui n’était pas bien intégré ? Pourriez-vous me le décrire ?
- Quand est-ce que vous vous sentiez bien intégré ?
- Quels types de groupes sociales est-ce qu’il y avait à l’X ?
- A quels types de groupes est-ce que vous participiez ?
- Est-ce que vous aviez des amis des autres pays à l’X ?
- Est-ce que vous croyez qu’il y a une différence d’être élève étranger à l’X ? Si oui, comment ?
• Est-ce que vous croyez qu’il y a une différence d’être homme ou femme à l’X ?

• Est-ce que vous croyez que la façon dont les gens s’habillent et se comportent est importante à l’X ? Pourriez-vous me décrire « du bon goût » ?

**Valeur de l’Education**
• Pourquoi est-ce que l’éducation est importante pour vous ? Pour votre famille ?
• Si vous aviez des enfants, quels seraient vos espoirs pour eux concernant l’éducation ?

• Est-ce que vous vous sentez différent des gens qui n’ont pas participé à l’enseignement supérieur ? Les grandes écoles ?

**Une question que vous n’avez pas besoin de répondre :**
• Est-ce que vous êtes pratiquant(e) ? Si oui, dans quelle religion ? Est-ce qu’elle influence votre vie ?
Elèves et Anciens Elèves – Informations Démographiques
Où viviez-vous quand vous étiez enfant/jeune ?

Votre nationalité :

Votre âge :

Votre sexe : □ Masculin □ Féminin

Quel est le niveau d’éducation de vos parents ?

Votre père :

□ Baccalauréat
□ Licence (Indiquer institution et spécialité): _______________________________
□ Master (Indiquer institution et spécialité): _______________________________
□ Doctorat (Indiquer institution et spécialité): _______________________________
□ Autre (Indiquer institution et spécialité): _______________________________

Votre mère :

□ Baccalauréat
□ Licence (Indiquer institution et spécialité): _______________________________
□ Master (Indiquer institution et spécialité): _______________________________
□ Doctorat (Indiquer institution et spécialité): _______________________________
□ Autre (Indiquer institution et spécialité): _______________________________

Quelle est la profession de vos parents ?

Votre père : __________________
Votre mère : __________________

Quelle était votre voie d’entrée à l’Ecole polytechnique ?

Concours Voie 1
Concours Voie 2

Votre promotion à l’Ecole polytechnique : __________________

Quelles langues parlez-vous couramment ?

Quelles langues lisez-vous couramment ?
Combien de temps est-ce que vous avez passé hors de votre pays de nationalité ? (Pour rendre visite à votre famille, pour travailler, pour étudier, pour des voyages de longue durée, etc.)

<table>
<thead>
<tr>
<th>Pays</th>
<th>No. de Mois</th>
<th>Raison</th>
</tr>
</thead>
</table>

Vous n’êtes pas obligé(e) de répondre aux questions suivantes :

Avez-vous une orientation politique ?
   Si oui, laquelle ? (Parti politique)

Si vous êtes français, depuis combien de générations votre famille habite-elle en France ?
The Administration
Objectives and Experiences

• If you are going to describe l’École polytechnique with three words, what words would you use and why?

• From your perspective, are there diversification strategies at l’École polytechnique?
  o Why did l’École polytechnique take on internationalization strategies and the reform X2000?
    ▪ What is the link with state policy? How is it inscribed in state policy?
    ▪ What are the biggest challenges of these objectives?
    ▪ What are the successes?

• Are there challenges related to the integration of foreign students?

• Why are French students not obligated to do a foreign internship?

• Do you believe it to be different if one is a man or woman at l’École polytechnique? How so?

• Why does l’École polytechnique participate in programs like l’Égalité des chances? How does the concept of “equality of chances” work with the notion of “the elite”?

Organization and Processes

• Please describe the goals and objectives of your office.

• What are the successes of your office?

• What are the failures?

• Have you had any particularly interesting experiences? Or surprises?

• I’ve noted that several foreign students have become French. Is there a citizenship policy at l’X?
The Administration
Your nationality:
Your age:
Your gender:  □ Man  □ Woman
Have you worked outside of France?
If yes:
Country  Dates

What is your level of study?
□ Baccalauréat
□ Licence (Indicate institution and specialty): ______________________________
□ Master (Indicate institution and specialty): ______________________________
□ Doctorat (Indicate institution and specialty): ______________________________
□ Other (Indicate institution and specialty): ______________________________

Comments:
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
Students

Motivations
• Why did you want to become a polytechnicien(ne)?
• When did you decide that it was your goal? In what conditions?
  o Do you have any polytechnicien members in your family?
  o Did your family encourage you?
• For you, what does “to be a polytechnicien(e)” mean?
  o What are the values of l’X?
  o Why is l’X important for France?

For French students:
• What type of career do you plan to pursue after l’X?
  o Are there any anticipated paths for you?
  o If you want to go into business, would you want to be an entrepreneur?
• Do you imagine that you will always live and work in France?
• What do you imagine that members of your promotion will do?
  o Professions
  o Cultural and political influence

For foreign students
• You will be a polytechnicien(ne). What does that mean in the context of your country of origin?
• What type of career do you plan to pursue after l’X?
  o Are there any anticipated paths for you?
  o If you want to go into business, would you want to be an entrepreneur?
• Do you imagine that you will live and work in France?

Experiences
• What are the necessary qualities to be well integrated at l’X?
  o How would you describe someone who is not well integrated?
• When did you feel well integrated?
• What types of social groups are there at l’X?
• In which types of groups do you participate?

• Do you have friends from other countries here?
• Do you think that there is a difference for foreign students at l’X? If so, how so?
• Have you noticed problems or challenges with the integration of foreign students?

• Do you believe that it is different being a man or woman at l’X?

• What are your friends at l’X like? Could you please describe them to me?
  o Did you know them before coming to l’X?
• Among your friends, is there someone with whom you get along really well? How would you describe her/him?
- What do you like about him/her?
- What do you do together?
  - Studies
  - Leisure
  - Political debates
- What does your best friend who is not at l’X do?
- Do you think that how people dress and comport themselves is important at l’X? What is “good taste,” in your estimation?

**Value of Education**
- Why is education important for you? For your family?
- If you have children, what would be your educational hopes for them?
- Do you feel different from other youth who do not pursue higher education? The *grandes écoles*?

**A question that you don’t need to answer:**
- Do you practice a religion? If so, which? How does it influence your life?
Alumni

*Current situation*
- Could you please describe your current job?
  - How did your training at l’X prepare you for this job?

*Motivations*
- Why did you want to become a *polytechnicien(ne)*?
- When did you decide that it was your goal? In what conditions?
  - Do you have any *polytechnicien* members in your family?
  - Did your family encourage you?
- For you, what does “to be a *polytechnicien(e)*” mean?
  - What are the values of l’X?
  - Why is l’X important for France?

- Do you keep contact with *polytechniciens*? If so, how? From your cohort?
- Have you met *polytechniciens* after receiving your degree? If so, how?

*For the Mentors*
- I understand that you participate in the mentoring program. What do you do in this role?
  - Why do you participate?

*Experiences*
- What were your friends at l’X like? Could you please describe them to me?
  - Did you know them before coming to l’X?
- Among your friends, was there someone with whom you got along really well? How would you describe her/him?
  - What did you like about him/her?
- What did you do together?
  - Studies
  - Leisure
  - Debates

- What were the necessary qualities to be well integrated at l’X?
  - How would you describe someone who was not well integrated?
- When did you feel well integrated?
- What types of social groups were there at l’X?
- In which types of groups did you participate?

- Did you have friends from other countries there?
- Do you think that there is a difference for foreign students at l’X? If so, how so?

- Do you believe that it is different being a man or woman at l’X?
- Do you think that how people dress and comport themselves is important at l’X? What is “good taste,” in your estimation?
Value of Education

- Why is education important for you? For your family?
- If you have children, what would be your educational hopes for them?
- Do you feel different from others who have not pursued higher education? The *grandes écoles*?

A question that you don’t need to answer:
- Do you practice a religion? If so, which? How does it influence your life?
Students and Alumni
Where did you live growing up?

Your nationality:

Your age:

Your gender: □ Man □ Woman

What is the level of education of your parents?

Your father:
□ Baccalaureate
□ License (Indicate institution and specialty): __________________________
□ Masters (Indicate institution and specialty): __________________________
□ Doctorat (Indicate institution and specialty): __________________________
□ Other (Indicate institution and specialty): __________________________

Your mother:
□ Baccalaureate
□ License (Indicate institution and specialty): __________________________
□ Masters (Indicate institution and specialty): __________________________
□ Doctorat (Indicate institution and specialty): __________________________
□ Other (Indicate institution and specialty): __________________________

What is the profession of your parents?

Your father: __________________________

Your mother: __________________________

How did you enter l’Ecole polytechnique?

Concours Voie 1

Concours Voie 2

Your cohort at l’Ecole polytechnique: __________________________

What languages do you speak fluently?

What languages do you read fluently?
Who much time have you spent outside of your country of citizenship? (Visiting family, studying, working, extended traveling)

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Months</th>
<th>Reason</th>
</tr>
</thead>
</table>

You do not have to respond to the following questions:

Do you have a political orientation?
   If yes, which? (Political party)

If you are French, how many generations has your family been in France?
APPENDIX E - Administrative Structure of l’Ecole polytechnique

Directions / Administrative Offices

- *La Direction du concours (DCA)* / Direction of the concours
- *La Direction des relations internationales (DRI)* / Direction of International Relations
- *La Direction de l'enseignement et de la recherche (DER)* / Direction of Teaching and Research
- *La Direction des études (DE)* / Direction of Studies (Student Services)
- *La Direction des services d'enseignement (DSE)* / Direction of Teaching Services
- *La Graduate School / The Graduate School*
- *La Direction de la recherche (DGAR)* / Direction of Research
- *La Direction des relations industrielles et des partenariats (DRIP)* / Direction of Industrial Relations and Partnerships
- *La Direction de la formation humaine et militaire (DFHM)* / Direction of Human and Military Formation
- *La Direction de la communication (DCOM)* / Direction of Communication
- *La Direction du développement (DDEV)* / Direction of Development
- *La Direction des systèmes d'information (DSI)* / Direction of Information Systems
- *Le Secrétariat général (SG)* / Secretary General
Le Conseil d'Administration / The Council of Administration of l’X

Président
M. Jacques Biot GUILLOU

Vice-président
M. Yves DEMAY, Directeur général de l'École Polytechnique

Membres représentants de l'État
Laurent COLLET-BILLON, Délégué général pour l'Armement
Jean-Paul BODIN, Secrétaire général pour l'Administration du Ministère de la Défense
Mme Françoise BEVALOT, Chargée de mission au Ministère de l'enseignement Supérieur et de la Recherche
M. Luc ROUSSEAU, Vice-président du Conseil Général de l'Industrie, de l'Energie et des Technologies, ancien élève de l'École polytechnique
M. Pierre VALLA, Directeur adjoint au directeur général de la recherche et de l'innovation du ministère de l’enseignement supérieur et de la recherche
Mme Michèle FEJOZ, Directrice des ressources humaines du ministère de l'économie, secrétaire générale adjointe des ministères économiques et financiers

Personnalités nommées en raison de leur compétence en matière scientifique, industrielle ou d'enseignement
Mme Elisabeth CREPON, Directeur de l'ENSTA ParisTech
Mme Martine RAHIER, Rectrice de l'Université de Neuchâtel en Suisse

Membres des Corps de l'État et cadres des entreprises publiques et entreprises à capital partiellement public, de l'industrie privée et des établissements scientifiques
M. Jean-Louis BEFFA, Président d'honneur de Saint-Gobain, président de Asia Investment Banking de Lazard, ancien élève de l’École polytechnique
Mme Barbara DALIBARD, Ingénieur général des mines honoraire, directrice générale de SNCF Voyages, ancienne directrice exécutif d'Orange Business Services
M. Thierry DESMAREST, Président de la fondation de l’École polytechnique, ancien élève de l’École polytechnique
Mme Elisabeth KOGAN, Vice-présidente recherche de Teva-Pharmaceuticals industries
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