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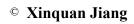# CROSS-CULTURAL ADAPTATION IN GRADUATE SCHOOL

by

Xinquan Jiang

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctoral of Philosophy
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Doctoral Committee:

Associate Professor Janet H. Lawrence, Chair
Professor Emeritus Marvin W. Peterson
Professor Twila Z. Tardif
Assistant Dean John B. Godfrey

Studying in America, it really opened doors for me. People always say life is about making different choices. We open different doors and follow different paths. I'm not sure how other paths would be, but I can say for sure that this one is right for me. I will continue on this path, because it already opened up many great opportunities for me.

-- Student interviewed for the study

Dedication

To my parents, who gave me love, strength, and wisdom

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CHAPTER 1

INTRODUCTION

International Students in U.S. Higher Education: Current Context

American research universities are "magnets for the most outstanding students" from around the world (Levin, 2008). Each year, nearly one third of students who leave their countries to seek higher education abroad come to the U.S., drawn by the quality of graduate programs (Clark, 1995) and financial resources (Agarwal & Winkler, 1985; Cummings, 1991). On the other hand, American universities have shown continuing commitment to attracting the brightest minds in the world, recognizing the political, economic, and educational benefits that these foreign students bring to the nation and their institutions (Altbach, 2002). As the American academy entered the twenty-first century, the profound challenges arising from the changing global economic and political landscape, the shrinking financial resources for postsecondary education, and the global competition for international students have led higher education institutions to devote increasing attention to the recruitment and admission of the most talented students from around the world. Ongoing research about international students' experiences, however, continue to indicate that language problems, stress, cultural differences, and social isolation limit their abilities to participate both academically and socially in the campus community (Hechanova-Alampay, Beehr, Christiansen, & Horn, 2002; Pedersen, 1991; Trice, 2004). Furthermore, research also suggests that faculty and administrators who are

in strategic positions to educate and support international students are not sufficiently and accurately aware of these students' perceptions of and satisfaction with their educational experiences, including the challenges and needs they have during their study in the U.S. (Barnett, 1991; Johnson, 1993; C. Joo, 2002; Parr, Bradley, & Bingi, 1991; Tabdili-Azar, 1984; Tomovick, Jones, Al-Khatib, & Baradwaj, 1996; Walker, 1998).

In response to increasing global interdependence and multicultural society, many higher education institutions' mission statements make reference to their commitment to internationalization, diversity, and education for global citizenship. It is assumed that international students not only contribute academically to teaching, learning and research but they also enrich university communities with cultural diversity and thus help educate American students for global citizenships (AAC&U, 2002; NAFSA, 2003). Research about intercultural initiatives at institutions across the country confirms that meaningful interactions with international students enable Americans to learn about cultures and global issues; to participate in educational environments where differences are acknowledged and respected; and to better understand U.S. interdependence with the world (Jiang, 2002; Jiang & Brown, 2008; Peterson, Briggs, Dreasher, Horner, & Nelson, 1999). Therefore, higher education scholars and practitioners began to realize the need to focus their attention on international students' adjustment and integration to their university communities.

International Graduate Students in Science and Engineering

The statistics from National Science Foundation suggests each year international graduate students make important contribution to graduate education in science and engineering. Foreign students make up almost half of the total enrollment in science and

engineering (National Science Board, 2006), particularly in engineering (45%) and computer sciences (43%). In 2005, students with non-resident status earned half or more of doctoral degrees awarded in engineering, computer sciences, and physics in the U.S. (National Science Board, 2006). Many research institutions depend on these academically and technically well-trained students to carry out research and teaching activities, and the ability of American universities to undertake scientific research which results in innovative technologies and products has become increasingly dependent on these students (Chellaraj, Maskus, & Mattoo, 2008).

Recent statistics from the National Science Foundation show that the majority of international graduate students in science and engineering come from India, China, South Korea, Taiwan, and Canada. Among these countries and regions, China has the largest number of students earning U.S. science and engineering doctorates for more than two decades. In April 2007, a total of 48,300 Chinese students studied at graduate level in U.S. universities, with 67% of them studying in science and engineering fields. Nearly all of Chinese science and engineering students who completed their doctoral studies, according to a survey conducted for the 2002-2005 period, reported plans to stay in the U.S. and most of them had already accepted firm offers for employment (National Science Board, 2008).

Despite their dominant presence in science and engineering graduate programs, higher education research has rarely examined their experiences. Questions such as how these students navigate, adjust, and succeed in the complex, diverse, American academic organizations remain largely unanswered. While there is a scarcity of research on international students in general, understanding how international graduate students in

science and engineering negotiate the myriad academic, cultural, interpersonal, and psychological challenges and identifying issues that influence their adjustment is a pressing concern.

Chinese Engineering Students as the Focus of Analysis

In 1854, Rong Hong (also known as Yung Wing, 容閎,1828 ~ 1912) graduated from Yale University. He was the first Chinese graduate of an American university. During the four years at Yale, Rong Hong lived with an American family, worked as a librarian, played football, joined a fraternity, and became a naturalized American citizen. Nonetheless, his undergraduate life was not without struggle. In his memoir, *my life in China and America,* Rong wrote:

> Between the struggle of how to make ends meet financially and how to keep up with the class in my studies, I had a pretty tough time of it. I used to sweat over my studies till twelve o'clock every night the whole freshman year. I took little or no exercise and my health and strength began to fail and I was obliged to ask for a leave of absence of a week. (p.56)

During his college years, Rong often pondered the conditions and future of his motherland and asked himself "What am I going to do with my education?" By the end of his college education, he was determined that "the rising generation of China should enjoy the same educational advantages that I had enjoyed; that through western education China might be regenerated, become enlightened and powerful." With this ambition, Rong returned to China and persuaded the Qing government to send young Chinese to the United States to study Western science and engineering. In the summer of 1872, the first group of Rong's Chinese Educational Mission, thirty young teenage boys, sailed for the United States in their Chinese clothing and their hair in queues. These bright boys, however, quickly adapted to the American way of life. They changed to American

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clothing and some were bold enough to cut their queues. With growing concerns from the Chinese teachers who feared these young boys would lose their Chinese identity, the mission came to an end rather abruptly.

The exchange of students between China and the U.S., however, did not end. On the contrary, the Chinese youth found more opportunities to study abroad as a result of America's growing interest in China. In 1909, as a part of the Boxer Indemnity, Roosevelt's government reached agreements with China on building Tsinghua School (which later became Tsinghua University and a major venue for China-US student exchange) and financing Chinese students to study in the U.S., which was referred to as the Genzi Indemnity Fund Project. The project educated many outstanding scientists and educators in the contemporary history of China who played critical roles in the creation and development of academic institutions and traditions in China. During the republic period (1910s-1930s), a significant number of Chinese also went to France, Japan, and Britain to seek modern education and became leaders in political, social, and educational revolutions (for example, Deng Xiaoping was among them). The number of students studying abroad reached over one thousand by 1936 (Qian, 2002).

In the 1940s, after the War against Japan, the flow to study abroad resumed with sponsorship from the Nationalist's government. The China-U.S. diplomatic relations worsened with the establishment of the socialist government in 1949 and after the breakout of the Korean War, China stopped sending students to the U.S. After almost three decades of isolation, Frank Press, then Nixon's advisor on Science and Technology led a delegation of scientists and officials from National Science Foundation and other government agencies to China in 1978. At the end of an unexpectedly speedy negotiation,

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they were pleasantly surprised that China agreed to the exchange of students as part of the overall collaboration in science and technology.

With the open door policy, China has been trying to gain competitive advantages in science and new technology to survive in a knowledge-driven global economy. Like Rong, who two centuries ago was determined to revive his country by importing western science and technology, contemporary China has sent more students to study science and engineering in the U.S. than any other country in the world. Perhaps Rong's Chinese Educational Mission was not a complete failure after all.

The hardships that Rong encountered at the colonial Yale College persisted among different generations of Chinese students who studied in America. Qian Ning, a Chinese graduate from the University of Michigan in the 1990s, wrote about Chinese students' life in America based on his experience and the stories of his Chinese colleagues. What Rong described about his life in America, the financial struggles, academic challenges, long hours of studying, and the inability to balance life and work are very much evident among contemporary generations of Chinese students in the U.S. Differences, however, are also clear: while Rong Hong was mostly concerned about using his American education to serve his country, the Chinese who were in U.S. universities in the 1990s, including a large number of visiting scholars and students who were sponsored by the government, cared more about personal achievement and professional development. These students, often in their thirties or forties, found ways to win financial support from departments and professors in order to stay in the U.S. Qian observed that "these students also were not as placid as the earlier, older generation or as shy in dealing with Americans." (p.96) With increasing numbers of younger students in

their twenties coming to America on their own in the 1990s, Qian (2002) noted in his

book how this "venturing new generation" differed from him in their experiences and

adjustment to American life. These students were "born to study in America": they

listened to the Voice of America and prepared for TOEFL at college; and they were

familiar with American democracy and pop culture. Furthermore,

> They were not burdened with the desire to pay back or to serve heir motherland,
> nor were they planning to start families. They thirsted only for life's adventures
> and seeing the world. "To study abroad, like life, is a journey," said a male
> student in Chicago. "I just want to enjoy the journey." (p.112)

Clearly, waves and waves of Chinese students have come to America to pursue

their dreams, each with aspirations, experiences, and memories shaped by their time in

China. In the U.S., they learned science and technology, and they were exposed to beliefs,

values, and lifestyles that were radically different from their own. Different waves

encountered America in different ways, not only because of their personal characteristics

but also because of changing social, economic, political, and academic environments in

China and the U.S.

Now more than ever, as American universities march into the twenty-first century,

thousands of Chinese students are studying in U.S. graduate schools, the majority of them

in science and engineering. These Chinese engineering students are among the core of

talented students driving U.S. science and engineering graduate education and research.

When they graduate, most of them stay in the U.S., either remaining in the academic

work force or making contributions to high-tech industry (Levin, 2008). Even those

Chinese engineers and scientists who return to China after graduation often contribute to

science in the U.S. by collaborating in increasingly global scientific networks, generating

new knowledge, and helping to increase scientific capacity (NSB, 2006; Wagner, 2007).

Despite the magnitude of their presence in science and engineering programs, and the contributions that they have made to U.S. higher education and industry, academic researchers have largely overlooked Chinese engineering students. Scholarly inquiries about Chinese engineering students are often subsumed under studies of international students in general, which tend to ignore the unique backgrounds and circumstances of students from different countries or in different academic fields. Works that tap into the richness and complexity of the lives of Chinese students in the American academy often come from Chinese students themselves who address their adjustment experiences and their emotional journeys in personal memoirs or other types of informal writing. These works, however, are often marginalized in academic discourse.

What are Chinese engineering students' experiences like at this beginning moment of the twenty-first century, in the context of increasingly global and complex academic organizations? How do they adjust and succeed in graduate school? What personal and environmental factors influence their decision making? How do they construct their experiences? How do their perceptions and experiences shape who they are? Higher education research should examine these questions closely using various theoretical and methodological lenses.

Research Questions

The purpose of my study is to describe and analyze the current experiences of Chinese engineering students' in graduate school. I focus on Chinese engineering students because of the magnitude of their presence in the American universities and the scarce knowledge that academic research has provided about their experiences in graduate school. Chinese engineering students, along with other international graduate

students in science and engineering departments, are key contributors to the research and academic activities of many American universities. After graduation, they help meet the demand for qualified scientists and engineers in R&D industry, and thus, make substantial contributions to the U.S. competitive advantage in science and technological innovation in the world. The National Academy of Sciences states (2000) that "If science is to continue to prosper and move forward, we must ensure that no source of scientific intellect is overlooked or lost" (p.vii). Therefore, it is essential that the American higher education community, particularly research institutions, better understand the educational experiences of these students and give them the opportunity to develop their full potential. Ensuring successful and satisfying educational experiences for these students has significant implications for the country, higher education institutions and their academic departments.

Since research on the experiences of Chinese engineering students is sparse, some insights can be gained from studies that examine international students' experiences in general. However, this body of research, mostly doctoral dissertations, largely focuses on identifying the difficulties and problems students face as they study in the U.S. (Lee & Rice, 2007). Although many discuss specific problems and offer suggestions for overcoming them, few pursue the underlying reasons why international students struggle with certain issues, why certain situations are particularly difficult, and why they respond as they do to the challenges. Without examining these issues and the individual and environmental contexts that influence personal perceptions and experiences, the inconclusive and conflicting results often raise more questions than they answer.

A handful of studies explore international students' adjustment as one of several influences on their academic performance and persistence (Eland, 2001; Heikenheimo & Shute, 1986; Huntley, 1993; Senyshyn, Warford, & Zhan, 2000; Westwood & Barker, 1990). I want to take a broader perspective in investigating international students' graduate school experiences by placing their cross-cultural adaptation at the center of my analysis. Cross-cultural adaptation, as I will discuss in Chapter 3, encompasses functional, psychological, and social adjustments in the new environment. At the heart of cross-cultural adaptation is an individual's ability to communicate and engage psychologically and socially with the host environment (Kim, 2001). By placing cross-cultural adaptation at the center of analysis, I want to draw connections among students' academic success, social interactions and integration, and intercultural learning.

In fields outside of higher education, under the rubric of sojourner adjustment, scholars have examined cross-cultural adaptation for both student and worker populations (Guzman, 2003). This body of literature has approached international student adjustment from different perspectives including: (1) identifying stages of cross-cultural adjustment (Lysgaard,1955; Oberg,1960; Gullahorn & Gullahorn, 1963; Adler,1975); (2) describing and analyzing the problems and challenges encountered by international students (Cunningham & Kang, 1990; Dee, 1999; Nicholson, 2001; Ross & Krider, 1992; Sun & Chen, 1997b; Surdam & Collins, 1984); and (3) generating predictors of successful cross-cultural adjustment and/or performance (Gudykunst & Hammer, 1987; Zimmermann, 1995). Although this body of work has produced useful insights concerning the cross-cultural adaptation of students, by largely focusing on performance criteria in various cross-cultural contexts, this literature fails to provide an account of foreign students'

experiences in graduate school, the rich, nuanced details that connect their academic, interpersonal, and cross-cultural lives. I do not wish to duplicate these studies by identifying problems a priori and generating predictors of successful adaptation. To draw out the richness and complexity of the cross-cultural experience of international graduate students, I want to probe deeper into personal experiences and perceptions to understand how these individuals construct reality based on what they experience in graduate school.

In essence, I am interested in what Chinese engineering students perceive to be the key challenges during their doctoral studies; how they respond to those challenges; what challenges they associate with cross-cultural adaptation; and how they define and approach cross-cultural adaptation in the context of an academic organization. I am also curious about how their personal characteristics, backgrounds, beliefs and values, aspirations, and the culture of engineering departments shape their perceptions and adjustment. My dissertation research, then, is guided by the following research questions:

1. What do Chinese engineering students believe are the key challenges they encounter as they study in a U.S. graduate school? How do they respond to them? Why do they respond as they do?

2. How do Chinese engineering students experience and perceive cross-cultural adaptation in graduate school? What challenges do they associate with cross-cultural adaption?

Significance of the Study

My goal is not to evaluate individual perspectives, experiences, or their adjustment. Also, I want to emphasize that it is not my intent or assumption that this study will lead to generalizations about the experiences of all Chinese students or international students in general in American universities across time and contexts.

Instead, my goal is to describe and understand the unique features of Chinese engineering students' experiences in a particular university context.

The life stories of Chinese engineering students are selected because of their substantial presence in science and engineering programs and the lack of inquiries into their experiences. The individual perspectives will hopefully assist other international students to reflect on their own cross-cultural adaptation, as the Chinese students in the study wished. For example, Shirley, a fourth year doctoral candidate in atmospheric science, noted at the end of the interviews:

> I gave you my story. I hope, if my story can help others, especially new students… actually it's another reason that I decided to do this [interview]. If I can help other students with my experience, I think, that's good enough. I hope this research can help, especially women students in engineering, help them adjust in grad school, that would be great.

Tao, in his thirties, who is about to complete his doctoral study in mechanical engineering, shared his perspective on the significance of this research. He remarked:

> It really helped me to reflect on the past, things that I've never or didn't have the time to think through. But what's more important is, I think it's a great *topic*[1]. It helps us to think about ourselves but also helps other students in the sense that they will be able to make a better choice in many ways based on what we went through, you know. Like if I had heard these stories from other students two years ago, I would probably have made different choices… our experiences and lessons will help them adjust much better and faster, you know, get them on the right track.

As these students hoped, this research seeks insights into individual students' motivations, approaches, and interpretations of the adjustments they make during graduate school. These insights should offer valuable information for readers as they consider the usefulness of this study in their own contexts.

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[1] Terms used by participants in English. Chinese students in the study frequently inserted English in their conversations although most of the interviews were conducted in Chinese.

Overview of the Dissertation

In the following chapters, I first review and critique relevant literature on international students' adjustment in U.S. institutions of higher education in Chapter 2.

Chapter 3 describes different theoretical frameworks that provide the conceptual foundation for my study. I begin by providing an overview of theories that describe different stages or curves of cross-cultural adaptation as well as a brief overview of developmental models of intercultural sensitivity.

Chapter 4 presents the methodology for this study. This includes descriptions of the research setting and the qualitative research design. This chapter also provides a description of the verification process related to the findings.

Chapter 5 presents both an overview of the participants as a group and individual participant profiles. The participant profiles include personal background information, motives to study in the U.S., personality dispositions, and brief overviews of their graduate experiences.

Chapter 6 summarizes and discusses key challenges a group of international graduate engineering students associate with graduate study in the U.S. and how they respond to these challenges as they strive to succeed in graduate school.

Chapter 7 presents overall themes related to study participants' descriptions and interpretations of cross-cultural challenges and cross-cultural adaptation, and a discussion of personal gains they achieved in the process.

Chapter 8 presents my interpretation of the themes from Chapters 6 and 7 in relation to the research questions, existing literature and theoretical frameworks.

Chapter 9 continues my interpretation of the findings and concludes with a

discussion of this dissertation's limitations, implications for practice and future research.

CHAPTER 2

REVIEW OF LITERATURE

Since research on Chinese and international engineering students is limited, in this chapter, I review higher education literature on experiences of international students in the U.S. and other English speaking countries in the world. This body of literature provides insights into how international students in general negotiate the academic, interpersonal, and psychological challenges they face during their academic pursuits in a new cultural environment. First, I provide an overview of research on international students. I then review several academic, social and interpersonal issues that have been consistently identified in the literature as influencing international students' academic achievement, adjustment and satisfaction. I critique the literature from a cross-cultural perspective and argue that a focus on academic success situates international student adjustment within a framework characterized by a set of identifiable and correctable problems rather than focusing on the process and the nature of cross-cultural adjustment in academic contexts. I then review recent literature on international students' socialization that highlights the significance of their social and interpersonal adjustment. Finally, I offer an overview of the literature on institutional support for international students and discuss articles that address international student satisfaction with support services designed to assist them with their adjustments.

Academic Adjustment

Beginning in the 1970s, scholars have sought to understand how factors such as language proficiency, personal characteristics, and relations with faculty and advisors influence the academic performance and persistence of international students participating in American higher education. The term "success" has been widely used to describe multiple outcomes from high GPA to degree completion and academic adjustment has become an all-inclusive term. Studies often mix academic issues with other issues related to social relations and cultural adjustment. The use of broad, ill-defined terms such as academic adjustment and academic success has led to conflicting results and prevented scholars from more effectively targeting key topics for research and analysis (Altbach & Wang, 1989). Studies that often define a student body using such measures as "international students" or "Asian students" only hint at the most obvious and common issues that these students face, although students experiences are likely to vary depending on their cultural heritages and the academic contexts surrounding them.

While previous research is largely inconclusive regarding factors that influence foreign students' academic performance, four issues appear prevalent in the literature: English language proficiency, an understanding of American classroom culture and learning strategies, and relations with faculty and advisors (Liberman, 1994; Stoynoff, 1996, 1997; Sun & Chen, 1997a; T Wan, 1992; Wang, 2004).

Language Proficiency

The lack of English language proficiency has been identified as a major obstacle for performing academic tasks for non-native English speakers who learned English for academic purposes. Although most international students demonstrate their English

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abilities by taking tests such as the Test of English as a Foreign Language (TOEFL) before admission, research suggests that these tests are unreliable because they inadequately indicate students' language abilities in real-life situations (Stoynoff, 1996, 1997; Sung, 2000; Trice, 2001). Many students from Asian countries are found to have serious problems in understanding lectures, taking notes, answering questions, and writing essays even though they score well on language proficiency tests (Heikenheimo & Shute, 1986; Nicholson, 2001). These students tend to spend extensive time interpreting lectures and notes, and rely on converting their previous knowledge into translated English versions. For example, Chinese students require extra time for converting ideas and concepts from Chinese to English (Qian, 2002). When international students miss a word or phrase in class, they tend to pause and try to figure out the meanings, and thus miss the following parts of the lectures (Constantinides, 1992).

Additionally, the prevalent use of colloquial phrases, metaphors, and rhetoric in college classrooms often leads to misinterpretation of lectures and instructions (Littlemore, 2001). The difficulties of understanding lectures, communicating their ideas, and participating in classroom activities cause international students to have doubts about their English abilities and further undermine their confidence of communicating in English (Coilingridge, 1999; May & Bartlett, 1995; Senyshyn, et al., 2000). For example, international students express that they are hesitant to share their opinions in class because of the fear that they will embarrass themselves with poor English (Senyshyn, et al., 2000).

Academic writing poses another challenge for many international students with limited English proficiency. Learning to write to the standards of one's academic

discourse community involves not only the acquisition of specialty knowledge but also the acquisition of the expression paradigms of the respective disciplines. Previous research indicates that improving writing skills required more time and attention than enhancing listening and speaking abilities (Wang, 2004). Angelova and Riazantseva (1999) found that learning to write according to the discipline-specific conventions and practices posed a great challenge for international students in their first year. Also, Prior (1991) and Spack (1997) examined international students' writing samples and both found that academic writing remained problematic for students who were successful in their research and professional studies. Casanave (1995) studied international students in sociology and found that the issue was not that students could not write but rather that they conceived and wrote in ways different from the U.S. academic discourse.

Language problems also affect faculty-student interactions and faculty perceptions of international students. Language limitations that were reflected in misunderstanding, poor academic writing, and limited class participation often led faculty to misperceive students' academic ability and motivation (Constantinides, 1992; Huntley, 1993). Some researchers conclude, therefore, that as a student's English language skills improve, academic adjustment becomes less of a problem and cultural learning and adjustment become easier (Cunningham & Kang, 1990; Dee, 1999).

Despite the problems arising from limited language abilities, international students vary in their desire to improve their English. Wang (2004) documented four Chinese students' journeys in U.S. graduate schools and found that those in science and engineering fields were primarily concerned with research and cared less about

improving their English writing and speaking skills, partly because limited English skills did not hold them back from completing degree requirements and graduate in time.

Classroom Functions and Learning Strategies

Academic practices are shaped by the educational philosophies and the value systems that are deeply rooted in the cultures of societies (Skow & Stephan, 2000). While adjusting to graduate school may be challenging for any student, research suggests it is particularly so for international students because of the differences in educational systems. This is depicted by a Chinese doctoral student in a U.S. university as follows: "The problem is not because we are incapable of doing things excellently, but because we are lacking the experience of handling the American university environment." (Sun & Chen, 1997a, p. 10) Previous research indicates that classroom participation and learning strategies pose major challenges for international students in their learning process. Most international students tend, at least initially, to rely on previous classroom norms and learning experiences and often find it difficult to participate at the level of American students (Sun & Chen, 1997). Craig (1981) and Edwards and Tonkin (1990) examined classroom behaviors of international students. They found that U.S. classroom culture, especially the quality and degree of faculty-student interactions, led to confusion and anxiety among international students. These findings reflect major differences in learning and teaching across cultures. In the U.S., students are encouraged to challenge teachers, work in groups, and students and teachers both engage in a great deal of conversation, whereas in other cultures, the teacher is considered as the authority of knowledge and students learn by paying attention to lectures and memorizing book materials.

Research also shows that learning preferences and strategies are influenced by learner characteristics as well as by social and cultural traditions (Bennett, 1999; Hayhoe & Pan, 1996; Worthley, 1987). Two studies conducted by Stoynoff (1996, 1997) revealed that learning strategies were related to international students' academic achievement. Academically successful students (as measured by GPA, credits earned, and number of withdrawals) better managed their study time, were better able to prepare for and take tests, were better at identifying the main ideas in spoken and written discourse, made better use of social support systems (e.g., study groups, tutors, friends, etc.), and spent more time studying than less academically successful students.

Finally, studies focused on Chinese students and students from other East Asian countries demonstrate that most of these students have to adapt learning strategies that emphasize reliance on authority and direction from teachers to those that emphasize independence (Ladd & Ruby, 1999; Qian, 2002; Wang, 2004). These studies suggest that students tend to consider professors as the repository of truth and knowledge and thus ascribe more authority and power to professors. Thus, students expect their advisors to tell them what to do, while U.S. faculty often expect graduate students to be critical, creative, and independent learners.

Relations with Faculty and Advisors

Faculty-student relations have been consistently identified as a key issue in international students' academic experience. Close relationships with academic advisors and other faculty members are critical to students' academic success because faculty are the primary agents of the academic community who facilitate international students' professional and personal development (Eland, 2001; Sung, 2000; T Wan, 1992; Wang,

2004). However, findings from previous research suggest that faculty-student interactions are frequently problematic, and language and cultural barriers often hinder international students from establishing relationships with American faculty and students (Trice, 2001). Furthermore, studies focusing on faculty perceptions of international graduate students show that faculty members tend to vary in their perceptions of adjustment issues facing international students, and respond differently to their students depending on their perspectives. In two different studies, Emmanuel (1992) and Trice (2000, 2001) examined engineering faculty's perceptions of the challenges international graduate students face. Some professors were keenly aware of the academic, social and cultural issues encountered by international students while others sensed few problems. Overall, most faculty in engineering were satisfied with international students' academic performance but they were also concerned by their language problems. Emmanuel (1992) suggests the disparity in faculty perceptions of issues surrounding international students contribute to differences in students' adjustment. Limited research also indicates that students appreciate faculty advisors who have an awareness of their unique situations and provide valuable guidance on academic matters, personal support, and advocacy within the community (Eland, 2001; Wang, 2004).

Other writing about faculty influence on the quality of students' educational experience falls into the category of opinion pieces that lack empirical evidence. Several have observed that faculty members do not adequately value or understand international students and refuse to take into account their special needs and priorities (Cooper, 1983; Kaplan, 1987; Light, 1993).

Social Experience

Only recently has the social dimension of international students' experiences received attention from higher education researchers. Because recent literature on the social experiences of international students in the U.S. is limited, this review includes similar studies conducted in Australia, Canada, and the U.K. that shed light on their social networks and socialization patterns within foreign academic settings.

Although not clearly defined, social adjustment seems to pertain to how well international students establish new social relations and support groups. Previous research has demonstrated the importance of social ties to international students' capacity to cope with life transitions by modifying negative causal attributions, communicating assurance, and buffering stress (Lee, Koeske, & Sales, 2004). Decoding and managing cross-cultural social situations elicits stress and anxiety (Kim, 2001). Therefore, international students tend to associate with others like themselves, avoiding interpersonal interactions with people of different race, ethnicity, and culture. In a study of international students' friendship patterns, Bochner, McLeod, and Lin (1977) delineated three types of social networks: monocultural, bicultural, and multicultural. The monocultural network includes friendships with others from a student's home country. The bicultural network, on the other hand, refers to developing bonds with American people. The multicultural circle consists of friends and acquaintances from various countries. Previous research suggests that each social network serves different functions.

Interactions with Americans

A number of studies have demonstrated that developing relationships with native-born peers and people in the local community is related to important benefits. Schram

and Lauver (1988) found that students who had frequent interactions with American peers reported fewer problems of adjustment while isolated students immersed themselves in hard work to keep from loneliness and homesickness. In another study of international students in a Canadian university, Westwood and Barker (1990) reported that those who participated in an 8-month program that paired international with Canadian students had significantly higher grades and lower dropout rates than those who did not participate. Researchers have also demonstrated a positive link between interaction with American students and international students' overall satisfaction with educational experience (Lulat & Altbach, 1985; Perrucci & Hu, 1995). Conversely, studies have found that limited social interactions with host nationals is related to feelings of anxiety, depression, and alienation (Chen, 1999; Schram & Lauver, 1988). Limited social contact with American people is also related to perceptions of the extent to which they have been able to adjust or fit into the new academic environment (Surdam & Collins, 1984; Zimmermann, 1995).

Despite these important benefits, current research reveals that the two groups rarely interact, and that many international students operate in relative isolation from American students (Barratt & Huba, 1994; Jiang & Brown, 2008; Trice, 2004). Furthermore, Barrett and Huba (1994) noted that many international students experience only superficial contact with Americans, far from forming meaningful and lasting relationship with them. Researchers have found a number of barriers that impede cross-cultural socialization, although the findings are somewhat inconsistent. Individual and contextual factors that seem to hinder international students from building interpersonal relationships with people from the host nation include language barriers, cultural

proximity, perceived discrimination, length of sojourn, marital status, age, gender, campus engagement, and the extent to which students socialize with others from their home country. Concerning language barriers, results from several studies show that poor English skills are related to a number of negative outcomes in social interactions with the host nationals. Not only do students with limited English abilities have more difficulty communicating with Americans, they also lack cultural insights that come about through deep understanding of the language. Thus, they have more difficulty making friends with host nationals and are less satisfied with their social life (Heikenheimo & Shute, 1986; Perrucci & Hu, 1995; Rajput, 1999; Ray & Lee, 1988; Surdam & Collins, 1984; Trice, 2004).

The proximity of individuals' culture with the American culture has a strong influence on how students are perceived and the extent to which they feel comfortable about socializing with Americans. White international students or students from Western European countries were less likely to feel alienated and had more frequent contact with American students (Lee & Rice, 2007; Trice, 2004). Conversely, those who share few cultural similarities with Americans have the most difficulty establishing relationships with them. In general, students from African, Asian and Latin American countries encounter more difficulties in adjusting to American campus life and establishing relationships with American students. Part of the difficulty is because students from these regions were often subject to cultural stereotyping, prejudice and discrimination more than Western Europeans, and direct and indirect discrimination occurs in a range of contexts, both in and outside the academic setting, by peers, faculty, and members of local communities (Jiang & Brown 2008; Lee & Rice, 2007) .

Married students interact less with Americans than single students and are more satisfied with their social relations (Perrucci & Hu, 1995; Trice, 2004), perhaps because they have the support of their family and therefore have less need for outside friendships. Concerning age, gender, length of sojourn, and time spent with co-nationals, research has led to mixed results. Student engagement on campus, however, is consistently identified as a positive factor (Trice, 2004; Zhao, Kuh, & Carini, 2005). Trice (2004) concludes that students who regularly interact with Americans through campus activities "have the knowledge of how to negotiate within other cultures and they continue to build more social capital through the way they choose to invest their time" (p.684).

Socialization with Co-nationals

Given the barriers and challenges of forming relationships with host nationals, it is not surprising that many international students rely on other students from their home country for friendships and social support. Adelman (1988) noted, "similar others can become very interdependent and supportive during the challenges of adjustment, providing a sense of psychological comfort that one is not alone" (p.191). Similarly, Furnham and Alibhai (1985) suggest that based on the likelihood of shared language and values, support from a co-national is qualitatively different from that which may come from others. In addition, the network of co-nationals allows international students to maintain their cultural identity and practices.

Chang (1996) studied Taiwanese graduate students and found that the Taiwanese student network played a vital role in both academic and non-academic adjustment. New students depended on the veteran students' academic experiences to select courses, attend

classes, and relate to faculty and other students. The national network also helped students in facilitating understanding of U.S. holidays, traditions and social customs.

Some earlier studies, however, concluded that socialization with co-nationals negatively influenced the extent of international students' engagement with Americans and other international students, particularly during the early stages of their sojourn (Alexander, Workneh, Klein, & Miller, 1976; Kang, 1972). Reliance on a co-cultural group as the sole social network has been characterized as an adaptation barrier to the U.S. campus life as it constrained students' contact with the native students and student affairs professionals. For example, in one of the earliest studies of Chinese students studying in the U.S., Kang (1972) found that the majority of Chinese students who mainly lived with other students from China reported hesitancy of interacting with Americans, and most of them had never been to an American's home. In other studies, major cultural differences led students to have little desire for contact with Americans and they preferred co-national companions for social activities, romantic relationships, and religious practices (Bochner, et al., 1977; Furnham & Alibhai, 1985; Rajput, 1999). Within co-national groups, students often passed down inaccurate information and or stereotypes and prejudices against certain racial, ethnic groups, holding back students from establishing relationships with diverse others. More recent studies, however, have shown different findings. For example, Trice (2004) studied international graduate students' social patterns and found that students who were committed to developing relationships with Americans find the time and means to do so, regardless of whether they had strong bonds with others from their home country. Also, the longer students lived in the U.S., the more frequently they socialized with American students.

Socialization with Other International Students

Although few studies specifically have examined interactions among international students from different countries, evidence from related studies suggest that foreign status and similar experiences create a common ground for them to identify with each other. Bochner, Hutnik, and Furnham (1985) found that friendships were often formed on the basis of "shared foreignness" among international students. Additionally, Nicholson (2001) and Furnham and Alibhai (1985) found that international students preferred to associate with other international students from the same region. Similarly, Rajput's (1999) study of culturally isolated international students reported that students felt a sense of "solidarity" with other international students. However, cultural distance also limited international students from establishing multicultural friendships. For example, students from Japan, Taiwan, and Korea were often perceived by other international students as maintaining strong co-cultural network and thus difficult to interact with.

International Student Satisfaction

Research that addresses international student satisfaction largely concerns their perceptions of support and services provided at institutional and program levels. Although limited in number and scope, this body of literature provides important insight into how international students in general value and utilize professional support and programs offered by various academic and student affairs units, and the extent to which institutions and their departments assist with their adjustment. I begin with a brief overview of common institutional support functions for international students, followed by a review of studies that examine perceptions of the effectiveness of these functions by students and providers.

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Institutional Support for International Students

The international student services functions developed as a branch of general student services in the 1960s and 1970s (Barr & Upcraft, 1990). Services were initially provided by offices dispersed throughout a college or university campus, as was the case for the general student population. As the numbers of international students increased, however, a more centralized system was deemed necessary on most campuses in order to respond to the unique needs of international students. A separate, centralized unit of student services catering to the exclusive needs of international students has become an indispensable part of institutions with substantial international enrollments, according to NAFSA, a national association of international educators that spurred the professionalization of international student administration services.

Most of these administrative units, usually named as the office of international students or the like, are staffed with advisors who provide guidance and support on immigration regulations and legal issues, university policies, and general academic procedures. Some institutions also develop intervention programs to help international students overcome culture shock and ensure their psychological well-being (Ping, 1999).

In one of the earliest works on counseling international students, Pedersen (1991) concluded from his own counseling experience that the stress international students experience in the first six months of study in a foreign country often reached crisis level, and further advocated for providing professional cross-cultural counseling and education for international students. Similarly, Kher et al. (2003) discussed the critical necessity for institutions to identify ways of meeting the special needs of international students, particularly in smaller institutions. They observed that the issues that international

students encounter were most often addressed through counseling after the fact, and contended that the focus should be on proactive programs that assist students in their initial integration into the community.

Additionally, many institutions offer programs on English as a second language to assist non-native speakers with acquiring necessary proficiency. Special care is taken to provide training in speaking, listening, and academic writing skills. Such courses typically range from those equivalent to freshman English to advanced courses in technical or scholarly English. As many international graduate students receive teaching assistantships, institutions also have developed programs to ensure they are properly trained before they assume teaching responsibilities. Training varies from one-day workshops, week-long language skills programs, to semester-long courses depending on institutional types and the size of the international teaching assistant cohort (Bauer, 1994).

Nevertheless, many details related to academic matters are left to international students. This is partly due to the diversity and differentiation of academic units and the distinction between academic affairs and student affairs on some campuses (Mestenhauser, 1988). Academic departments and faculty advisors, as the main sources of academic support for international students, tend to vary in their responses to international students according to factors such as the size of international enrollment in the program or unit, leadership, and faculty involvement (Trice, 2000).

Perceived Effectiveness of Services

A limited number of studies conducted at individual institutions across the country consistently concluded that services typically provided to international students were underutilized and generated mixed feelings of satisfaction. Most reported a low

level of awareness, usage, and satisfaction with a majority of services and programs (Johnson, 1993; C.-E. Joo, 2002; Lu, 2001; Tomovick, et al., 1996). More specifically, research has shown that international students were often not aware of support services and programs provided through the division of student affairs, and that services that used most often were those that required mandatory participation.

Perceptions of service effectiveness varied between administrators and international students (Barnett, 1991; Jenkins, 2001; Parr, et al., 1991; Tabdili-Azar, 1984; Walker, 1998). In two similar multi-campus studies, Parr, Bradley, and Bingi (1991) and Walker (1998) collectively found that student affairs' professionals perceived international students as well-adjusted with either slight to moderate concerns, and drew the conclusion that international students seemed to be quite satisfied with their experience in the U.S. Tabdili-Azar (1984) and Jenkins (2001) both took comparative approaches and investigated the perceptual differences between international students and student affairs' administrators who were in close contact with these students regarding the frequency of use, importance, and effectiveness of the services. International students were significantly more negative in most areas examined by the survey. Compared to student affairs advisors, the students reported their use of the services as significantly less frequent and the services as significantly less effective (Tabdili-Azar, 1984). In another study, Barnett (1991) surveyed more than 100 administrators at different levels in 23 institutions and found chief administrative officers assigned the highest perceived effectiveness scores. Barnett argued that chief administrative officers were not closely enough associated with international program functions to perceive effectiveness of the services and programs accurately.

Summary and Critique

The review of literature on international student adjustment suggests issues that have received most attention are those related to academic performance, and thus, a focus on the outcome of academic success characterizes much of the research. Many studies are exploratory and lack theoretical grounding, and their findings are inconclusive and contribute few new insights. Academic adjustment has become a global, generalized term and studies often mix academics with other issues related to social experiences and adjustment. Furthermore, although research has identified a wide range of problems and issues that international students encounter in and outside of classroom, few critically examine the underlying reasons why international students struggle with these issues, how they perceive and respond, and why they respond as they do. As such, current research has failed to capture more than superficially the perspectives international students have about their academic life.

The present review shows many issues related to language difficulties, academic writing, learning strategies and faculty-student/peer interactions are multifaceted and students' responses to these issues vary greatly. Research needs to examine these differences in students' perceptions and responses to the challenges they encounter, and illuminate how and why their perceptions change over time. Additionally, academic challenges have been studied in isolation from other transitional changes students undergo in a new cultural environment, particularly their experiences in social and cultural contexts within and outside of the academic community. Although some studies acknowledge the importance of interactions with faculty and peers, overall this body of research failed to provide a complete account of international student adjustment and

related challenges because the concept of adjustment is explored in very narrow terms of academic achievement.

Recent research highlighting the social patterns of different groups of international students illuminates the significant influence of non-academic interactions on academic achievement and overall adjustment. However, these studies provide only a glimpse into the phenomena of sociocultural immersion and cross-cultural adaptation in the academic context because they do not sufficiently explore the intersections between academic success, social integration, and intercultural learning. Overall, in higher education research, there is a lack of a coherent and integrative approach to investigate the adjustment of international students on American campuses.

CHAPTER 3

CROSS-CULTURAL ADAPTATION: THEORETICAL FRAMEWORK

In response to the limitations of higher education research on international student adjustment, I turn to theories and research on sojourner adjustment. These theories, and the empirical research that supports them, describe what adapting to a new culture entails and what it takes to prevail in that process. As such, they are particularly relevant to understanding the process of adaptive change that international students go through, and how they change from being cultural outsiders to increasingly active and effective cultural insiders.

The phenomenon of cross-cultural adaptation has been investigated extensively from different perspectives in various social science disciplines. While anthropological and sociological studies have primarily focused on the macro-level structural issues involving immigrant groups, social psychological studies, have largely dealt with the intrapersonal and interpersonal experiences of sojourners in unfamiliar environments. Studies of individuals' adaptation attend to both the long-term adaptation of immigrants and refugees living in a new culture permanently and the short-term adaptation of temporary sojourners. In particular, with a substantial history of academic interest, studies of the long-term adaptation of immigrants and ethnic communities have employed traditional anthropological and sociological concepts such as acculturation and

assimilation to analyze individual adaptation experiences, giving these concepts new definitions. In such studies, acculturation has been understood as changes in individuals whose primary learning has been in one culture and who selectively acquire traits from another culture (Marden & Meyer, 1968). Assimilation commonly refers to the process of more comprehensive change whereby individuals become absorbed into another culture (Kim, 2001).

Since the 1960s, with the continuous influx of international students and scholars and the increase of expatriate workers sent overseas by multinational companies, studies of short-term adaptation have received more attention in social psychological and communication research. Studies in this area have extensively addressed the psychological problems or "cultural shock" that arise when temporary sojourners encounter unfamiliar environments Hence, studies have frequently focused on the problematic nature of cross-cultural adaptation, mostly sojourners' reactions to negative experiences within the new environments (Anderson, 1994).

In contrast to the problem-oriented perspective, scholars such as Adler and Ruben have considered the developmental and growth-facilitating nature of the cross-cultural adaptation process. Ruben (1983) questioned the problem-based view of adaptation and argued that culture shock experiences might, in fact, encourage effective adaptation. Similarly, Adler (1987) asserted that cross-cultural adaptation experience should be viewed as a phenomenon that leads to profound learning, growth, and self-awareness. Finally, Kim (2001) stated that the problematic nature of entering a new culture presents strangers with an opportunity for new learning and for enhancing their coping abilities as they work out new ways of handling problems and meeting the demands of the new

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environment. Therefore, Kim characterizes the core of sojourners' cross-cultural experiences in terms of the growth dynamics that lead to internal changes in sojourners. Other studies that describe the "stages" of the short-term adaptation process provide further support for the learning-and-growth-oriented perspective (P. S. Adler, 1975; Gullahorn & Gullahorn, 1963; Lysgaard, 1955; Oberg, 1960). In addition, more recent works such as Kim's integrative theory of cross-cultural adaptation (Kim, 2001) and Bennett's developmental model of intercultural sensitivity (Bennett, 1993) also focus on the learning and growth-facilitating nature of cross-cultural adaptation.

Together, these theoretical accounts provide a firm conceptual foundation for understanding and examining international students' cross-cultural adaptation in the context of graduate school. In the following pages, I briefly review these theoretical and empirical works that articulate cross-cultural adaptation as a learning and growth producing process.

Stages Models and Learning Curve Theories

Many scholars have attempted to examine psychological reactions to the sojourn experience and to segment the stages involved in the process of cross-cultural adaptation (Adler, 1975; Dodd, 1991; Gullahorn and Gullahorn, 1963; Lysgaard, 1955; Oberg, 1958;). For example, the adjustment process has often been described in terms of "learning curves." Such curves, fluctuating up and down, depict the patterns of adaptive change over time with a focus on the degree of satisfaction with or positive attitude toward the host society. The U-curve of psychological adaptation first posited by Lysgaard (1955) depicts a curvilinear relationship between the psychological reactions of the sojourner and the length of time the sojourner resides in the host culture. Level of

adjustment in this curve is seen as a function of time in the new culture. The U-curve starts with the initial optimism and elation for being in a new culture, a subsequent dip precipitated by difficulties in adapting to the new culture, followed by a gradual recovery to higher, positive attitudes as the sojourner becomes acclimated. This adaptation process has been further extended to a "W-curve" by Gullahorn and Gullahorn (1963) to include a re-entry (or return home) phase during which the sojourner once again goes through a similar process. Research findings on the curve hypotheses have been mixed. While there is supporting evidence (Church, 1982; Torbiorn, 1982), Ward et al. (1998) found disconfirming results in a longitudinal study of the psychological and sociocultural adaptation of Japanese students in New Zealand. They found a more or less linear, progressive process of adaptation.

Similar to the curve theories are attempts to describe more discrete stages involved in cross-cultural adaptation. Several scholars describe four similar stages : honeymoon, crisis, resolution (or recovery), and stabilization (Dodd, 1991; Oberg, 1960). The honeymoon stage is characterized by a sense of fascination, elation and optimism when sojourners first encounter the new culture. After a while, they start to feel more anxious, impatient, and frustrated about being in the new culture, realizing major differences in the new culture and difficulties in adapting to it. The crisis stage is one of hostility and emotionally stereotyped attitudes toward the host society and increased association with fellow sojourners (Kim, 2001). The resolution stage is characterized by increased language knowledge and ability to function well in the new environment. At the final stage of adjustment, anxiety is gone and sojourners accept and enjoy the differences between the new host culture and their own native culture.

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Henderson, Milhouse, and Cao (1993) examined Chinese students' transition in the U.S. using this four-stage model. They found that the first "honeymoon" stage was the shortest, varying from one week to one month. As soon as the students confronted the pragmatics of living the American way of life, their elation and optimism subsided. The crisis stage was the longest and the most painful period, lasting from two to three months, where the majority of the students became emotionally paralyzed with varying degrees of symptoms. Most of the participants reached the resolution and stabilization stages as they gradually became familiar with the new surroundings and made efforts to get accustomed to the new education system and the local community.

Some researchers cast doubt on the veracity of stage models. According to Spaulding and Flack (1976), studies that disaggregate students by age, sex, educational background, nationality, English competence, level of study, and life styles suggest that social and academic adjustment processes do not present a clear-cut single pattern and that few generalizations can be made that could hold for all international students. In addition, several research findings offer counter evidence to the notion that adjustment is a function of time and that duration of sojourn makes no significant differences in psychological adjustment (M. R. Hammer, 1992). Finally, Furnham and Bochner (1982) argues that these curve and stage models have "a distinct clinical flavor" (p.163) and that the problems international students experience should not be regarded as some underlying pathology. Further, they suggest that descriptions of culture shock were rather hypothetical and have not been subjected to independent, objective verification.

Kim's Integrative Theory of Cross-cultural Adaptation

Kim's theory is comprehensive and incorporates many existing approaches and models to include the psychological, communicative, and developmental issues involved in the process of cross-cultural adaptation. Kim (2001), an intercultural communication scholar, places adaptation at the intersection of the person and the new environment, describing cross-cultural adaptation as a communication process that "makes the intersection possible through the exchange of information" (p.32). Kim's theory of cross-cultural adaptation assumes that 1) humans are open systems, 2) each person is a dynamic and self-reflexive system that adapts to environmental challenges, and 3) adaptation is a complex and dynamic process that brings about a qualitative transformation in the individual.

The theory points out that both the quantity and the quality of sojourners' communication activities in the new environment are crucial to their adaptation. In order to explain the differential rates at which the cross-cultural adaptation process unfolds, Kim's theory identifies a number of key factors that facilitate or impede the process. First, Kim conceptualizes sojourners' communication in the host society as having two inseparable dimensions: personal communication and social communication. Personal communication (host communication competence) refers to sojourners' abilities to relate to the host culture—the overall capacity of individuals to receive and process information appropriately and effectively and to initiate and respond to others in accordance with the host communication system. The key elements that constitute host communication competence have been grouped into cognitive, affective, and behavioral (or operational) categories.

The primary element of cognitive competence is knowledge of the host language and culture. Knowledge of the host language includes both linguistic knowledge and knowledge about the pragmatic use of the language in everyday life. Affective competence refers to "readiness" to accommodate cross-cultural challenges, for example, tolerance for ambiguity, flexibility, empathy, and ability to suspend judgment. Affective competence allows individuals to empathize with the natives, thus leading to a sense of belonging and a positive regard for the natives. Behavioral competence is the individual's "abilities to be flexible and resourceful in actually carrying out what he or she is capable of in the cognitive and affective dimensions" (p. 269). The interrelatedness of cognitive, affective, and behavioral components of intercultural competence has been documented in empirical studies of sojourners (G. M. Chen, 1992; Wiseman, Hammer, & Nishida, 1989; Zimmermann, 1995).

Social communication includes two aspects: host social communication and ethnic social communication. Host social communication refers to social participation through interpersonal relationships with local people and exposure to the host mass media. The size of social networks, the strength of host ties, and the amount of host media use influence the adaptation process. That is, the greater the use of host interpersonal and mass communication, the greater an individual's intercultural transformation. Sojourners' participation in the social processes of a new culture is complicated by interactions with co-ethnics. On the one hand, ethnic social communication can facilitate short-term adaptation as it involves interactions with people who have already advanced in their adaptive experiences. On the other hand, prolonged communication within ethnic communities can impede long-term adaptation.

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Interfacing with the personal and social communication dimensions of cross-cultural adaptation is a third dimension, environment. Three conditions or factors of the environment have been identified as being most significant to the cross-cultural adaptation process: the degree of host receptivity toward sojourners, the conformity pressure exerted by the host culture on sojourners, and the sojourner's ethnic group strength in the new environment. Kim notes that a receptive host environment facilitates adaptation by extending its welcome and support, and exerts implicit or explicit pressure on sojourners to acquire and practice the new cultural norms. The presence of a resourceful and organized co-ethnic community, however, tends to discourage adaptation because a strong ethnic support network tends to perpetuate the long-term maintenance of the original cultural identity and practices.

Kim's theory also takes into account individual background characteristics that have significant bearing on the adaptation process. Three key aspects constitute the overall "adaptation potential" of a sojourner: one's readiness for and understanding of the challenges involved in crossing cultural borders and his or her knowledge of the host culture, the proximity of one's culture to the host culture, and one's psychological makeup or personality attributes such as openness and positivity. Together, these personal characteristics can explain variations in sojourners' host communication competence and their participation in social communication activities.

Collectively and interactively, these dimensions influence, and are influenced by, the adaptive changes leading to intercultural transformation. Kim notes that cross-cultural adaptation can be seen as a continuum along which sojourners show differential levels of intercultural transformation. The gradual process of intercultural transformation, then, is

the outcome of sustained participation in the host environment. Kim describes intercultural transformation in terms of its three specific facets: functional fitness, psychological health, and intercultural identity. Functional fitness is reflected in individuals' capabilities of carrying out day-to-day activities smoothly and feeling comfortable in a host environment. As Kim states, "functionally fit individuals have developed a broadened, clearer, more objective, and more differentiating perception of the host cultural and communication patterns" (p.186). An increase in functional fitness is accompanied by an increase in overall psychological health as problems associated with culture-shock and stress decline. The increased functional fitness and psychological health of sojourners in the host environment lead to formation of a new, alternative identity that is "broader, more inclusive, and more intercultural" (Kim, 2001, p.191).

The consideration of intercultural transformation in the process of cross-cultural adaptation is the highlight of Kim's theory, especially the development of an intercultural identity. An intercultural identity results when an individual internalizes new cultural elements and constructs an active self based on his or her understanding of multiple realities. Kim explains that cross-cultural adaptation is "a personal journey that ultimately leads to a transcendence of cultural categories in individual consciousness" (p.195). Essentially, the process of intercultural transformation results in an "intercultural personhood", a special kind of orientation toward self, others, and the world.
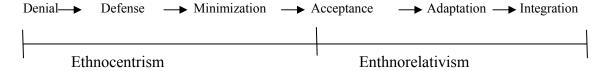
Overall, Kim's theory not only provides an integrative explanation of how sojourners cope, learn, and grow in a new culture, it also highlights how an individual sojourner's motivation and perception (both cognitive and affective) influence adaptation and the individual transformation that occurs during the process.

Bennett's Developmental Model of Intercultural Sensitivity

While Kim's theory provides a comprehensive account of cross-cultural adaptation, the Developmental Model of Intercultural Sensitivity (DMIS) more specifically explains the intercultural learning process. Bennett's model explains how people construe cultural differences and respond in cross-cultural situations based on their different constructions (Bennett, 1993). Bennett terms this experience "intercultural sensitivity."

Similar to the stage models, the DMIS conceptualizes increasing sensitivity to cultural difference into six developmental stages. Figure 3.1, adapted from Hammer, Bennett, and Wiseman (2003) describes the movement from ethnocentrism to ethnorelativism, a more sophisticated and inclusive understanding of cultural differences. The model assumes a linear progression from the beginning, intermediate, to end stages. However, the progression through the stages is not always one-way or permanent as the developmental model also takes into account the possibility that individuals will "retreat" or "regress" in the process.

Figure 3.1. **The Developmental Model of Intercultural Sensitivity**

Denial⟶   Defense ⟶ Minimization ⟶ Acceptance ⟶ Adaptation ⟶ Integration

Ethnocentrism	Enthnorelativism

Note. From "Measuring Intercultural Sensitivity: The Intercultural Development Inventory," by Hammer, Bennett, & Wiseman, 2003, *International Journal of Intercultural Relations, 27, 4,* p. 421-443.

The first three DMIS stages are conceptualized as more *ethnocentric*, meaning that one's own culture is experienced as central to the reality one constructs. Among those who deny cultural differences, one's own culture is experienced as the only real

culture and difference is either not experienced at all, or it is construed in rather vague ways. Bennett suggests that denial of cultural difference is the default condition of monocultural primary socialization. A defensive response to cultural differences is an outlook where one's own culture is considered as the only "viable" culture and differences are viewed suspiciously, as threats to one's self-esteem and identity. Experience of cultural difference is polarized around either the inferiority of other cultures or the superiority of one's own culture. Among individuals with a minimization orientation, there is acceptance of differences with other cultures on a surface level, but elements of one's own cultural worldview are still experienced as universal.

The next three DMIS orientations are defined as more ethnorelative where one's own culture is experienced in the context of other cultures. These stages represent a fundamental shift in mindset from an unconscious ethnocentric assumption to a more conscious assumption that one's own is one of several equally viable cultures. In Acceptance, other cultures are experienced as equally complex and different constructions of reality; there is an acknowledgement that identifying significant cultural differences is crucial to understanding human interaction. Acceptance does not mean "agreement," so it is possible that one can accept the existence of alternative values while still feeling that the values are inappropriate. Adaptation to cultural differences is where one attains the ability to shift perspectives which is the basis for biculturalism or multiculturalism. This shift is not merely cognitive, but includes affective and behavioral adjustments. Thus, people in the adaptation stage are able to express their alternative cultural experience as appropriate feelings and behaviors.

Integration enables one to expand the sense of self to include the movement in and out of different cultural worldviews. The need for this integration arises out of significant pluralism in the worldview of an individual, when his/her sense of identity does not fit into any one cultural frame. Bennett (1993) refers to this condition as cultural marginality, where cultural identity exists on the margins of two or more cultures. According to Bennett, cultural marginality has two forms: an encapsulated form, where the separation from culture is experienced as alienation; and a constructive form, where cultural difference becomes a necessary and positive part of identity, thus enabling people to move among cultural frames while maintaining an integrated identity.

In general, the ethnocentric orientations can be seen as ways of avoiding cultural difference, by denying its existence, by raising defenses against it, or by minimizing its importance. The ethnorelative orientations are ways of acknowledging cultural difference, either by accepting its importance, by adapting one's perspective to take it into account, or by integrating cultural difference into one's self-identity. Bennett (1993) argues that with increasing exposure to differences and sometimes proper intervention, the development of intercultural sensitivity moves from centering one's own culture and reality to recognizing and accepting differences and actively constructing an alternative view of culture and reality based on various perspectives. It is a shift from a naïve, narrow, and self-centered worldview to mature, open, interdependent worldview. This shift of worldview is accompanied by a more sophisticated level of cognitive processing and a shift in one's sense of self and others as cultural beings, and therefore, allows for engaging in meaningful, interdependent relationships with diverse others.

Integrating Diverse Perspectives

The different conceptualizations of cross-cultural adaptation and intercultural learning reviewed in this chapter guide my inquiry into the adjustment experiences of Chinese graduate students. This body of work suggests: 1) cross-cultural encounters present problems and anxiety as well as opportunities for learning and growth; 2) cross-cultural adaptation is a process of communication between individual sojourners and the new environment; and 3) individual characteristics shape the adaptation process and adaptation brings about a qualitative transformation in individuals' worldviews, sense of self, and relationships with different others. This literature directs attention to the central role of communicative interactions between sojourners and their host environments in cross-cultural adaptation and to individual interpretations of their experiences. Instead of asking whether students' adaptation follows predictable patterns, research should consider how they cognitively construct and adapt to their new environments, .

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

The purpose of my study is to describe and analyze Chinese engineering students' cross-cultural adaptation experiences in graduate school to better understand how they personally perceive and interpret these experiences. My main concern is not whether students adapt successfully, but how they make sense of challenging graduate education experiences that they believe require cross-cultural adaptation; how their perceptions and experiences lead to different adaptations. To this end, I conducted in-depth interviews with a group of ten doctoral engineering students who were nearing or had just completed their graduate programs.

The constructivist interpretive framework

A research paradigm represents a worldview, a framework that fundamentally influences how the researcher sees the world, how it should be understood and studied (Guba & Lincoln, 1994). This basic set of beliefs that guides researchers' actions throughout the inquiry process includes ontological (beliefs about the form and nature of reality), epistemological (beliefs about knowledge), and methodological (how one comes to know) assumptions.

My approach to this study is shaped greatly by assumptions of the constructivist interpretive paradigm (Lincoln & Guba, 1985). I believe that people construct realities based on their experiences within social contexts. Reality is what we see, what we hear, and what we feel. Our understanding of reality may change as we become more informed.

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I also believe that interactions between the researcher and the participants lead to the co-creation of knowledge about a particular social phenomenon. Therefore, I asked my study participants to describe and reflect on their graduate school experiences and to explain what cross-cultural adaptation within this context meant to them.

This study was also informed by assumptions considered key to ethnographic inquiry, which attempts to place specific encounters, events and understandings into a fuller, more meaningful context (Tedlock, 2003). A key assumption of ethnographic inquiry is that researchers can reach a better understanding of people's perceptions and behaviors by entering into first-hand interaction with them in their everyday lives, (Tedlock, 2003). I participated in the daily routines of many of the participants, developed ongoing relationships, and observed them in their natural settings - their offices, labs, apartments, and other social contexts. I conducted multiple in-depth interviews with them and maintained field notes of my observations and experiences.

<div align="center">

Research Setting

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Institutional Profile

The research setting was Lakeside University (pseudonym), a prestigious public research university in the Midwest. In 2007, close to 5,000 international students from over 100 countries attended Lakeside University making this an ideal site for the study. In fact, this university has a long history of enrolling substantial numbers of international students at the graduate level. The prestige of the institution and the reputation of its graduate programs allowed Lakeside to draw outstanding applicants from around the world. Over the last decade, international students have represented more than 20% of the

total annual graduate enrollment at Lakeside, mostly studying in science and engineering programs. In 2007, more than one third of Lakeside's international graduate students were enrolled in engineering programs.

At Lakeside, several administrative units along with academic departments provide support to the international graduate students. These units include the Office of International Education, the Graduate School, and the English Language Center (pseudonyms). The Office of International Education is the central administrative unit that provides services to students from outside the U.S., such as new student orientation workshops and events and information about immigration regulations and health insurances. The Graduate School has traditionally served the entire graduate student community. More recently, the graduate school administration began to acknowledge the unique experiences of international graduate students, and has developed funds and programs, such as fellowships, academic programs and social events, that are tailored specifically to their needs. For example, the graduate school has created more funding opportunities exclusively for international graduate students where they do not have to compete with domestic students, and has also developed intercultural learning workshops and events to educate students about cross-cultural adjustment. Finally, the English Language Center is the primary resource for English language training and evaluation for international students. The center also provides programs for improving communication skills such as "Telephone talk" and "job interview language." Many international students in engineering programs are required by their departments to take language classes in their first or second years.

College of Engineering

Lakeside's College of Engineering (COE) is among the most highly ranked engineering schools in the world. In 2007, the College consisted of more than 60 fields of study with over 300 tenured or tenure tack faculty nearly one third of whom were foreign citizens. Sixteen Chinese faculty members were concentrated in the larger departments, such as mechanical engineering, electrical engineering, and computer science. In the same year, about 1,200 international graduate students were enrolled at the College, with the majority of them from China, South Korea, and India.

Chinese students were present in all engineering departments at Lakeside. Table 4.1 presents data showing the percentage of the international doctoral students in each department who were from China. Overall, Chinese students accounted for more than 15% of the international doctoral student population in half of the engineering programs. Because of the prestige of the programs and the generous funding for international students, the number of applications the College receives from highly qualified applicants has increased each year. Furthermore, over the years Chinese students have built strong alumni networks which function as a primary information source for prospective students and it is not surprising to find that many Chinese engineering students graduated from the same programs in the same Chinese universities.

Table 4.1 Distribution of Chinese Students in Engineering at Doctoral Level

Academic Programs	Number of Chinese students	% of international students in the program	% of Chinese students in the program
Mechanical Engineering	44 (6)*	62%	17%
Computer Science	26 (1)	46%	16%
Electrical Engineering	16 (1)	59%	9%
Materials Science & Engineering	15	55%	23%
Naval Architecture & Marine Engineering	11	65%	36%
Industrial & Operation Engineering	10 (1)	41%	16%
Nuclear Engineering & Radiology	8	38%	15%
Biomedical Engineering	7	46%	6%
Atmospheric & Space Science	7 (2)	40%	28%
Electrical Engineering-Systems	5 (1)	73%	6%
Civil Engineering	5	87%	13%
Chemical Engineering	4	31%	4%
Aerospace Engineering	3	44%	4%
Environmental Engineering	3	52%	11%

*indicates the number of students who participated in this study. The total number exceeds 10 because some students were in joint degree programs (See Table 5.1 for details).

Research Group

The engineering doctoral students at Lakeside University typically serve as research or teaching assistants depending on their interests and funding opportunities. International doctoral students are frequently involved in their faculty advisors' research group in their first or second year of study. These research groups vary by size, structure, and duration depending on the nature and funding sources of projects. Some large groups typically have post-doctoral researchers or research scientists who manage daily operations and oversee graduate students. In this case, students may have fewer opportunities to interact with faculty advisors.

Research groups tend to function fairly autonomously and, in some groups, members work on independent assignments with very little overlap with each other. Typically, research groups meet once a week to discuss progress. These research groups are the academic and employment bases for most international graduate students. They spend significant amount of time and energy working on the group projects, and more importantly, their research and dissertation topics are often established from their work in the group. The faculty member who leads the research group also serves as academic advisor to the students and their funding depends on their ability to deliver results for the projects. Within this organizational structure, the faculty advisor plays an extremely important role in each student's graduate career; the faculty advisor typically supports graduate students financially, chairs dissertations, and even determines completion of graduate study.

Research Design

The research design of this study consists of two major parts: selecting and recruiting participants, and gathering and analyzing interview data.

Selecting Participants

Participants were selected using a criterion purposive sampling technique (Patton, 2001). Because this study concerns the experiences of international graduate students specifically the sample is necessarily purposeful (Patton, 2001), or criterion based (Miles & Huberman, 1994). The following specific criteria were used in selecting participants:

1. The student was a doctoral candidate or the student had recently completed his/her doctoral degree at the time of interview.

2. The student was originally from China and came to the U.S. for the purpose of attending graduate school.

3. The student was enrolled in a graduate program in the College of Engineering.

Advanced graduate students were purposefully selected based on the assumption that the duration of their graduate school experience and period of stay in the U.S. were connected with their capacity for critical self-reflection on various aspects of graduate experience. Also, the focus on engineering students controls for disciplinary variations in areas such as instructional goals, teaching and learning styles and peer dynamics that provide unique learning contexts, and therefore, influence students' perceptions and adjustment. Previous research has found that organizational factors such as departmental leadership, faculty age, the size of unit, and the size of international enrollment were related to how an academic unit responded to its international students (Trice, 1998).

Based on my previous experience with interview-based research, a realistic assessment of time and logistical requirements, and estimation of the amount of experiential materials needed for rich description, I decided to collect data from ten individuals. I conducted multiple interviews with each individual, gathering in-depth information about their life experiences as an international graduate student. This process allowed me to engage in prolonged interactions with participants and build meaningful relationships with them.

Participants were recruited on the basis of reputational selection (Miles & Huberman, 1994). That is, they were recommended by an expert or key informant. The key informants in this study were faculty members and student affairs' administrators who were in close contact with international graduate students. A list of four potential key informants was generated during an initial search, which included Chinese and American faculty members at the College of Engineering. Using a snowball sampling technique (Patton, 2001), following conversations with each informant I solicited recommendations of other faculty members and administrators who were closely involved with Chinese graduate students. As a result, I met with five engineering faculty members and conducted formal interviews with each of them, each lasting about 40 minutes. I also interviewed two graduate coordinators over the phone. Overall their suggestions helped identify the majority of participants. Also, following the interviews with the first five students, I asked each of them to recommend other Chinese students, particularly women participants. Women participants were most difficult to recruit because they were underrepresented in the engineering field.

I sent emails to all of the prospective participants and collected demographic information (See Appendix A) from those who agreed to participate in the study to confirm their eligibility. The final sample included a mixed group of individuals who were recommended by the faculty and the Chinese students. They allowed me to hear a variety of perspectives from students who were both satisfied and less than satisfied with their graduate experience.

Interviews

Traditional techniques of obtaining experiential data from participants are interviewing, eliciting writing, and participant observation. Van Manen (1990) states that the qualitative interview serves very specific purposes: (1) it may be used as a means for exploring and gathering experiential narrative material that may serve as a resource for developing a richer and deeper understanding of a human phenomenon, and (2) may be used as a vehicle to develop a conversational relation with interviewees about the meaning of an experience. In this study, the goal of the interviews was to understand "the experience of other people and the meanings they make of that experience" (Seidman, 1991, p. 3). In order to allow participants to answer questions from their own frames of reference, rather than choosing from a limited number of predetermined options, I decided to conduct open-ended interviews. The open-ended questions allow for the flexibility to probe for meaning-making and to follow up unanticipated but relevant issues raised by the participants (Patton, 2001).

A total of 20 formal interviews were completed during the fall 2007 semester with 10 Chinese graduate engineering students from various areas of specialization. I met with each participant at least twice and conducted two formal interviews with each of them.

Each interview lasted approximately 90 minutes and produced more than 40 hours of recording. Most of the interviews occurred at a public place except when participants chose to meet at their residences. All interviews were conducted mainly in Chinese although both participants and I frequently inserted English into the conversations.

The interviews included pre-determined questions designed to collect consistent and relevant information from all participants, and unstructured dialogues which allowed individuals to share their stories in unique and personal ways. I used an interview protocol (See Appendix C) that was developed based on the guiding research questions. The protocol consisted of broad questions related to the principal research questions, and alternative probes that could be used to facilitate the collection of vital, substantive descriptions of participants' experiences.

I began the first interviews by informing participants about the purpose of the study and the interview methods. Participants also had the opportunity to ask questions about the study and sign the consent forms (IRB approval number: HUM00005117) (See Appendix B). I also spent time explaining the confidentiality of our conversations and my role as an interviewer. That is, my role was not to judge their experience or them but to hear their life stories and how they make sense of their academic journey in America. To begin, I asked participants to describe their backgrounds, particularly their college education in China. I also inquired about their motivations for attending graduate school in the U.S. and their expectations. Next, I asked them to describe key challenges they encountered in graduate school, and how they responded to those challenges. The first interviews ended with a question about emerging new challenges at the current stage of their graduate study.

The second interview was arranged approximately one or two weeks (three weeks at most) after the first interview took place. I began by reviewing challenges participants discussed previously to refresh their memories. Then I transitioned into the discussion of cross-cultural adaptation, asking them which of these challenges they associated with cross-cultural adaptation. I followed up with questions about their perceptions of cross-cultural adaption, and their perspectives on the connection between adaptation and success in graduate school. At the end, I asked participants to share insights they learned from their experiences over the years, their feeling about participating in the interviews, and I obtained permissions to contact them in the future regarding the findings. As themes and issues arose from earlier interviews, I asked subsequent participants about those issues to gather confirming or disconfirming information. Also, if a topic or an issue was brought up in more than one interview, I probed further for more information. For example, early in the interviews the issue of religion emerged as a salient adjustment experience for one participant. When a second participant brought up attending church events, I probed further to gather relevant information that would help me compare their experiences.

All interviews were audio recorded with permission from participants and transcribed verbatim. Interview transcripts were returned to participants for their comments, clarification, and/or correction of errors. I followed up with participants for their reactions and/or observations. Most participants did not provide additional comments except when asked for clarifications.

In addition to audio recording, I also took field notes. My notes included two types of information: notes of major topics or themes that participants discussed, and my

observations of participants, questions that arose from particular topics, and my initial thoughts on how interviews related to each other. These notes were incorporated into descriptions and thematic analyses of participants' experiences in the later stage of analysis.

Establishing Relationships with Participants

Building a strong, trusting relationship with participants is important to effective interviewing. I used several strategies to build rapport and establish my credibility. My first attempt was during the recruiting stage when I initiated informal contacts with the participants via email or phone calls. I introduced myself and communicated my research interests and the purposes of interviews to the participants in informal ways. The initial interactions helped break the ice and establish some degree of familiarity with the participants. When possible, I also asked for a tour of their office, lab, or the department.

Early in the interviews I assured participants of their anonymity and asked them to choose a pseudonym that I could use in writing. In addition, I explained to them that I would change and/or remove any identifying information when necessary. I also informed them about their rights to decline to answer any questions and withdraw from interview at any time, and that they could review the transcription and change and/or remove any personal information. I also explained that the audio recording of the interviews would be erased at the completion of the study. These assurances were given verbally as well as in the informed consent form signed by participants at the beginning of the interviews.

I also built rapport with participants by showing my genuine interest in their stories and their perceptions. Participants acknowledged my experience of working with

international graduate students. They also seemed to be pleased to hear that I was particularly interested in Chinese students studying engineering as many of them felt much of their experience was either unknown or ignored by the university administration. For people whom I had known previously, even if it was limited, there seemed to be added degrees of ease, comfort, and willingness to share their stories, particularly their struggles and personal feelings. I was also able to establish credibility with participants because of my own experience as a doctoral student.

Participants' comfort in sharing their personal experience and feelings may also have been influenced by my cultural identity and personal style. Because of my own experience as an international graduate student and my cultural identity, I was able to connect with participants instantly. I demonstrated my comfort in hearing about their struggles when they talked about challenges they encountered. I presented myself as open, understanding, and curious. I attempted to show respect and appreciation in how I asked my questions and listened and reacted to their responses.

Analytical Procedures

Qualitative research is a successively selective process where the researcher progressively narrows the focus at each stage to achieve data reduction (Krathwohl, 1998). The processes of qualitative data analysis usually involves preparing data for analysis, conducting different types of analyses, representing data, and interpreting the larger meaning of the data (Creswell, 2003; Krathwohl, 1998). In the analysis process, I used interview transcripts and my observational notes as the primary texts. To ensure

thick, rich descriptions of Chinese engineering students' experience in graduate school, I took the following steps in analyzing the interview data.

Initial Processes

Digital recordings of the interviews were transferred and stored on a secure computer with password protection. Then, transcriptions were completed and proof-read to check for any information that revealed participants' identities. Finally, these transcripts and my field notes were inputted into QSR NVivo, a computer software program designed for qualitative data management and analysis (e.g., data storage, coding, retrieval, comparing, linking). I used the latest version, QSR NVivo7 which allows using texts written in languages other than English.

I began the analysis of interviews by listening to the interview recording numerous times and reading the combined transcripts of two interviews for each participant to "get a sense of the whole" (Patton, 2001, p.440). It was important to get an overall sense of each participant's experience and perceptions at early stage because the next stages of coding and categorizing involve segmenting texts into chunks of information. After reading all transcripts, I was able to gain a comprehensive picture of each participant's experience. This knowledge enabled me to better understand the context and connections among the themes that I developed at the coding stage. I also kept memos of individual experience, recurring topics or issues, and salient patterns. These memos were instrumental in developing codes and constructing individual profiles.

Coding

The next step in analysis involved data reduction by identifying phrases or passages that embody a singular idea which seemed interesting or significant (Rubin &

Rubin, 1995). During my initial reading of the transcripts, I segmented texts into chunks of information and gave them descriptive labels. Semantically related phrases, or themes, emerged as I found recurring information in multiple transcripts. Based on initial readings of the transcripts, the research questions, and the literature on international student experience, I identified a list of themes of interest. As I coded more transcripts, I continued to add new codes to reflect important topics and issues that emerged in the later transcripts.

With the assistance of the QSR NVivo program, codes (known as nodes in the NVivo program) were recorded and managed in a hierarchy of tree nodes and child nodes. The tree nodes served as an overarching code category (themes) that combine several child nodes (discrete phrases/passages). Free nodes were also created when codes appeared independent from all tree nodes. After coding all transcripts, I went through an iterative process of refining and restructuring code categories. The nature of codes changed from descriptive to inferential and interpretive during the process (Miles & Huberman, 1994). When I thought all coding was finalized, I went back to each transcript to confirm consistency across all transcripts. Some restructuring of code categories was necessary to eliminate redundancy (See Appendix D for the complete code list). The NVivo program made the reexamination of codes a manageable process as I was able to locate each text segment instantly.

It is important to note that, despite the seemingly mechanical process of reading and coding, analyzing the transcripts was a highly subjective and reflective process. Determining what was important or interesting was a matter of judgment and reflected the main purposes of my study.

Thematic analysis

The process of finding patterns and developing themes began during data collection when I developed some preliminary ideas of the key challenges that my participants encountered and how they understood their cross-cultural experience in graduate school. Listening to the interviews, reading the transcripts as a whole, and the prolonged processes of coding and categorizing brought more clarity to these preliminary ideas. Identifying themes and patterns involved a reflective and reiterative process of comparing and contrasting: texts, codes and coding categories. Writing was also a part of the analytical process. During the writing process, I frequently revisited the transcripts, revised coding scheme, added and/or changed categories, and remained open to other themes that might emerge. After completing three chapters on thematic analysis, I returned to the literature to re-orient myself to the theoretical frameworks.

Verification

To establish credibility and trustworthiness for my interpretations, I referred to four constructs proposed by Lincoln and Guba (1985): credibility, transferability, dependability, and confirmability.

Credibility

Credibility demonstrates that the study findings are accurate and have integrity and validity (Patton, 2001). Lincoln and Guba (1985) argue that member checking is an important technique for establishing credibility, "whereby data, analytical categories, interpretations, and conclusions are tested with members of those stakeholding groups from whom the data were originally collected (Lincoln & Guba, 1985, p. 314). To

establish credibility in my descriptions and interpretations, I provided each participant with their own interview transcripts individual profile and asked them to check these materials for accuracy. In addition, I also asked my colleagues (who were international students) and three Chinese engineering students who were not involved in the study to review the preliminary findings and assess, in light of their experiences, whether my interpretations made sense to them. Finally, in my analysis and writing, I provided ample evidence (in the form of participants' narratives) for the various themes identified and my interpretations of those themes.

Transferability

Transferability addresses whether the findings from a study can be generalized from one context to another. The goal of this study was to understand the unique experience of Chinese engineering students in graduate school, not to generalize to students from other countries or in different disciplines. The rich, detailed descriptions of participants and the research setting, however, provide enough information for readers to determine the usefulness of my findings in other contexts.

Dependability

Dependability accounts for "changing conditions in the phenomenon chosen for study and changes in the design created by an increasingly refined understanding of the setting" (Marshall & Rossman, 1999, p. 194). This was evident in the way my research evolved. For example, I described previously how I changed the protocol to include topics that emerged during my initial interviews.

Lincoln and Guba suggested one method for assessing dependability: the inquiry audit, a process in which qualified persons other than the researcher monitor the

appropriateness of the research methods and affirm the study to be dependable (Lincoln & Guba, 1985). In this research, the dissertation committee, the participants, and my colleagues who reviewed my dissertation drafts have served auditing functions.

Confirmability

Confirmability is similar to the concept of objectivity in quantitative research that asks whether the study results can be repeated by someone working with the same data. In qualitative research, the issue of confirmability addresses whether the data support the interpretations (Lincoln & Guba, 1985), or whether an independent scholar reaches the same conclusions as the investigator (Marshall & Rossman, 1999). Having study participants, my student colleagues in higher education studies, and dissertation committee members who were experts in international education review my analyses and check my interpretations helped confirm the findings.

CHAPTER 5

PROFILES OF PARTICIPANTS

In this chapter, I first present a portrait of the participants in the study. I then present an individual profile of each participant beginning with his or her personal background and motives for studying in the U.S. I provide a general picture of the participants and their experiences before and during graduate school. The individual profiles ends with a description of their career decision, plans after graduation, and thoughts on returning to China. A more detailed analysis of the challenges they encountered during their graduate study in the U.S. and their responses to those challenges will be discussed in the next chapter. I also include my impressions of each participant, which are based on our prolonged interactions before, during, and after the interviews, field notes, audio recordings, and correspondence. I share these because they often shape my interpretations of their responses to particular interview questions.

Profiles of Study Participants

All participants in this study were born and raised in mainland China and none of them had previous experience of living or studying abroad. Table 5.1 presents the socio-demographic characteristics of the participants. Two of the seven men have recently graduated with doctoral degrees and remained in their programs as post-doctoral researchers. One of the three women graduated and held a post doctoral position

Table 5.1 Descriptions of Participants

Pseudonym	Age	Program	Gender	Year of Study	Marital Status
Chris	30	Computer Science	Male	6	Married
Grace	31	Atmospheric Science & Electrical Engineering	Female	Graduated	Married
John	28	Mechanical & Industrial Operational Engineering	Male	4	Single
Larry	25	Systems Engineering	Male	4	Single
Lei	31	Mechanical Engineering	Male	Graduated	Married
Shirley	28	Atmospheric Science	Female	4	Single
Song	31	Mechanical Engineering	Male	Graduated	Married
Tao	30	Mechanical Engineering	Male	5	Married
Wayne	30	Mechanical Engineering	Male	5	Married
Zoe	25	Thermal Engineering	Female	4	Single (engaged)

briefly but had resigned at the time of this study. Two of the three women studied atmospheric science while all but two men were in the field of mechanical engineering. The other two men were from the departments of electrical engineering and computer science. As I described in Chapter 4, all of these academic units are characterized by large numbers of Chinese doctoral students. For example, there are 44 (17%) Chinese doctoral students enrolled in the mechanical engineering program and 26 (16%) in the computer science program. In atmospheric science, seven Chinese students account for 28% of the doctoral student body.

Looking at their academic backgrounds, all participants studied in elite universities in China before coming to the U.S. and two had transferred from other U.S. institutions to Lakeside. Five participants attended Tsinghua University for their undergraduate and or graduate studies. The other participants' alma maters include Peking University, Shanghai Jiao Tong University, Tianjin University, Sun Yat-Sen University, and the Chinese Academy of Sciences. Three participants had more than one advisor due to unique funding situations and two of the women participants had changed faculty advisors during the course of graduate study. In terms of faculty advisors' nationalities, six of the 10 participants had Chinese faculty as their academic advisors. Only three participants had American advisors. Four students had foreign-born faculty advisors or co-advisors who were not Chinese.

Although participants came from different family backgrounds, all but one of them were raised in big cities. Two participants mentioned their upbringing in academic families. Most participants were in their thirties and half of them were married with

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young children. Most participants lived with their nuclear family or shared housing with other Chinese students, while three lived with Americans or people from other countries.

Most of the participants were associated with research labs or groups and held appointments as graduate research assistants. Three participants were employed as teaching assistants at the time of the interviews. All participants shared an office or work space with others, mostly Chinese or other international students in their departments. Only two participants were involved in student organizations and assumed leadership roles.

For the sake of anonymity, I asked participants to select a pseudonym for use in the reporting of study findings. If they preferred, I assigned one for them. Only John chose his pseudonym. I selected names for the others based on the proximity in pronunciations, either in English or Chinese, which helped me connect the names with the individuals instantly.

Individual Profiles

Chris

I met Chris on a late afternoon in October at one of the busiest libraries at Lakeside. At the time, several major job fairs were taking place around the campus. Chris was swamped with working on a journal submission and job interviews so that scheduling our meeting became difficult. Nevertheless, he assured his commitment to the interviews and showed up on time.

In his thirties, Chris was a bit of a paradox to me. He described himself as an "open, people person." He likes to socialize with colleagues and described himself as "one of the few Chinese who goes to bars." However, Chris has a private side. He

admitted that he rarely shares his personal issues with other people except his wife. His private personality was apparent during the interviews as he often gave examples of challenges and difficulties that his friends or other Chinese students experienced instead of talking about his own experiences. Although he was communicative and insightful throughout the interviews, Chris often remained ambiguous about his own feelings.

Chris was the only computer science student I interviewed for the study. He grew up in Wuhan, the capital city of a southern province in China, and graduated with a bachelor's degree in computer science from a major university in his hometown. From there, he journeyed across country to Beijing where he attended graduate school at Peking University. According to Chris, he made an easy transition from his hometown to life in Beijing: "I had been in Wuhan for too long and wanted to go somewhere else, to a different place." Chris had fond memories of the three years he spent in Beijing and shared that he missed Beijing the most among the places that he had lived before. After graduating with a master's degree in computer science from Peking University, Chris felt he had not achieved his ambition to learn advanced computer science technology and decided to pursue a doctoral degree in the U.S.

> I wanted a doctoral degree so that I could learn more about advanced technology, and … have a better career…. I knew I could get a decent job as a Beida (Peking University) graduate, but I didn't want to work right away. I wanted to learn more because I worked hard when I was an undergraduate and learned a lot by myself. I mean, I didn't have the right environment [for learning], because the professors didn't have enough experience or maybe I didn't get to meet the good ones. My advisor, I mean he's a great person but he didn't have any *ambition* academically, so I didn't feel I learned enough … about the new, *cool* stuff, so I wanted to learn more.

Chris's seven-year journey in the U.S. began in 1999 when he first attended a flagship state institution in the Midwest. Unlike his easy transition in Beijing, Chris

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experienced tremendous "culture shock" soon after his arrival. Getting off the plane and

without much time to adjust, Chris found himself in an uncomfortable situation as a

graduate teaching assistant facing classrooms full of American undergraduate students.

He regretted that he "accidentally" passed the department's English screening although

his spoken English was not up to the challenge at the time. He reluctantly spent 12 hours

a week teaching an introductory computer science course and devoted many more hours

to preparing lessons and grading. Aside from the overwhelming teaching load, Chris felt

uncomfortable with the department staff that showed little respect for international

students.

In his second year in the U.S., Chris decided to transfer to Lakeside University for

the reputation of its computer science program. He spent two more difficult years trying,

however, to find a balance between his teaching responsibilities and doctoral study.

Overwhelmed by academic pressures and teaching responsibilities, at times Chris felt that

he had "lost ambition" and wanted to "take a break." He noted, " I got tired of teaching

and everything, you know, so I sort of gave myself a break after working so hard for two

years here, to slow down a bit. I wasn't very ambitious about doing research so wasn't

very productive at all." Chris candidly described himself as "unachieved" in graduate

school in reference to his unsuccessful efforts at getting papers published in academic

journals. Furthermore, he was dissatisfied with the lack of mentoring from his advisor

and felt that he could have done better with proper guidance.

> My advisor never gave me any direction or research to do. He gave me the
> freedom to find my own interest area. I know some advisors give very specific
> directions on research, and they tell you that it can be published when it's done. I
> spent a lot of time reviewing papers trying to find a topic. Looking back, I wish he
> gave me more direction.

Chris was reflective about his journey through graduate school, and was particularly thoughtful about his "unrealistic expectations" for graduate school and his "pure" ideas about graduate study, which nearly cost him his self-confidence when his first submission for publication got rejected. "I was really frustrated and questioned my ability to do research. I know now that it happens to everybody—if your paper gets rejected, you revise and resubmit. But it was a major blow to me back then." Discouraged by the rejection, Chris stopped submitting articles for publication although it was part of his doctoral degree requirements. Until recently, he began trying again and learned to navigate the publication process more efficiently. This time he did not take things too personally. Chris remarked,

> I remember reading an article about surviving graduate school. It said graduate school is like a business, you need to know what you are doing ... it doesn't matter whether you are smart ... *intellectually* or not... what's important is you know what you want and how to get there. And don't be frustrated by failure. Even if you fail, get up and try again.

Having learned many lessons the hard way, Chris admitted that he has become seasoned and mature as a person. "I developed a different perspective about life. Before I was kind of naive and not so sure, but now I kind of know what I want. I'm more aware of what's going on and where I want to go."

After the less than satisfying break, Chris seemed ready to move on with his career. He was working on resubmitting the rejected paper for review and was looking forward to graduating in a semester. When asked about his career plans, Chris said that he decided to go into industry: "I've been in academia long enough to know that I don't fit here." Unlike his decision for doctoral study, this time Chris is more explicit about his career choice and determined to find a job that he feels passionate about.

Grace

Grace, in her early thirties, has recently graduated with a joint doctoral degree in atmospheric science and electrical engineering. She was offered a post-doctoral position by a faculty member from a different department who was impressed by her dissertation research. At the time of interview, she had resigned from the position in order to spend more time with her two young children.

Grace stood out from the other participants with her humble and welcoming personality. She invited me to her apartment for interviews and got her entire family involved. Both Grace and her husband showed genuine interest in the study and shared their experiences and perspectives during the interviews. They remarked that Grace's experience was "typical" and "represented" the lives of many Chinese students studying in the U.S. Therefore, they felt "it's important to tell my story because maybe it can help other Chinese students who have similar experiences, and also it will help Americans, and the faculty and university have a better understanding of Chinese students and our experiences." When asked why they thought their experiences were typical, Grace and her husband began their stories—their successful life in China, journey to America, the hardships of doctoral study, and their struggles to establish themselves in America.

Grace was a quite successful student throughout her formal education in China. She graduated with a bachelor's degree in atmospheric science from a top tier university in a southern province. Since she graduated at the top of her class, Grace earned free admission (without taking entrance examinations) to a research institute in Beijing for graduate study. The idea of studying abroad came to Grace when she was in Beijing. "I was very much influenced by the environment, by what other people were doing at the

time. Everyone was preparing for GRE and TOEFL. So did I. My advisor was a visiting scholar in the U.S. for quite a while and he always encouraged me to study in America." Grace spent a great deal of her time at graduate school brushing up on her English in preparation for study in the U.S. She recalled, "It all happened by chance. I wasn't so sure at all … I just tried a few schools and got admitted." In the meantime, Grace was offered a promising career at a prestigious national weather center in Beijing where her husband was also employed. Although it was an ideal career path for atmospheric science graduates, Grace turned it down without a second thought when she was offered admission and a research assistantship from Lakeside. She arrived in the U.S. in August, 2000 to begin her seven-year journey in graduate school. Several months later, her husband also left his job in Beijing and they reunited in the U.S., hoping for a better future. Grace's husband shared, "we agreed back then that she would come first and then I would join her later because we knew we would have a chance at a better life in America. And our kids could live a better life than us. Yeah, we wanted a better future for the kids. That was the main reason."

Grace acknowledged that, aside from immigration intent, she never had a grand ambition academically or professionally. Instead, she was pragmatic and had planned to change her field of study right after she came to Lakeside. She spoke candidly: "I just wanted to get into a more practical major and get a decent job. But when I got here I discovered that it's not that easy to change programs because of my international status." Grace noticed that her program retained a high ratio of Chinese students, particularly at the doctoral level. "It's difficult and boring," she explained, "Americans leave as soon as they realize this. Chinese students have no choice but to stay because of their visa."

Transferring to popular fields like computer science would risk her visa status and her family's financial stability, therefore, Grace "didn't have enough confidence" to try out new programs.

Grace was calm, soft-spoken, and gracious. She always had a smile on her face while telling her stories. Even as she talked about her depression and the hard times she experienced in the U.S., she did so without being overly emotional or appearing too negative. Grace shared that she endured extraordinary challenges in her early years at graduate school. At first, language became a major issue: she had difficulty understanding lectures and class instruction, and became speechless when professors asked her questions. In addition to language barriers, Grace found out that she had to re-learn many difficult subjects, such as advanced calculus, chemistry, and computer programming to catch up with course requirements. In her first years, balancing the coursework and research assignments was a constant battle for Grace. She felt pressured to commit most of her time to research projects assigned by her advisor, an assistant professor who was ambitious and aggressive in his research agenda. Grace stated, "They think I'm capable because I have a master's degree and I'm from China, but the truth is every step is a struggle for me. And everyone is so talented here. I can always feel the pressure." Only a few weeks into the first semester, Grace questioned her ability to do research and "lost her confidence and motivation." The thought of quitting lingered as Grace suffered from low self-esteem.

> I had to continue on because of my (visa) status, it was very difficult and I know that if I do the same (thing) for a job, my life will be miserable. I know I won't be doing research after graduate school, but I still have to finish the program. I lost motivation and became ... I couldn't even speak like a normal person, not that I don't know those vocabulary and grammar, it's just ... I was so *depressed* and couldn't speak like a normal person.

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At the end of the first year, Grace finally found the courage to leave her advisor and his research group. Things began to change with her second advisor, a senior faculty member in electrical engineering who is interested in interdisciplinary studies of electrical engineering and atmospheric science. Grace spoke highly of her second advisor who nurtured her talent and also cared for her emotional well-being. "I probably wouldn't be here with a Ph.D., wouldn't finish if it wasn't for him."

Grace appeared to put things into perspective and restored her self-confidence. She reflected on the difficult days with a better understanding of herself and her place within her family, academic community, and the world. Grace explained that the birth of her son was a turning point in her life. She described,

> A lot of people say having a baby makes life more difficult. But for me it wasn't like that. I mean, maybe because I was so stressed out ... having a baby actually helped me ... It was like I have something else to do, I have other responsibilities. I don't have to focus on my study all the time. I have a family to take care of and it's more important than anything else ... it really balanced out the stress so I decided to have a second child very soon.

As a temporary stay-at-home mother, Grace was enjoying her "big break." She noted, "being done with academics is a huge relief. I feel liberated." Having two children helped Grace open up and get involved in social activities with other mothers. For the sake of her sons, she was motivated to "get outside of the small circle" she had lived in so far. "My husband and I both think social skills are very important, the 'EQ' as people call it. So I take them out a lot to play with other kids and arrange play group activities with other moms. I have met many people since then." Grace plans to travel more often with her children in the U.S. and around the world to experience different cultures.

Grace was family-centered when making decisions about her career. She made it clear that she put her family before her career. "We are in the final process of getting a Green Card, so I don't have the pressure to keep my visa status. I can get any job, anytime, anywhere." She wanted to find a "less challenging" job that would allow her to spend more time with her sons. She is also interested in a career that uses her cultural background which would help her feel more competent. At this point of her life, Grace seemed relaxed, optimistic, and, most noticeably, pleased with her life as a mother.

John

John, in his twenties and single, is one of the six mechanical engineering students I interviewed. He worked with a senior Chinese faculty advisor as did several other students. John, however, was different from those students in many ways: he was the only student who introduced himself with an English name; he liked to express himself in English, and quoted many English phrases including his favorite lines from the movie *Spider Man*; and perhaps because he was single and the other mechanical engineering students were all married, his experience and perspective were quite unique.

He projected a warm, thoughtful, sincere manner when we first met, and yet, became intense and voluble as soon as he delved into the topic. Our conversation often continued after the recorder was turned off. Unlike the image I remembered of a reserved and reticent engineering student, he was candid, articulate, and willing to share his thoughts and feelings throughout the interviews. He told me at the beginning that my research drew his immediate attention because he always wanted to have meaningful discussions about what people like him go through in America.

John grew up in a big city in an eastern province in China. He got into mechanical engineering under the influence of his father who was an engineering professor. As the youngest of his siblings, John admitted that he was the "spoiled" kid at home. After high school, he left home for the first time to go to college in Tianjin, a city he called his second hometown. In Tianjin, although living on his own was challenging, John was frequently visited by his retired parents and their local friends, which made the adjustment easy at college.

John came to the U.S. in 2003, a few days before classes began. Soon after his arrival, John was overwhelmed by academic pressures and stressful life in his new environment. He described, "The first year was stressful. In ME, you need to take a qualifying [exam] in the first year.... it used to be, they changed it so now it's 40% fail rate." He explained that "professors don't want to invest in you until they make sure you pass. So my boss told me to take the exam in January on the first day we met." John had no choice but to work hard, while also trying to adjust to the new environment. As such, he lived miserably in the first year and small things like shopping for groceries without a car added to the challenges.

John was driven and creative in his academic pursuits. Since a junior in college, he had planned on studying in the U.S. with encouragement from his father. He continued on to graduate school in Tianjin so that he could apply for doctoral programs at top tier research institutions in the U.S. At Lakeside University, he explored interdisciplinary approaches in his field and found his way to negotiate with his advisors to pursue a joint degree in mechanical engineering and industrial engineering. John has recently achieved his candidacy in both programs and decided his career path. He noted confidently, "I

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know what I want and how to get there. I want to be an IOE faculty and I know how to get there."

John's determination and creativity was also evident in his efforts to adjust. He described how he devoted himself to academics and lived very much within the walls of Lakeside in the first years. He added, "It almost didn't feel like I'm in America, other than speaking English at class. But I didn't want to limit myself to the [Chinese] circle, I wanted to step out and experience the real America, see what it's like." After achieving candidacy, John had more time and flexibility to explore other interests, and he made it a priority to improve his English and learn about American ways of living. Recently, he made a difficult decision to move out from the apartment that he shared with two other Chinese students and to live with an elderly American couple that he met from church. John expected "it won't be easy" and at times he was discouraged by "all the conflicts and misunderstandings." Nevertheless, he noted, "I still don't regret it…because I made it through, and achieved my goals."

John's adjustment experience also centered around some major changes that he had gone through in his personal life in the U.S. In 2005, he was involved in a major car accident on a trip by himself to Canada. Although he survived the accident without injury, John suffered from "depression" and questions about life and death bewildered him. He shared:

> Where do we go when we die? Why do I live? Why? I thought about these questions before but never had answers. After the accident, I had nightmares all the time and couldn't stop thinking about these questions, and think about… I came to America so that I can have a car, a big house, and … but I began to question myself "Are these really what I want?' It was definitely the most difficult time in my life.

While struggling with these issues, financial troubles, and loss of ambition, John was introduced to Christianity by happenstance, and faith helped him survive.

> One day in August, I met Larry when was walking on campus. He was handing out flyers for church events. I got a flyer and walked away. But he noticed something was wrong and asked "Are you Ok?" I said I was fine and kept walking. But he came after and kept asking "Are you sure?"... I don't know what I said then but I remember he said "God loves you." It got me really angry and I started arguing with him. I said, "No, God doesn't love me. He loves everybody else but not me"… He listened and told me that he wanted to help … so we met for lunch the next week. And then, he gave me a bible at lunch, my first bible.

Since that time, faith has become an important part of John's life. He identified as a true believer and distinguished himself from other Chinese students who went to church for other purposes. John referred to his faith frequently when reflecting on his personal development. However, he also acknowledged his internal struggle with his newfound faith. "I am young so I do struggle sometimes. Like I don't have a girlfriend. I want to meet Chinese, Christian girls because it's important to me that the person I love or loves me shares my faith. But it's so difficult. There aren't many out there."

In summarizing his conversion to Christianity, John acknowledged that his Christian faith had made him more "Americanized", meaning he became to enjoy the American lifestyle and accept American values and beliefs. In the meantime, John noticed that his faith had distanced himself from his Chinese friends, especially since he socialized more with church-goers. Although a little disappointed, John felt it more important that he found peace of mind with his social life at church. At the end of the interview, John concluded that his perspectives on life and the world have changed, and that he no longer desires material wealth like he used to. More importantly, he found purpose in life and aspires to become an engineering faculty. He plans to stay in the U.S. after graduation because he can "be a simple man and live a simple life in America."

Lei

Lei, in his early thirties, is one of the two postdoctoral researchers in mechanical engineering I interviewed. He recently graduated with a Ph.D. degree and was hired by a senior Chinese faculty member from the department to work in a research lab. When we first met, although not nervous, Lei admitted that he had never been interviewed before, and expected that he would address the questions raised by the interviewer, rather than engaging in an interactive conversation. Therefore, he responded somewhat abruptly to my questions, and shared very little about his feelings and perceptions. It was not until we met again at his apartment and his newly-wedded wife joined the conversations that I began to know him more as a person. His wife has recently joined him in the U.S. and they are expecting their first child.

Lei grew up in an academic family and his father exerted a strong influence on his academic career including his decision to study in the U.S. He attended a major university in central China for his undergraduate education, and then returned to Beijing for graduate study at Tsinghua University. In fact, Tsinghua was not a strange place to Lei. He knew "the place and the people" well because of his father's connections. During his graduate study at Tsinghua, Lei, like many other Tsinghua students, "followed the crowd" to study in the U.S. He noted, "I wanted to try, besides my parents wanted me to go abroad for doctoral education. I also wanted to do more research." When probed further, Lei, however, was unable to articulate his academic aspirations. "Actually I didn't think too much about what I wanted for the future, I just wanted to go out and learn more about what's out there in my field." He added that, like many Chinese college

graduates, he was drawn to the idea of going abroad and getting an American Ph.D. degree.

When describing his arrival and initial adjustment, Lei characterized himself as "a carefree person" and stated that he did not experience any "shocks" at all. He shared, "I didn't have a place to go or have anyone to pick me up at the airport. I got off the plane and met a few Chinese students at the airport. We took a taxi together to [town] and started looking for apartments." Lei rented an apartment in a few days and quickly settled in. He did not feel much cultural difference except that he was impressed that the U.S. is much more developed in infrastructure than China.

If his initial adjustment was "smooth and not so difficult", Lei seemed to be more concerned about adjusting to his role as a family man and raising a family in the U.S. He was daunted by helping his wife adjust and figuring out how to raise a child in a foreign country. "When I was single, it was easy. But now I have to think about my family, my baby. I have to handle so many things, this is new to me," he said. His wife sat silently nearby as Lei continued on. Lei and his wife relied on their circle of Chinese friends for resources and support. But his wife still felt helpless and lonely, often spending time alone at home. They debated about her going back to China to have the baby where she could live in comfort, and get enough help and support from family and friends.

Among the Chinese students I interviewed, Lei was one of the few who spoke rather straightforwardly about negative experiences. During his doctoral study, Lei experienced disappointments and suffered from lack of interest in research projects he was assigned. Like the unrealistic expectations that Chris had about doctoral study, Lei also went through a reality check and found U.S. graduate school was different from what

he had expected: his advisor rarely provided mentoring and guidance on his research and study, and the research scientists who oversaw the research group managed doctoral students as if they were employees and cared less about the students' research interests. His assignments were mostly repetitive technical routines and he felt it was "boring and nothing like he had imagined." Lei noted, "I used to think doing research is sacred, you know, I looked up to it. But now I think of research as *business*, you know, just need to work on it and finish it, like *business*." He pointed out that many engineering students, including him, stayed in a research group for the sake of funding and few have genuine interest in the projects. Lei had thought about changing advisors and research groups, and even attempted to transfer to other universities. He persisted, however, realizing the time and effort he had already invested at Lakeside. Looking back, Lei spoke forthrightly about not having a clear motive for his doctoral study and how this has contributed to his lack of motivation in research. He commented:

> Many Chinese students are forced to doctoral studies, by their parents, or … they just follow the crowd. I believe you know how it is ... doing Ph.D., it's *suffering* if you don't have a passion for it, particularly if you work on a topic that you don't like, or you have no interest at all, it's like you don't even want to take a second look at it. A lot of Chinese students are *suffering* because they don't know what they really want.

Compared to his graduate study, Lei seemed purposeful and passionate about his post-doctoral research as he tried to prepare for his next step. He hopes to find a faculty position in a research intensive institution but remains uncertain about his future in academia and in the U.S. He has not decided if he wants to go back to China in the near future. Despite these uncertainties, Lei remained optimistic about future.

Shirley

Shirley was a kind young woman in her twenties. Like Grace, she studied atmospheric science. Although it is a relatively small doctoral program, the two did not know each other, perhaps because of the time gap between them. Their academic experiences in China and at Lakeside, however, showed some resemblance. Growing up in a major metropolitan area in Sichuan province, Shirley attended a flagship university in southern China, and then went to the Chinese Academy of Sciences for graduate study. She described herself as an "outdoorsy" person and chose to study atmospheric science because she liked the idea of traveling to exotic places. Like Grace, Shirley prepared for study in the U.S. in her first year at graduate school and left China as soon as she was offered admission and funding from Lakeside. During the interview, she regretted not completing her master's degree in China that she had worked on for three years.

Initially, Shirley appeared quiet and shy. She seemed a little awkward about being interviewed. She relaxed, however, as the interviews progressed and proved to be "extroverted and talkative". She liked to go out on the weekends, as she described, "I like going to parks and hiking, the outdoors. Because I'm in a covered structure all the time, you know, in the lab or office, I don't get to breathe fresh air very often so I go out whenever I can." During the week, Shirley spends most of her day in her office doing research, and she goes to the gym or stays at home in the evenings.

Similar to Grace's experience in the first years, Shirley went through some tough times when she began her doctoral study, trying to balance coursework and research assignments. Her advisor, an American professor, "took it for granted that I could hit the ground running from day one because I'm a Chinese student. They just expect you are

prepared and capable. ” In fact, Shirley had few experiences of research involvement and found she had to self-teach herself many things in order to complete those research assignments. When she lagged behind in submitting results, her advisor made sure that Shirley understood her responsibility, making explicit her financial obligation to her advisor and the research project. Shocked and confused, Shirley had to put the group project before her doctoral study and often worked overtime to complete the assignments. She shared, “I had to work very hard, you know, seven days a week, and forget about other things, even like the basic needs, you know, eating and sleeping.” The stressful life almost ruined her health and she ended up in an emergency room one day because of a severe pain in her stomach. Shirley took the warning sign seriously and was determined to make a change. She started to pay more attention to her well-being and took the time to exercise regularly.

Shirley's life is now more stable and organized as she learned to manage her time better by keeping a schedule planner, a new time management skill that helped her balance multiple responsibilities. She also tries to keep her work to weekdays and enjoy weekends. After achieving candidacy, Shirley has been pursuing other interests, including taking courses and plans to get a master's degree in statistics. She acknowledged the practicality of her choice: if she decides to stay in America after graduation, a statistics degree will give her a better shot at landing a job than a doctoral degree in atmospheric science. Additionally, she has joined a conversation circle organized by the English Language Center for international students. She also meets regularly with a conversation partner, a Japanese student, who teaches her Japanese in English. She explained that her department has a substantial number of Chinese students

and most of her officemates were Chinese "except one American girl." This environment limited her opportunities to speak English and she felt that her spoken English has not improved to her satisfaction. Shirley noted, "Although I'm living in America, English is not necessarily the major language for me because I speak Chinese all the time at the office and home."

Although Shirley tried to diversify her social life and keep herself busy with different activities, she felt lonely. She shared, "the truth is I'm lonely. That's how it is. I mean, I want to change ... like have a boyfriend, but I haven't met the right person. I don't know, maybe there are other ways to meet people." Shirley was disappointed by the fact that few Chinese students in her surroundings were single, but she remained skeptical about dating Americans. For now, she is resigned to fate and would rather focus on "things that I can control," her research and study. Nonetheless, Shirley is pleased that she has made a few good friends, although not many, whom she could turn to for support and advice. She also deeply cares about her friends and often lends helping hands to other Chinese students because, despite different circumstances, she could emphasize with them based on the difficulties she went through in America.

At the end of the interviews, Shirley concluded that the American experience has helped her grow up. She valued these experiences including the challenges as she became more mature, responsible, and independent. For her future career, Shirley still vacillates between academia and industry. She likes her current research but is not sure if it is something that she wants to commit herself to as a career. Recently, she had the opportunity to teach an undergraduate course and she liked the idea of teaching better

than doing research. With a couple of years remaining in graduate school, Shirley hopes to have a better idea about her life and future.

Song

Song, 31, has recently graduated with a doctoral degree in mechanical engineering. At the time of the interviews, he had been working for a few months in a post-doctoral position provided by his advisor, a senior Chinese faculty member who worked with several Chinese students including John and Wayne. Song appeared reserved and quiet when we first met in his office, a small, nondescript space with a few desks and two chairs. But a few minutes into the conversation, he surprised me in many ways. He noted, "Normally I don't like getting involved in things like this, but I find the topic very interesting and important to us Chinese students in engineering." He hoped that he could help other Chinese students by sharing his experience and insights. Our conversation extended over a dinner where we ran into Lei and his wife at the restaurant. Lei and Song knew each other well and chatted cordially about their families and mutual friends.

Song grew up in the South in a well-established family. He studied engineering and received his undergraduate and graduate degrees from Tsinghua University. When asked about his motives for doctoral study, Song responded:

> To be honest, I didn't have a motive, really. Everybody was going abroad at Tsinghua at that time. Besides, the TOEFL and GRE were easy for me, I did well in English, so I didn't work too hard on those. Then I got an offer so I came ... I thought about [staying in China] but it was difficult to find a nice job in my area because it's too theoretical. But I didn't want to give up what I have studied for so long, and I wanted to see what's out there.

Even today, Song shared, he has great opportunities in China and he can go back anytime if he wants to without sacrificing his career. But Song has chosen to stay in the U.S.

because he enjoys the simple, private lifestyle in America, and he is not sure if he could adjust to the complicated concept of "guan xi" (social relations and networks) in China.

Song seemed confident and worldly, and spoke eloquently about his graduate experience. He is also unusual in comparison with the other students I interviewed in the sense that he talked more about insights he gained over the years, rather than his challenging experiences. He described that his initial adjustment was not a difficult process. He bought a car soon after he arrived in the U.S., and thus it was less challenging for him to navigate the new environment and manage his needs. Also, he believed he had a better command of English than his predecessors, and therefore, had few problems from the beginning. In his words, it only took him about a month to get used to the new surroundings and once he delved into doctoral study and research, he felt "things are not so different from Tsinghua." He stated that his academic training at Tsinghua prepared him well for his doctoral study: he was familiar with the research routines and the coursework covered subjects that he already knew. He noted, "of course, there are some small differences here and there, but those things are not that hard to figure out." Song, however, shared some salient experiences that he remembered vividly to this day. These incidents involved encountering issues related to different academic norms and rules and interacting with people of different race and gender. Despite his good will and honesty, Song explained, he made critical mistakes and was misunderstood and misjudged by people of different gender and culture because he did not quite understand "the rules." He told an incident that happened not long ago in his office with a female student that he supervised. As a senior Chinese student and her supervisor, Song wanted to help the student when he found out that she was incapable of completing

project assignments. He called her to his office and had a conversation with her, mostly reminding her of the consequences of her act and offering his suggestions, with the door closed. When the student left his office, looking quite upset, the department staff thought something was wrong and reported to Song's advisor. Song justified that he closed the office door to protect the student because, according to the Chinese norms, he did not want to embarrass the student by letting other students and staff sitting nearby outside of the office hear their conversation. Song was surprised when his advisor questioned him and reminded him of his mistakes, and he became more cautious and aware of cultural differences in interpersonal relations since then.

Throughout his doctoral study, things mostly turned out as Song planned or hoped. Academically, he believed his built a strong resume with abundant internships and research experiences plus his leadership role in his current post-doctoral position. Regarding his interpersonal experiences, Song frequently described himself as an "open, smooth, balanced" person: he has developed good relationships with his advisor, colleagues, and the students he supervises in the research group; and he felt comfortable with Americans colleagues at work and even considered himself more sociable than most Chinese students. And yet, Song acknowledged that it "happened to be" that most of his friends are Chinese. Even his Chinese friends, he noted, were mostly from his department or his cohort.

What most intrigued me about Song was his strong sense of family-centeredness. He transferred to Lakeside from another institution to be with his then-girlfriend who was an engineering student. They have since gotten married and now have a one-year old child. Song disclosed that meeting his wife was the most important achievement for him

in the U.S. and his family comes before his career. Because his wife recently started in a promising faculty position at a research institution in a southern state, Song turned down a well-paid job offer in Chicago to avoid the long distance relationship. He shared, "*Research, publishing papers* ... I consider them as [a] *job*, [a] *job* that doesn't *pay* well. (Laughs) But for me personally, family was the most important achievement in my time in America." He is supportive of his wife's career but also wants to be the breadwinner of the family, and hopes to find a job near her wife's school soon. For his career, Song prefers large research labs to industry because unlike the repetitive routine of the industry he may have "more independence at national research labs."

Song stated that "finding a fitting job" was by far the most challenging task he ever encountered in America. Although feeling optimistic, Song was frustrated that his international status has largely limited his career opportunities. He commented that international graduates were often discriminated against in the job market due to their non-resident status, and that they were treated unfairly during job interviews. He shared:

> It's not fair but you have to accept it. I never felt it [discrimination] when I was a student, but it's so obvious once you go out [of campus] ... really. I had several interviews. They all went well until the visa issue came up at the end. If you are not a Green card [holder] or a citizen, they immediately say "we have to stop." It's just so obvious.

Song has been weighing different options and hopes to make a decision in a few months. Again, he was mostly concerned about ending the separation from his wife and infant son and getting back on having a normal family life.

Tao

Tao is a fifth year doctoral student in mechanical engineering, married with a two-year old son. About to graduate in a few months, he was preparing for several job

interviews at the time of our interviews. Despite his tight schedule between the job interviews and his teaching responsibilities, Tao agreed to meet without reservations. We met once late in the evening and then again on a weekend at his apartment. Tao looked tired but remained focused and communicative throughout the interviews.

Of all participants, Tao was the only person from a small town. He grew up in a remote rural region in eastern China. After high school, he went to Tsinghua University where he spent eight years for his undergraduate and graduate studies. Like the other participants, Tao did not know exactly what he wanted after graduation, therefore, decided to study abroad and explore the outside world. He shared:

> I wasn't quite sure about my career, what kind of career I wanted. So I started to apply, I thought it was a great opportunity to come to America and get a different experience. I chose Lakeside because I had a lot of friends here from my department, some of them were from my research group. It was a huge factor in my decision to come to Lakeside.

Coming from a small rural town, Tao's experiences provide an interesting comparison to the adjustment of other participants who come from more urban areas. For example, moving to Beijing from the countryside, Tao went through difficult periods of adjustment at Tsinghua University. He explained, "At first, communication was a major issue. I had an accent and people didn't understand what I was saying. It was really frustrating in the first year." Over time, Tao not only changed his accent but also learned to adjust by taking advantage of the rich resources available at Tsinghua. He stated, "I learned that I needed to be proactive at college. In high school all I did was study, but in college I found there are so many other things you can do. So I became more open, and changed in many ways." At Tsinghua, he was involved in various student organizations and stayed connected with other students and professors. Those connections, Tao noted,

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proved to be instrumental in his career as a graduate student. "I really depend on my friends. Because I'm all alone in this university life, I mean my parents can't help me, friends are all what I have. So I value friendships more than anything."

Tao stated that his prior experience at Tsinghua made him independent, capable, and aware of what it takes to adjust to a new place. He remained upbeat and proactive and such an attitude helped him adjust and do well at Lakeside. He shared a few examples of how he was involved in student organizations and volunteering opportunities on campus. In one example, Tao talked about taking advantage of English language courses that the department required all international students to take.

> The department makes a lot of us Chinese students to take English classes in the first couple years. I was *very [pro]active in* taking those courses. I know many students just take them because they are mandatory. They don't take the classes seriously. They just want to finish them. But I took them with an *active* attitude, I mean I participated actively, and I enjoyed those classes. I still keep in touch with the teachers. They email me if they need me and I go to them if I need help. It's like we are good friends.

Nearing the end of his doctoral study, Tao took on a teaching assistantship at his department to support his family and his wife's study, who was about to complete a master's degree in statistics at Lakeside. His teaching responsibilities consumed most of his time and energy, and at times, he felt overwhelmed by working with undergraduate students. He noted,

> It is a lot of work, you know, teaching, grading, and the office hours are the worst, especially when the exams are coming. Those kids, they literally try to make up the times they slept away in the class during office hours. Also, like some basic math concepts and theorem, I tried to teach them the way I learned in China, I guess maybe I was being too abstract, they just won't get it, I mean, after hours of explanation. It really took me a while to figure out how to work with American kids.

Trying to balance his personal life and other responsibilities, particularly after his son was born, Tao remarked, "Life is hectic, but it also taught me to be efficient and more organized, which is a good thing."

Overall, Tao seemed satisfied with his graduate experience at Lakeside, although he has always struggled financially and had difficulty seeking funding sources when his research group was disassembled abruptly. He enjoyed working with his Korean advisor and group members from all over the world. But he also expressed his frustration over not being able to build close relationships with people other than Chinese. Tao summarized that he had always been busy with his studies, research, and other activities at Lakeside, but he also achieved many goals and learned profoundly about the world and life in general. He was hopeful, but cautious, about his next step. With both him and his wife on the job market, Tao was concerned that their legal status in the U.S. was at risk and he had to secure a job in a limited time frame. To my surprise, Tao was more certain about his plan to return to China than any other students I interviewed in the study. He told me that he would return to China with his family soon, maybe in a couple of years, because he wanted his son to grow up as a Chinese and also because they believed they could have better opportunities back home. But for now, he needed to gain some working experience to firm up his resume. He also wanted to move to a big city where he could get more exposure to American lifestyle and culture which he deemed as a valuable addition to his American education.

Wayne

Wayne is 30 years old, in the fifth year of his doctoral study in mechanical engineering, and hopes to graduate in a year. He is an easygoing, confident man with a

sense of humor. His comments, however, were mostly brief and concise, and he often waited for me to ask questions. Although we talked mostly in Chinese, he often mixed English into the conversation. During both interviews, Wayne seemed tired and a bit distracted. His frequent yawning suggested lack of sleep, perhaps, because of the recent change in his life, becoming a father to a three-month old daughter.

Wayne grew up in a suburb near Shanghai which was apparent by his distinctive accent. He attended a boarding school since middle school. He then went to Shanghai Jiao Tong University for his undergraduate and graduate studies in mechanical engineering. Maybe because of his upbringing in the cosmopolitan Shanghai, Wayne seemed worldly when talking about his motive to study in America. "With a Ph.D., I know that with an American degree, I can survive anywhere in the world. I had a *motivation* to do that, I didn't want to live in China all my life, I wanted to travel around the world and experience living in other countries." Wayne spoke positively about his experience at Lakeside and attributed his adjustment in the U.S. to his boarding school experience. "I learned to be independent and take care of things myself early on." He noted that by having spent many years in a big city like Shanghai, he felt comfortable at Lakeside and the small campus town. Wayne and John, about two years apart in age, were in the same cohort of their program and shared the same advisors and office space. Their experiences, however, were quite different. Wayne's initial adjustment was more similar to Song's experience. He asserted that adjusting to life in America was not a difficult experience for him, especially when he bought a car which enabled him to travel around the country and enjoy the American life style. Wayne also insisted that he only made necessary changes so that he could achieve his goals. He felt strong about his

Chinese identity and maintained a Chinese lifestyle. Wayne has a defiant edge to his personality that perhaps bolstered his perception of and unwillingness to embrace American values and culture. And yet, Wayne expressed that he felt insecure and unsettled in the U.S.

Wayne reflected on his experience at Lakeside by making reference to the differences in the ways graduate schools function in China and the U.S., speaking favorably about the roles of faculty and advisors in the U.S. He shared, "China's education is problematic, I didn't like my experience at Jiao Tong University, now that I know what the *education system* is like in other countries, I can tell what's good and what's bad." Despite its reputation, Wayne criticized graduate education at Shanghai Jiao Tong University. In particular, he was critical of how professors used graduate students as "cheap labor" and cared more about their own productivity than students' learning. At Lakeside, Wayne appreciated how faculty members guided him to explore his own interests and allowed him to get involved in the actual research processes.

Wayne was less clear about his plan after graduate school. He told me that he has been working as a teaching assistant for over a year, hoping to gain some teaching experience before looking for faculty jobs. And yet, knowing that it is difficult to land a faculty position and even more so to keep up with the challenges of faculty life, he keeps his options open with the possibility of going into industry. Wayne also remained uncertain about returning to China. He felt that as an international student he was not welcomed in America, citing discriminatory institutional and immigration policies against international students. He questioned many Chinese students' decisions to stay and live in America after graduation and justified his choice to remain in the country. "I

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want to stay here for a while, get a job and some experience, and then go back or go somewhere else." Ultimately, he intends to return to China after he develops his niche either in the academic world or in industry in the U.S.--doing so will make him a more desirable candidate in China.

Larry

Larry, a fourth-year student in electrical engineering, is one of the youngest participants in the study. He came across as communicative but serious, composed, and professional during our initial email exchange and interviews. His professionalism was also evident in the way he answered my questions. His comments are focused, analytical, and well-communicated. He mostly talked about his academic experience and campus involvement, and steered away from talking about his personal life.

Larry grew up in Beijing and earned his bachelor's and master's degrees from Tsinghua University. His educational background is different from the other participants in the sense that he was enrolled in a special class for gifted students in high school and began his college education when he was sixteen. Larry spoke fondly about his experience in the gifted class which gave him exceptional exposure to successful people educated in the U.S. Such exposure inspired him with the idea of studying advanced technology in the U.S. Although a stellar student, Larry's first attempt to apply for the prestigious automation program at Tsinghua failed and he had to wait another year for a second shot. Larry acknowledged that the painful experience taught him perseverance.

As an undergraduate student, Larry was recognized for his outstanding academic achievement and was nominated to graduate school in his senior year. The desire to study in America became stronger while he was in graduate school. Larry reflected:

I just wanted to come to America. I don't know why exactly. I just wanted to come here, and never really thought about what it would bring to me. I mean, nobody knew it, I didn't know either. It's like when I was a junior, I knew I was going to graduate school, so I started doing research with professors. I was involved in many research projects during senior year and in grad school. I became familiar with research and the field, and had some ideas about what I wanted to do. Besides, our department founded a new research center at that time, and provided great opportunities to meet professors from America. Of course they were all Chinese, and they brought projects from America, so I had opportunities to work on those projects. I had a taste of what I could accomplish, so it felt like I wasn't just wasting time, you know, spending hours coding or working on algorithms.

Through his involvement in those research projects brought by American researchers, Larry became interested in using his research to address problems in the real world. During his graduate study at Tsinghua, Larry met a Chinese engineering scholar who was also a student of his current advisor. He was inspired by the scholar's research presentation which seemed like "a perfect match" with his research interests. "That was a decisive incident, you know, I applied for this program right after I met him. Since I've been here, my research… basically it worked out the way I had planned."

Young and thoughtful, Larry shared his American experience from day one. Having never traveled long distance before, Larry described his excitement over his first trans-Pacific flight to the U.S.

It was very exciting because I was about to start a new life in a new place all by myself. I couldn't sleep on the flight because I was anxious, not sure if I can do well in a country that no one speaks Chinese, like how to give tips, you know, I heard about it but had never done it … everything seemed confusing. My flight arrived at midnight. I still remember looking down at the ground, it was so bright … everything was new and exciting. I was picked up by a volunteer and on the way to [town] it was so quiet, very different from the hustle and bustle of big city living in Beijing. The next morning, I was so excited to … see the blue sky, I never saw such a blue sky in Beijing ... of course I was very tired but I was completely taken by the new surroundings, like ... taking the school bus, even talking to American people. I had never really talked in English before, it was fun. I wasn't worried about anything, maybe just a little nervous.

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Larry spoke enthusiastically about his research. He was one of the few participants who explained their research to me in great detail. Larry even got me in interested in his research and it made our conversation much easier and relevant. He was proud and engaging when talking about how his research was related to real world problems. Larry stated that solving practical issues in real life motivated him in his research. He even shared an example of how his research was applied at a manufacturing plant to improve production efficiency. He noted, "Although research is like ... we approach research from theoretical perspectives, but we have to apply it in real operations to produce cost savings. This is what engineering is about, I think it's very important."

During college, Larry has always been involved in student organizations. At Lakeside, he took on the leadership role as president of the largest Chinese student organization. At first, Larry thought of it as an opportunity for doing some volunteer work but he soon realized that leadership is more than just willingness to help others. He was pleased that he had the experience to improve his leadership skills and thought it was an important part of his graduate training. He admitted that he often felt stressed by the challenges of leading such a big organization—more so than his research—but he was pleased that he has learned the ropes of his job after a year. He hopes to change conservative mission of the organization under his leadership so that it can play an active role on campus and in the university community in increasing awareness of Chinese culture and society. Larry valued developing his leadership skills and those of other Chinese because he saw many Chinese students "when they go out to industry, many of them take lower level, technical positions and few of them move up and become managers or leaders. I think leadership skills are very important for career development."

Larry appeared confident and certain about remaining in academia, despite the challenges ahead. He was proud of the fact that he has been making a contribution to his field and was committed to his research. When asked about his plan after graduation, Larry seemed to care less about other factors and was determined to go and live wherever his work leads him to.

Zoe

Zoe is a young and energetic woman, in the fourth year of her doctoral study in mechanical engineering. She is from the northern part of China and has recently become engaged to her long-time boyfriend. Zoe's background was different from the other participants although she insisted that her experience was "normal, nothing dramatic." Somewhat similar to Larry's experience, Zoe was on the fast track in her schooling: she started her formal education earlier than her peers and when she went to Tsinghua University she was two years younger than her classmates. Zoe continued to graduate school at Tsinghua, and completed her master's degree a year faster than her peers. Even in America, Zoe was motivated and ambitious in her academic pursuits. She achieved candidacy soon after she began in the doctoral program and her mission was to finish her doctoral program in four years. She explained, "It makes me feel more … accomplished, you know, finishing the program in a shorter period than others. It usually takes five to seven years to complete, but if I could get a Ph.D. in four years, it says something about my ability, right?"

Zoe represents a younger generation of Chinese students coming to the U.S., what the Chinese refer as the post-1980 (those born in the 1980s) generation. Her unique sense

of self-confidence reminded me (a child of the 1970s) of the generational difference. Her

reasons for coming to the U.S. were also a bit unique in comparison.

> In 2004, going abroad wasn't as popular as it was before, like in my cohort, people were not so crazy about it any more. Besides, for me it was about self-affirmation. I mean, although it's not so popular any more, getting an offer from a great school like Lakeside was like the ultimate acknowledgement.

Zoe had another motivation which was to travel internationally and explore the world.

She remarked, "So I gave it a try, not necessarily wanting to stay in America or whatnot.

I really didn't think too much about spending 4, 5 years here, getting a job or things like

that."

Describing herself as "a bit strong-willed," Zoe was not afraid of speaking her

mind. She delved right into the subject of changing her advisor when she began talking

about her experience at Lakeside. Zoe recounted that she left an advisor who was

originally assigned to her soon after she started her program. In spite of the professor's

high reputation and scholarship, Zoe was fed up with the excessive workload and opted

to change advisors. "I knew right way that his research interests and his personality was

not a good fit for me." Zoe noted, "It wasn't an easy decision for a new student like me. It

was hard ... to confront your boss and tell him that you don't want to work with him

anymore in such a short period of time." Nonetheless, Zoe was determined to follow her

instinct.

> I think first impressions are very important. Maybe I can tell myself that I can get used to it in a month, a semester, or a year, or maybe it's because I just got here, maybe all advisors are like that ... I know a lot of people do settle down with these thoughts. But I didn't want to ... it's like forcing myself to fit in a place that doesn't fit me ... I know it's not right for me ... Yes, I could adapt, I could force myself to adjust, I can ... but is it really what you [I] want?

With her fellowship running out in a few months, Zoe pondered her decision to come to America. "Actually I was thinking at that time ... Do I really like it here? Do I really want to get a Ph.D.? I thought about it a lot." Zoe noted that another reason that influenced her decision to leave the advisor was that she did not mind going back to China. "I didn't care too much about staying here, about getting a Ph.D. It didn't matter to me whether I stayed or went back." Zoe found her current advisor three months later and decided to stay and complete her study because "I didn't want to quit like that".

Zoe shared her views on many issues regarding Chinese students' experiences in engineering school, including communication problems, socialization, cultural adjustment, managing stress, and career choices. She was particularly thoughtful about the differences in her academic experiences in the U.S. and China. Zoe described that she went through very tough training in her undergraduate years at Tsinghua and she thought she was well prepared for many kinds of challenges. Nevertheless, what she encountered in doctoral study exceeded her anticipation: "I knew it wasn't going to be easy, but I didn't expect it to be so challenging. Like I said, there are many things that I never experienced before ... I never expected it to be so difficult. One thing for sure is that I'm better at handling challenges now more than ever."

Zoe is also a very private person. When asked about her upbringing and her high school years, Zoe avoided talking about her family and personal background during the interviews and our subsequent conversation. She also noted that she agreed to participate in the study only because my recruiting email was forwarded to her by a friend. She noted:

> I wouldn't participate if it was from a group email ... I usually don't talk to people about my personal life. Like I said before, even when I'm stressed out, I don't talk

to my friends or family about it, I don't tell them how I feel ... I'm not the kind of person that tells people about my personal problems. That's why [I came] ... it came from someone I know well, that's one reason. Another reason is, I'm attracted to the topic. It's very interesting. I probably wouldn't participate if it's about something else.

Zoe's interest in the topic was evident in her reflective sense-making of her experiences and those of other Chinese students in engineering school. Although uncertain about her future after graduation, Zoe remained confident that she could excel at any profession based on her experience during her doctoral studies.

Summary

In this chapter I presented an overview of each participant's personal background and the contours of their journey as a graduate student at Lakeside University. These descriptions highlight their motives for coming to America and pursuing doctoral studies, their commitment to academic success, and their personal struggles while adjusting to the American academic system. I observed both similarities and differences in their backgrounds that may have contributed to their adjustment experiences. For example, they are a group of accomplished students who went to the very best universities in China for their undergraduate and master's education. Admission to graduate schools is highly competitive in China, and the competition is even more intense for computer science and engineering programs at the prestigious universities. These students are among the very brightest students in China, and their academic preparation before they came to the United States was exceptional by Chinese standards.

Almost all participants decided to pursue an American doctoral degree without knowing exactly what they wanted out of their graduate study. Some participants wanted to obtain an American doctoral degree to prove themselves, while for others it was a

default choice when they could not figure out a suitable career in China. The American doctoral degree seemed like the symbol of ultimate success for participants who were already quite accomplished within the Chinese higher education context.

Participants who more carefully considered the purpose of their study in the U.S. seemed to be able to identify their adjustment needs more quickly and navigated their ways through graduate school more purposefully. For example, Larry and John began planning to attend graduate school in America after being inspired by other researchers who studied in the U.S. Both of them committed themselves to research and decided to pursue a career in academia early in their doctoral study. They identified role models and mentors and sought their advice about becoming a faculty member. They developed and maintained healthy relationships with their advisors and enjoyed working toward their professional goals as they confronted the challenges of adapting to a culturally different academic and living environment. Larry chose to operate in dual cultural frameworks, while John became more Americanized in the process of adaptation.

Participants' relationships with their faculty advisors were frequently brought up in their discussions. Like Larry and John, Song and Tao had close relationships with their advisors, and spoke positively about their experience with them. Other participants, including Chris, Grace, Lei, Shirley, and Zoe, shared snippets of conflicts and struggles embedded in their relationships with their advisors.

In the next chapter, I focus on the challenges the study participants encountered as they studied in a prestigious American university, identifying and analyzing differences and similarities in their experiences and the challenges they described.

CHAPTER 6

KEY CHALLENGES IN GRADUATE SCHOOL

While the previous chapter provided general profiles of the 10 Chinese graduate

student participants in this study, in this chapter I address the research questions. A major

purpose of my investigation is to describe and understand more fully the key challenges

Chinese engineering students perceive in graduate school and why they respond in

different ways. To this end, in the first phase of the interviews, I asked these students to

describe issues they felt had tested them at different points in their graduate studies. I also

asked them to share strategies they used to address these issues. In this chapter, I analyze

the different ways participants understood and responded to difficult tasks that emerged

throughout their graduate studies.

As I read and coded participants' accounts of key challenges (see Appendix D for

a complete code list), I found they clustered around four themes: academic challenges,

language barriers, relations with faculty and socialization. Academic challenges involve

specific aspects of doctoral study and research that study participants found to be

particularly demanding and issues that they struggled with throughout their studies.

Language barriers include difficulties and negative feelings they experienced due to

limited English abilities and struggles related to improving their English and overall

communication skills. Relations with faculty centers around how participants' perceived

and related to faculty members, especially their advisors. Socialization includes

participants' social experiences within the Chinese community as well as their interactions with peers from other countries and local people.

Academic Challenges

All participants had been in their graduate programs for three years or more and had achieved candidacy at the time of the interviews. Yet, when reflecting on their academic challenges, they often traced back to the first week, first month, first semester and the first year in the U.S.. As I read the transcripts, I found their comments clustered around five sub-themes of academic issues: academic pressure, finding motivation for research, academic writing, becoming an independent researcher, and navigating the system. Each issue is discussed in the subsequent sections.

Academic Pressure

All but two participants reported being overloaded with course work and pressure to conduct research in their early days in graduate school. The source of pressure varied from department to department. In mechanical engineering, participants described that the major pressure was to pass qualifying exams in their first year. John and Wayne both discovered that the department has set the bar high for qualifying exams. John noted, "The *qualify* was in January, so from September to December I had to prepare for it, and on top of that I took three courses. It was very stressful … basically I didn't have a life in that first six months." Lei and Song, on the other hand, expressed that they felt the U.S. graduate courses were less challenging and they felt well-prepared by their graduate training back in China. In atmospheric science, Grace and Shirley reported that the pressure from faculty to conduct research and deliver results was constant. Grace and Shirley both had difficulty staying current with the three courses they took in their first

year. Nonetheless, their faculty advisors "pushed" them "even harder" on research projects and both of them had thought about "quitting" several times. Chris, who was a teaching assistant in computer science, was "frustrated" by his teaching responsibilities and that he had to spend more time on lecturing and grading than his graduate study.

Participants interpreted high expectations from faculty differently. Some thought that faculty members at Lakeside preferred Chinese students because of their strong academic backgrounds and research potential. They expected Chinese students to perform well, although the students did not think they were as prepared and capable as the faculty members expected.

> It's true, I mean, they have this notion, I mean, faculty have this prescribed notion that Chinese students are *smart.* So they *suppose* you are *top 1.* That's why many Chinese students also position themselves at that level. So I mean stress comes externally as well as internally, that we think we should always be the best, the smartest.

Shirley struggled to live up to her advisor's high expectations. Although she had taken high-level courses in mathematics and sciences, Shirley had little hands-on experience of doing research in China. Grace expressed similar sentiments regarding faculty expectations. She shared, "I have never used Matlab in China, and have never touched those lab instruments before." In addition to learning the software programs and the hardware in her lab, Grace discovered that she had to re-learn many subjects such as computer programming and chemistry because what she learned in China was inadequate.

In response to these pressures, participants explained that they had no other recourse but to work long hours, "cutting time for eating and sleeping." Many acknowledged that they "lived" in the labs and libraries in the first two years in order to fulfill their research responsibilities or complete coursework. For example, Grace "often

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worked until four or five in the morning, sometimes later, then went home to get some sleep, and came back to classes" in her first year. Larry had to work "10 hours a day, six days a week" on his research as suggested by his advisor. According to these students, it is typical that Chinese students often immerse themselves in study without thinking about balancing their life and work appropriately. While most Chinese students accepted hard-work as part of their graduate education, Zoe was unhappy with the prospect of "spending 365 days" in the lab and chose not to comply with the rule. She noted, "you can get into trouble, or even *depress*[ion] without a proper outlet for those stress. I mean it is really stressful."

As they adjusted to academic life in the U.S., participants reported that they acquired better time management skills to cope with the hectic schedule in graduate school, and eventually learned to balance work and life. Shirley learned to keep a schedule book and kept her research and course work on different days of the week so that she could be more efficient by focusing on one thing at a time. John and Zoe noted that they went to the gym regularly to relieve stress. John stated that time management and multitasking became more and more important to him at the final stage of his doctoral study as he tried to balance his research and other activities. Tao talked about his multiple responsibilities as a graduate student parent and how he was "forced to better organize" his time to balance his personal and academic life. He noted, "I'm more organized at work or home, and it helps keep me motivated and efficient."

Academic Writing

Another of the early challenges participants faced was something they did not expect to be so different from what they had known in China; writing reports and papers.

Participants often talked about having to learn how to write all over again. Song felt

confident about his English and writing abilities until his advisor became critical of his

writing. It dawned on him that he was not just "making small mistakes".

> I realized that I didn't have the *basic training in technical writing* … of course I didn't have a lot of experience of writing manuscripts in China, but it doesn't *explain* it. I had to start from zero. My boss … he gave me hard times but I got a lot of help from him too, like he corrected my monthly report sentence by sentence, and sometimes he projected my paper on the wall, and we went through the whole thing line by line. It was quite a learning experience. My writing has gotten much better, probably better than many engineering students. I owe it to him.

Lei also spoke about the difficulty of academic writing. He commented that in China,

writing is not considered as essential in engineering training, although it is an important

part of doctoral education in America. He shared:

> Chinese students are real doers. But they are not capable of presenting their ideas and work in writing because in China our training mostly focused on technical skills. But here in America, in engineering, it's very important that you know how to write research proposals, like for obtaining funding. We have the *advantage* in technical knowledge, but not necessarily in putting things in writing in a persuasive way. I think, *in general*, Chinese students lack training in technical writing…. we are great at running equations or doing projects but…. I had to learn how to write from scratch. Honestly, I never expected it to be an issue.

A common strategy used to acquire and improve writing skills was to read

exemplary journal articles and scholarly books, particularly those written by their faculty

advisors, as Wayne pointed out. Participants expressed that it was a process they had to

go through in adjusting to American graduate education and they appreciated the benefit.

Although a difficult process, they learned the structure and logic by becoming familiar

with the literature. Writing dissertations, however, remained a daunting barrier despite

the fact that they had achieved candidacy. For some, it meant putting together several

major papers they had completed during their doctoral studies. While many participants

took courses on dissertation writing, they still felt underprepared and were often frustrated by the extended process of writing and criticism from faculty members.

Finding Motivation for Research

Despite spending most of their time and energy on study and research, most participants admitted that their doctoral study was not always purposeful, and that they suffered from a lack of motivation in their research. As described in the previous chapter, participants applied to American graduate schools for various reasons, and few came with genuine interests in research or joining the professoriate. Grace endured inconceivable stress and "was pressured" by her husband and parents to complete her study although all she wanted was a degree and a decent job and she had no interest in becoming a researcher or faculty.

Lei spoke most explicitly about his "suffering" from loss of interest in his research. He noted, the "Ph.D. is a time-consuming process. It demands more input with less outcome." Without a meaningful purpose and passion, doctoral study became "suffering", particularly because he had to "do research on topics that he was not interested in at all" due to his financial situation. An American Ph.D. degree has become more of an emblem of success and thus a trend for Chinese graduates from major universities, as Lei put it, "many Chinese students, including me, enter doctoral programs without knowing what they truly want" other than the degree itself, and they are not intrinsically motivated to do research. Furthermore, Lei's responsibilities in the research group projects mostly involved tedious tasks and hardly offered opportunities for the kinds of learning that he desired. Similarly, Shirley, like most Chinese students, came to the U.S. straight from graduate school in China. She commented, "I just followed the

crowd, like taking GRE and TOEFL, and came here. I never really thought about doing *science* or getting *Ph.D.* or go into *academics*." Shirley readily admitted that while working with her advisor she simply tried to complete the assignments and found little to engage her in the project itself.

While these participants struggled to take interest in research activities and participate in the research group, they understood what they needed to do to complete the degree, and were determined to fulfill the requirements. In most cases, they "got used to the routine" and doing research became part of the "job" they knew how to do well. More importantly, they relied on research assistantships to financially support their doctoral study, their living, and family in the U.S.

Not all of them came with poorly defined motivations for their Ph.D. study. John and Larry, both young and ambitious, acknowledged that they were academically driven in coming to the U.S. Both men aspired to become American-trained researchers influenced by people who were educated in the U.S. While in college in China, John, under the influence of his father who was a engineering professor, had communicated with his father's students who studied in the U.S.. He took advice from his predecessors and thoughtfully planned his doctoral study. Similarly, Larry was influenced by people with American higher education backgrounds whom he met in high school and throughout his study at Tsinghua. However, they were less than certain about what doctoral education entailed and what they exactly wanted out of their doctoral study. It was not until they became involved in research with mentoring and guidance from faculty advisors that these two men crystallized the purpose and meaning of their American education. Larry, for example, was genuinely excited about his research and has come to

understand that his work in graduate school could be useful and profitable in industry. John, on the other hand, took the initiative and pursued an independent, interdisciplinary study in mechanical and industrial engineering. Both have set a career goal-–to become faculty in their respective fields— and understood what they needed to do to accomplish it. In addition to staying focused and being productive, they saw their advisors as role models and sought mentoring relationships with junior faculty members with whom they could connect.

Becoming an Independent Researcher

Another major challenge for participants in the study was "learning the ropes" of doctoral research. All participants had a taste of working on research projects led by faculty and senior graduate students back in China. None of them, however, had the experience of conducting research independently. The professors often assigned them "very specific, minute tasks", according to Song, "although I got a master's degree [in China], I had never done any real *research*, at least not *independent research*. I was like a helper, they only gave me small assignments to do." Song added:

> But here I feel it's really … independent. My boss gave me some directions, I mean, he helped with my first paper, but then the rest was up to me … I had to figure out everything by myself … in China I didn't have any freedom with my research assignments. But here sometimes my boss recommended some ideas, but it was up to me to figure out how and what to do … for me, it was the most salient experience in my *Ph.D. study,* becoming an independent researcher.

Wayne shared similar experiences and feelings. He was ambitious and wanted to finish his doctoral program as fast as he could. He reflected on the most challenging task in his doctoral study—defining a research topic. The struggle to develop his own research agenda was evident in several statements.

The first year … I wanted to finish quickly, but I discovered that I can pass *qualify* early, but it doesn't mean my *Ph.D.* [process] is going to speed up. They are not related. Because … from my arrival to pass *prelim* … it took a year and half … I mean it was rough, but productive. Most of my papers are based on *ideas* I conceived at that time, now I am just putting those ideas in papers and publishing them. It was like … I had these ideas, now I knew what I needed to make them more complete, like a whole story … I'm doing simulation models, so *idea* is the key, a new idea means everything…. for that, I read *papers*, a lot, and deliberated a lot, like literally every night before go to sleep. All I could think about was my *topic*.

My advisor pointed out direction for me, but it was very vague. So I had to read a lot of *papers*, it's like … I was one against all, I had to find an area that nobody has done before, nobody has discovered before. I had to find it, and define it as my topic that I can work on the next three, four years … I was blank because I've never had such an experience … because in China graduate education is very much prescribed, you're given a topic and told what to do with it. It's different here. You have to figure out things on your own… so that was the most challenging part.

His efforts paid off and Wayne was confident and pleased that he has developed expertise in his topic area. "Now I can say I'm an expert on such and such," he noted. He appreciated the American graduate training as it helped him become a "true" researcher, not just "a technician working for the boss." He further commented that in China faculty used graduate students as "cheap labor" and did not engage them in the more challenging process of research.

Larry, who was involved in research projects since he was a senior at Tsinghua University, had more research experience than all other participants. He described how doctoral research was different from what he had done in China.

At Tsinghua, it was more like … my advisor was very young and he had lots of ideas … so he would develop an idea or the framework and ask me to work on the codes … so basically my work was very limited in scope and repetitive. It's different here in America; I had to do the research by myself. Of course he's [advisor] very experienced … he would point at an area and say it's an interesting problem, but exactly how to research the problem, and research what … I mean I had to figure out every step on my own. Sometimes if it's something that even he

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doesn't know, he would say he doesn't know and let's do the research together to
find out.

Despite the challenge, Larry enjoyed working independently and developing his own

research agenda. It boosted his confidence and motivation for doctoral study, particularly

when he saw results from his research in his first year as a doctoral student.

John also acknowledged the benefit of this new-found academic freedom and

talked about how he developed as an independent researcher. He shared:

> I saw how research emerges from zero, how an idea transformed into a research
> question because I have done them all … I would not have the opportunity to
> learn about these in China, from selecting a research topic, reviewing related
> research and literature, defining a research problem, to completing the research,
> and graduate. It's a complete process. It's an important achievement for me as a
> researcher.

In addition to the academic freedom, these students were also pleasantly surprised

by the availability of resources to support their research needs. Larry remarked that "the

resources for conducting research are incredible." Song concurred and commented that

many Chinese students, however, were not skillful at navigating and taking advantage of

rich academic resources. Knowing and utilizing academic resources, Song pointed out,

"is part of your doctoral study" in the U.S. and "you need to be good at it if you want to

succeed."

Whether they appreciated or felt frustrated with the independent learning process,

participants valued guidance and mentoring from academic advisors and other faculty

members in developing their research agenda. Wayne described how his advisor helped

him develop as a researcher.

> My advisor played an important role when I was still searching for a topic. He
> *encourage*[d] me, or maybe *push*[ed] me to put it another way, to come up with
> ideas, whether they were wrong or right. Once I had enough *general ideas*, he
> helped me to narrow down the field … he guided me, but I had to figure out the

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*detail*s. He never gave me any easy answers. Instead he always *pushed* me, *motivated* me to find my own answers.

Other participants complained about the lack of faculty involvement and mentoring on their research and doctoral study. This was common in statements such as these: "my boss was too busy with other things. He didn't help with my research at all"; "my advisor helped with the main ideas sometimes, but not details, only major ideas"; or "I was on my own, my advisor helped with the main direction [of research], but most of the time I had to find my own ways." Lei was particularly frustrated with his advisor, a senior Chinese faculty member with a reputation for being "busy with multiple engagements". He observed:

> My boss was the kind that set students free, so I had to figure out everything by myself. Of course, the *benefit* is that I experienced the whole process, I learned how to explore and research for a topic, but the *loss* is obvious too. I mean I spent too much time on figuring out what's out there so I wasn't able to dig deeper on one thing. I mean I did experience the whole process and learned something from it, but I didn't really, develop expertise on anything.

Navigating the System

In addition to research and other tasks related to their doctoral study, participants often reported challenges associated with major systemic differences in Chinese and American higher education, mainly classroom conduct and teaching and learning practices. Participants shared various experiences where they felt most challenged by U.S. academic practices, often comparing graduate education in China and in the U.S. These issues came up as key challenges for different participants at different points in their graduate education. Some incidents happened in the initial stages of their study while others came toward the end, but in both cases participants remembered them as the most salient experiences in their adjustment.

Participants, for example, discovered that things were quite different in classroom. Seven students mentioned that their feelings of discomfort were exacerbated in classroom as they felt incompetent, ignored and excluded. Some attributed their difficulties to their lack of fluency in English. Grace, who was usually quiet and reserved, felt intimidated by the give and take dynamics as she was used to being a passive learner. She noted:

> I felt the classes were very different. Back in China, it was more like [professors] pouring the stuff at you. But here you have to ask questions, so you have to think a lot, be alert all the time … they [students] always talk in class, but I had nothing to say, it was … very embarrassing, really embarrassing. I almost felt stupid.

Grace and other participants found it uncomfortable to ask questions and speak up in classes and thought others perceived them as incompetent. Class presentations were even more daunting for some individuals, especially, as Wayne explained, when describing complex theories and subtle concepts that were hard to put into words. Grace recalled that she had to learn how to use PowerPoint to present her assignments to the class. Tao opted to take a course on doing presentations at the English Language Center to make up for his skill deficits. Zoe, although self-assured and fluent in English, noted that even after three years she still had stage fright when speaking in front of class. Many participants echoed Wayne's statement that "We [Chinese students] are often at a disadvantage because we can't express our thoughts well enough for others to understand or pay attention to us."

Participants often reported that critical thinking was new to them, and that they felt challenged by the task of criticizing others' work. John recalled a course that involved reviewing and critiquing literature on a weekly basis. He noted, "I learned a lot from it, I mean it was difficult at first, but after I learned how to do it, it was helpful. I learned how to write reviews, see the strength and weakness of a paper, and how to offer

my opinion." John also enjoyed the small class where he was able to engage in intellectual conversations with the professor. He admitted that engaging in scholarly conversations with the professors enhanced his critical thinking, an element that was absent from his graduate education in China. Similar to John's experience, Wayne has sharpened his critical thinking skills and became so proficient as to review papers for his advisor who is on journal editorial boards. When asked if it was difficult to review papers, Wayne commented that he often "killed" those papers because "maybe I learned from the best examples, I have high standards for papers that can be published on journals, you know, for the sake of their reputation."

Noticing the differences in teaching and learning, participants showed appreciation for American faculty and their focus on student learning. Larry spoke about a course taught by his advisor: "He really emphasizes application. Like there was a course on linear feedback control. The assignments were all based on existing research, and they were like the simplified versions of the real problems, so … you could see how they are applied when you finish them." Larry went on, "I like it so it's easy for me to adapt. I feel … we should do more application in China because, like I said, we learn a lot of control theories, but we never use them so it's easy to forget after a while … but here I know how useful they are, so I really like the American method."

In addition to these examples, participants also shared individual experiences of adjusting to academic values in the U.S. and navigating the myriad resources available for them on campus. In these cases, participants adapted by learning from their mistakes, observing others, or seeking more information from peers. In adjusting to the new system, they often turned to other Chinese students to gather and share information. For example,

Song shared an incident when he once submitted a class assignment that resembled other

Chinese students' work in his class as they had a discussion about the problem prior to

working on possible solutions individually. He noted,

> It was a huge difference. I mean the honor code system, really. We copy each other's assignment at Tsinghua, it's not a big deal … but here... We didn't copy each other, just discussed it and didn't even work on it together. But it turned out that we made a common mistake. I remember it was an Indian professor. He told us he found a common mistake in our assignments and suspected plagiarism and asked us to explain. I was really shocked, I mean I never thought about it like that …

Although Song and his Chinese classmates did not commit plagiarism, he learned

a hard lesson and was quite surprised by the consequences. Song was concerned that

many Chinese students were at risk without knowing the honor code system or the

consequences of breaking the code of academic integrity.

His concerns made a great sense to me. Academic integrity is a heated topic

among academicians in China in recent years. In addition to exposing dishonest practices

and fraudulent work, an important part of the new debate is about establishing an

academic culture that is committed to the principles of academic integrity. The challenge

for Chinese students is that the standards of academic integrity are not clearly defined and

enforced in academic institutions in China and many of them bring their "bad habits" to

their doctoral study. Song shared that he knew many Chinese students often made honest

mistakes, rather than intentionally breaking the code, due to their ignorance of U.S.

university policies regarding practices like unauthorized collaboration. Song urged

Chinese students to study university academic policies and his wife who was an

engineering faculty to educate Chinese students.

Language Barrier

Language difficulties were the most common topic of discussion among the study participants. They reported problems and issues associated with their competence with the English language, how the academic environment compounded these difficulties, and how language barriers influenced their self-perception.

One of the first challenges participants encountered as they began graduate study was understanding lectures and class instructions. All reported difficulties comprehending questions and conversations in class in the first semester. Grace, like many participants, reported that she was unable to understand when the teachers raised questions in class. Shirley and Lei tape-recorded lectures but still had trouble understanding professors' speech because of their foreign accent or fast pace. Shirley also borrowed notes from her classmates in the first semester and reviewed the lectures after class. Participants reported that they improved their listening skills in a short time, however, and that they were able to comprehend most conversations, if not all, by the end of the first semester. As Wayne put it, "language … was a problem at the beginning … it was difficult to communicate … but it was *minor* … because you read papers all the time after all, so it wasn't that hard to learn the academic terms." Song felt his English "wasn't too bad". He went on, "of course my vocabulary was limited, and I didn't know how, I mean, I didn't know all those conversational words and phrases, but those were easy to *pick up*."

Despite quick improvement in listening, communicating their thoughts and feelings to others in an effective and confident manner remained a constant struggle for participants even after years of study in the U.S. Wayne observed that one of the greatest

challenges for Chinese students is attaining professional standards for presenting

themselves and their work at meetings and conferences. In part because engineering

education in China focuses heavily on technical knowledge and skills, and students have

no experience with reporting research findings and presenting their projects. Half of the

participants in the study took efforts to enhance their presentation skills. Tao took special

classes on making presentations at the university's English Language Center. He spoke

poignantly about the experience. "All of my presentations were video-taped so I could

watch them afterwards…. Oh, it was really helpful because I could see my facial

expressions, body language, everything. Things that you don't pay attention normally …

I *really* improved a lot from that."

While describing their efforts to improve their communication skills, participants

distinguished themselves from other Chinese students. The general consensus was that

the majority of Chinese students in engineering neglect their communication skills. Zoe

argued that Chinese students should have a better command of the English language

because they "are getting an *Engineering degree* in America, not an *Engineering degree*

in China." And yet, most Chinese students lacked initiative to sharpen their English skills

in a "Chinese speaking" environment. She offered her observation of Chinese

engineering students.

> I think speaking fluent English is the most important thing, even more so than the
> *research topic*. I know a lot of … Chinese students in engineering probably don't
> agree, they don't think it's that important or they don't think much of it or …
> don't pay attention to their English, or maybe some of them think about it when
> they have to do presentations, but that's all.

Chris agreed with this statement pointing out that many Chinese students

understood the importance of good communication skills, but few took the time and risk

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associated with enhancing their English abilities. This is evident from the fact that the other five participants in the study failed to take any actions to improve their language skills, although they unanimously indicated communication as a major challenge in their graduate study.

Another common theme in participants' experience of language difficulties is their feelings of incompetence and discomfort. Wayne was "afraid" that he was not making sense when he spoke English. Chris noted that he used to suffer from an "emotional barrier" which made him less confident when speaking English. John recalled his arrival period in the U.S. and how shocked he was to discover that language was a major problem. He shared:

> I learned English for so many years after all, and I did pretty well on TOEFL and GRE. In fact, I was very proud of my English because I was *No.1, No.2* in my class. But after I got here, I felt so bad. I wasn't proud at all. I couldn't understand, couldn't express my thoughts. I couldn't forget how … frustrating it was. It was almost depressing to know that I couldn't understand English … it was stressful.

John was frustrated that his poor English prohibited him from presenting his true self—a knowledgeable, engaging young man with a great sense of humor—when communicating with Americans. Many participants shared similar feelings that language barriers largely undermined their confidence in communicating with Americans. Shirley shared another example: she was so intimated by communicating in English that even the faculty and her colleagues noticed her fear and often encouraged her to stop "being shy and speak out". Her feelings of discomfort began to change only recently as she made a commitment to improve her speaking skills and regained her confidence through practice. She spoke of this change in her attitude. "Now I feel, I am pretty *confident,* yeah*,* quite *confident.* It feels much better. When I first got here, I was frightened to speak English … it's

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embarrassing, you know, not to be able to speak out. Like even if you have tons of ideas, if you don't talk, nobody knows what you think."

Most participants in the study were self-motivated in their efforts to improve their English although some departments made it a requirement for international students to take English language courses. They were resourceful and creative in finding strategies to improve their English. Media was a common choice because of its easy access and, perhaps, it requires less effort. Many participants relied on mass media such as radio, television, magazines, movies, music, and the like to improve their listening, and acquire information as well. Chris and John took further steps and sought opportunities to communicate with Americans through living arrangements. John, aspiring to be an engineering faculty, explained his choice:

> I found that for many Chinese students, their English was still pretty rusty even after four, five years, particularly us in engineering. I want to be *faculty* so it's important that I articulate myself well. But I felt I was moving farther away from my *dream,* I can't be a professor like this. If I want to live a decent life in America, to settle down, to become a member of this society, I mean I have to take the challenge and speak like others, to live a normal life, and communicate with people.

Shirley and Tao, on the other hand, sought opportunities to practice speaking English with international students. Tao resented speaking English with native speakers because they reminded him of how poor his English was whereas he felt "less intimidated" about speaking the language with international students. Shirley, who joined a conversation group of international students, shared that she had "the guts to speak out" and "just be myself and talk like myself" because "everybody was at the same level and "it feels like you are talking to friends." She noted that such a setting offered her reassurance and support, and that she was able to overcome the fear of embarrassment.

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Now, Shirley is less nervous when talking to Americans and less conscious about her

"Chinese English accent." More importantly, she understands that the more she speaks,

her English will improve.

Participants' thoughts and feelings regarding their English competency reveal that

they need more than just language knowledge to communicate confidently and

effectively. The sensitivity they experienced about their language abilities generated

frustration and sometimes feelings of inferiority. The inability to articulate their points in

class or to carry out substantive conversations with peers masked their academic

competence and personality. Descriptions of personal comfort and feelings of

competence in speaking English with other international students reflect their desire for

support and understanding from native speakers; they desire to be accepted and

acknowledged as who they are, not merely by their English abilities.

Perhaps one reason that participants creatively sought ways to deal with limited

English proficiency was the limited opportunities in their daily surroundings. Zoe, who is

quite articulate and outspoken, was disappointed that her English did not improve as

much as she expected although she had lived in an English-speaking country for three

years. She attributed much of the problem to the nature of engineering studies. She

explained:

> In fact for us in *engineering*, we don't have a lot of communication going on.
> That's a big problem. Because in *engineering* it's an unofficial rule that one
> person is one project. It's very rare that three people work on one project, that you
> have a *team* of three people on one project. It's very rare.

Another factor contributing to the communication problem, Zoe added, was the

fact that "many Chinese students study and live in an environment that doesn't require

them to speak English." Lei echoed Zoe's statement and explained why most Chinese

engineering students were limited in using English: "You have to consider the context; if we were surrounded by Americans, then we don't have a choice but to speak English, and it's likely that our English will improve. But the fact is, we speak Chinese all the time [at lab] from day one, so we don't have the opportunity to practice English." Song recalled his internship experiences and highlighted the contextual factor. "I didn't have any Chinese colleagues; they were all Americans so I was *forced* to … speak English. It was difficult at first, but very helpful, especially my first internship, my English got a lot better after my first internship." Aside from several internship opportunities, Song pointed out English was not necessarily the primary language for him as he worked with Chinese faculty and lab-mates at school, and socialized with Chinese friends exclusively. It echoed Shirley's statement: "our group is mostly Chinese students, so basically … other than communicating with my boss in English … I don't need to use English to live in America. I need an *environment to speak English.*" Tao expressed similar sentiments when explaining why he took extra classes at the English Language Center. "I was motivated by the fact that in the lab or department, it's mostly Chinese students. So even though I'm in an English-speaking country, I don't really have many chances to use English."

Others also felt overwhelmed by the academic pressure and found no time to attend to their English until they achieved candidacy. John was swamped by courses and other responsibilities and "didn't have the time, the energy to think about improving English even if I wanted." He added, "the academic pressure, plus living alone in a foreign country, it was daunting. I didn't have the time to think about English at all." Students who were married and lived with their families had fewer chances to speak

English outside the academic setting because they lived "the Chinese way" at home, socializing primarily with other Chinese families and watching Chinese media. Some attempted to change their lifestyle in hopes of using English more frequently. Song made an agreement with his wife (also an engineering student) to speak English at home, but they soon gave up the effort because it felt awkward and disrupted their normal life.

Relations with Faculty

For Chinese students in engineering, another key challenge in graduate school involves interacting with faculty members from various cultural and national backgrounds and making personal connections with their faculty advisors. Despite the diversity of cultural backgrounds and the personal variance in faculty styles of working with students, common themes emerged in the respondents' observations about their relations with their advisors: faculty as a positive influence; perceived barriers to building relationships with faculty; and dissatisfaction with faculty advisors and perceptions of discrimination.

Positive Influence

Participants in the study unanimously stated that faculty, particularly academic advisors whom participants usually called "boss", played a key role in determining the quality of their graduate experience. Several students talked about the important influence that their advisors had on their academic and personal adjustment as well as development. Larry saw his advisor as a role model and stated that "having a great advisor is most important" to his graduate career "because graduate school is a critical period in my career, shaping my philosophy of life and worldview." He described that his advisor, a

renowned senior scholar and Russian immigrant, is very nurturing and "his attitude and methods" greatly influenced Larry as a graduate student and as a person.

Similarly, John and Wayne, who had the same faculty member in mechanical engineering as their faculty advisor, spoke highly of his influence, particularly how he, a native Chinese, insisted on communicating in English with his Chinese students. Wayne stated, "[Advisor] has a great reputation among students. He understands students. He cared for me." John looked up to his advisor for his achievement as a renowned mechanical engineering faculty and a senior administrator. "He is my role model. I often think about why he is so successful.… I think one thing is his communication skill. He speaks English best of all Chinese faculty I've seen, I mean his writing, his communication skills … " John's advisor exerted great influence on his academic development and career goal. With his support, John was able to pursue a joint degree in mechanical engineering and industrial operational engineering, "a rare opportunity" that he felt lucky to have.

Faculty advisors were also perceived as a major source of support by participants. The Chinese students in the study especially appreciated faculty advisors who had an awareness of their unique situations and provided valuable guidance and support on both academic and personal matters. Tao, about to graduate and look for industry jobs, was grateful that his advisor looked after his interest and supported his decision to do internships, unlike other engineering faculty members who would not allow any distraction from research group responsibilities. Grace, too, showed her gratitude to her advisor who "believed in my abilities to do research more than I did." Grace, who battled depression and lost confidence in herself, was able to persist because her advisor

understood her difficult circumstances and looked after her welfare. She informed me
that her advisor has been in an administrative position for a long period and has had years
of experiences of working with Chinese students. He " is like a *psychologist*… try to
understand my problems, help me de-stress … always encouraged me, and never
criticized me or my work. I felt, he really believed in me, even when I wanted to *quit*."

Perceived Barriers to Relationship Building

Participants described various barriers in interacting with faculty, mainly their
advisors. They thought that the lack of formal information on how to interact with faculty
in U.S. institutions resulted in bumpy starts with their academic advisors. They did not
know "how to get along with boss", but managed to figure it out by trial and error. Larry
had an awkward beginning with his advisor whom he described as "strict and precise."

> I didn't know how different things were between China and America, and how
> faculty work in different ways. Like in China, we had our own lab, I had my own
> computer … so I sent an email to my advisor and asked about these things. He
> didn't answer the first time so I sent another email. When we first met, I mean he
> was born in 1939, like he was 65, he told me quite seriously … he said I'm a new
> student, I haven't made any contributions yet so I shouldn't demand things …

Larry, young in his early twenties, felt intimated by working with such a highly achieved
senior scholar and the awkward incidents made him feel even more nervous when
approaching his advisor. He explained, "He is very detail-oriented but I'm not. So he
picked on me several times. It wasn't that bad, but still made me nervous, like whenever
we met, I felt anxious. I didn't know him well at the time after all…" Larry attributed his
initial fear of his advisor to cultural differences and offered several possible explanations
why Chinese students' have difficulty interacting with faculty:

> Because of language and cultural differences, we [Chinese students] don't know
> how to approach them [faculty], like we might feel nervous, reluctant to interact
> with them. A lot of times we don't know what to say to them. Maybe because in

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China we always acted humble and respectful to teachers, always put them in a higher position than us. But if you look at American students, they talk to faculty very casually, like they are friends. I don't think Chinese students can ever do that, I mean it's very difficult to get to that point.

The turning point in his relationship with his advisor, Larry stated, was when his research turned into publication at the end of his first year, when his advisor acknowledged his achievement and his research abilities. "It was an exciting moment, to finally get to that point … it feels like a leap from, you know, I was so afraid of him and so nervous about every meeting at first, but now I find myself being … *very casual* and relaxed … (with my advisor). It feels like … it still makes me excited when I think about how far I've come." After working with his advisor for more than three years, Larry saw him as "a coworker, an elder, and a teacher" and their interaction was no longer limited to academic matters. Comparing his Jewish American advisor to his former Chinese advisor at Tsinghua, Larry observed that he became much closer to his current advisor as he worked with him closely and got to know him better. It is no longer a nerve-racking event for Larry to have routine meetings with his advisor and their interactions are more informal and personal.

Tao also at first felt "nervous and stressed" about working with his advisor. Although his advisor is Asian and culturally similar to him in many ways, Tao did not know how to approach him until he got advice from a Chinese graduate from the same department who told him to "think of them [faculty] as friends, not as superiors." He characterized the relationship between himself and his advisor as "pleasant and smooth." Tao admitted, however, that although his advisor has been "Americanized" in many ways, they interacted more like "Asians".

There are things you can't change, I mean my advisor is Korean, so a lot of us, we call him by his last name, not by the first name, like we would call American faculty, like we would call them Mike or Tom … and many other things … because we are Asian after all, so we still go with the Asian ways."

Unlike these experiences, Shirley felt disconnected from her American advisor, even after working three years in her group, and had difficulty articulating the exact source of her discomfort:

My boss? we never had a relationship that is … [interviewer: close enough?] Yeah, exactly. It's not just me, I mean every [Chinese] student in our group, we don't have close relationships with our boss to the extent that she would care for our future. I mean she only cares about whether we finish her assignments, or if her project is going well. She doesn't care about us at all, I mean she doesn't really care if I enjoy working with her or things like that. I mean she pays us, she told me directly that "I paid you" … after she told me that, I sort of understood our relationship. It became clear to me that I just need to do my job well then there is no … *unhappy* things between us. I didn't understand this before. Because in China, in graduate school, the professor will never, I mean nobody will say things like "I pay you", they won't talk like that.

Shirley found her advisor's straightforwardness to be somewhat offensive. However, it was a wake-up call and she understood for the first time that her research assistantship was like a job—she had to work hard to earn the salary. In spite of her struggle with the three difficult courses that she took each semester, Shirley made sure that her research assignments got finished to avoid conflicts with her advisor. Gradually, her advisor complained less and Shirley came to terms with their relationship.

Chris cited the organizational culture of engineering departments as a barrier to relationship building. He spoke critically about engineering faculty in comparison to what he perceived to be the student-faculty relationships in other disciplines such as social sciences and humanities. He was disappointed because engineering schools operate in the business mode and the relationship between faculty and students resembles that of employer-employee. He described:

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[In most engineering fields], the relationship between faculty and students is not that close, not close at all. I know in other schools and departments, faculty and students get along very well. I mean we spend a long time in a doctoral program after all. They get close with their advisors, even know about their family members, and their advisors know a lot about them and their family too. Things like that don't happen in engineering school often. It's like [business] … "you do your job, then I will support you".

Dissatisfaction and Perceptions of Discrimination

One reason why participants report they had difficulty finding a balance in their relationship with their faculty advisor is because they felt intense pressure to perform efficiently and deliver results in the research groups, which are usually supported with external grants and funds. According to participants, most Chinese engineering students depend on faculty grants to support their doctoral study, at least until they are experienced enough to be hired for teaching or administrative positions. They believed this financial dependence created many tensions between Chinese students and their advisors. Of all participants, Lei spoke most explicitly about the conflicting relationships between Chinese students and faculty due to the funding mechanism in engineering departments. The funding situation is the reason "why most Chinese students are not happy", Lei claimed, "We sometimes say, 'if I'm an American, I would fire them [advisor]'. But because we need funding, [we stay]. American students don't care; if they are not happy, they leave. They have fellowships and any faculty will take them."

> International students work very hard. The reason is quite obvious because we have to *secure your funding*. It's not unusual that your boss would stop supporting you if you don't meet expectations.… But Americans are different. I mean they don't worry about funding, so they are more *self-motivated*. But international students, we feel the *pressure* [to commit to the research projects] … so we only get *motivated* when it's time to graduate …

Reflecting Lei's description of funding constraints, participants often complained about their advisors being "tough", "pushy" (in both positive or negative sense), or

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"mean" in demanding results, even during the first years while they were burdened by coursework. In some cases, the pressure compelled participants to seek other advisors. For example, Chris transferred from another institution to work with "more knowledgeable and sensible" faculty although it meant he would start fresh at Lakeside University and lose two years in his study. He presumed that "professors have high [moral] standards", only to find out "that is not true." He added, "I've been in the *academic* long enough to know, from the people that I've known so far, there are some nice people [professors], but some of them are very *mean*." Chris stated that he could relate to the faculty and the pressure they were under to achieve professionally, and pointed out that "sometimes they get stressed out and would *push their depression* on students. It's not fair."

Zoe related similar conflicts with a faculty member who was too demanding. She was hesitant to give details of her experience with her first advisor with whom she worked for a week, but she defended her quick decision to move.

> Every professor maybe has their own way of training students, whether the intention is good [or bad], maybe it's more *effective* ... but I couldn't tolerate it. Even today after 3 years working with so many professors ... I know I was right [to leave] ... there is a *limit* to how far you can push students ... I can't imagine spending four, five years here without a break, whether it's Christmas or what. You can't ask me to work 365 days in the lab.

Zoe spent the semester without an academic advisor and did not participate in any research projects. She noted that she was able to explore her options because she had a fellowship to support her study in the first year.

Lei, too, was reluctant to disclose his feelings about his advisor, perhaps because his advisor, a Chinese faculty member, is well-known in his department and in the Chinese community at Lakeside University. Even though I assured him of the

confidentiality of our conversations, he was cautious and remained ambiguous. However,

several remarks hinted at his dissatisfaction toward his advisor and his research group.

Lei pointed out that his advisor was "very busy", and he could "count the times we met in

my graduate years." Lei described how the research group functioned like a business

operation, with a research scientist overseeing the projects and students working on

trivial assignments while his advisor assumed the role of a chief fund raiser. This was

very different from what he had imagined about doctoral study and research—working

closely with the prominent scholars in the field and finding his niche in the academic

world. At the end of a year, Lei attempted to transfer to another university but his advisor

offered him the opportunity to try out at a different research group. Realizing that he had

already invested two years in the program, however, Lei decided to stay, although still

not satisfied, and manage as best he could. With the lack of mentoring and guidance, Lei

felt he did not achieve as much in his research as he had hoped and wasted time on doing

routine technical work for the research group.

Most participants were reluctant to be critical of their faculty advisors overtly and

shied away from discussing details of any conflicts, perhaps because they wanted to

avoid the image of a disgruntled student. Or, perhaps they were not convinced of the

confidentiality of my research and were concerned about the negative effects of risking

funding or relationships with their advisors. Nonetheless, participants conveyed

perceptions of unfairness and discrimination through their stories. Zoe was one of the few

who deconstructed the phenomenon and talked about the inequities in the system:

> It's not … it's not an easy subject. I don't know if it's related to the interview, but
> I have to say this. (Long pause) Many bosses have … double standard. (pause)
> They know it's okay to push Chinese students because we work hard and
> diligently. They take it for granted and always expect us to work harder than other

students. It's … [not fair]. The department can't do anything about it. I mean what they can do to faculty, they all have their own territories … sometimes I feel like the American system is like a feudal system, isn't it? I mean professors have all the power…

When I asked if she was speaking from her own experience, Zoe neither denied nor confirmed it. Instead, she quickly pointed out that it was a shared knowledge among Chinese students in engineering. She further argued that Chinese students were responsible for creating their image as hard-workers.

I don't know if we gave them this impression… they have this image of Chinese students working hard and not enjoying life (laugh). So their expectation is like we should work more and harder than anybody else…. Or maybe, maybe it's because of funding, Chinese students often chose silence over speaking out; we chose to work instead of complaining, so the professors became more and more demanding.

Socialization

Another common issue that emerged from the interviews involves the difficulty participants experienced in socializing with people from different cultural backgrounds in the university and the local community. Participants' descriptions of their social interactions clustered around five sub-themes: the Chinese circle, social isolation, interaction with diverse people from different cultural and racial backgrounds, and campus involvement.

The Chinese Circle

Chinese engineering students in this study socialized mainly within a closed network of their Chinese peers. John illustrated social life with his phone book.

Chinese students mostly remain in the Chinese circle. For example, if you look at our phone, 9 out of 10 people on the list are Chinese. Even if you have one or two American friends or lab-mates, it's not a really close relationship. I mean our social life, life outside school is very *closed* … to the Chinese circle … I almost

didn't feel it different from living in China, except that I talk English in class or when doing presentation.

Many expressed similar sentiments saying that they felt living in the U.S. was not so different from living in China. Song illustrated how limited his social interactions were, even among the Chinese student community: "Most of my friends were from my lab, sometimes I get to meet their friends too. But I usually don't meet students from other departments in the college, like I'm close with people in my cohort, but not with other students." Song's circle of friends reveal an important departmental element that influences participants' social and cross-cultural interactions: they are surrounded by Chinese faculty advisors, Chinese colleagues, Chinese roommates, and Chinese friends. Although Song described himself as "open, smooth, and likes making friends," he pointed out that his social interactions were limited by opportunity, not necessarily by his willingness and ability to mingle with different people. As he put it, "I'm pretty *open* … like when we have meetings with GM folks, I'm the only Chinese student talking to those folks and the rest of Chinese students are silent. So I mean I don't resist, I don't mind it, it just … *happened to be* that all my friends are Chinese."

For most participants, the Chinese social network provided an important source of support. Academically, participants heavily relied on Chinese peers in their program for important information and help with subject matter, ever more than on faculty and advisors. Many sought tips and advice about degree requirements, academic procedures such as registration, financial assistance, and academic resources. When applying to his doctoral program, Tao got help from Tsinghua alumni friends at Lakeside who provided information about faculty and their research interests. John explained that Chinese students usually shared information and resources for the qualifying exams, a critical

turning point for doctoral students in engineering. In Shirley's case, the absence of

Chinese students in her cohort made it "extremely difficult" for her to cope with

complicated course assignments and projects, particularly in her first semester when she

had trouble understanding lectures. She took some statistics courses outside of her

department and was impressed by the support among Chinese students. "I really envy

people in statistics, I mean they have each other to help out."

The Chinese circle, as participants often referred to it, also provided much needed

social and emotional support. Many cited traveling, playing sports, or gathering with

Chinese friends as the primary means of releasing stress from work and/or socialization

in their personal lives. I was intrigued by how participants from the same program were

connected with each other in their personal lives, almost like a family. It was evident

when Lei and his pregnant wife walked into a restaurant where Song and I met for dinner.

Lei's wife chatted about her recent checkup with Song who also shared stories from his

wife's pregnancy. Their close connections with each other and other Chinese students in

their program were obvious as they exchanged information about various aspects of their

personal lives.

Shirley spoke of the support her Chinese peers rendered when she was

overwhelmed by the academic stress and thought about quitting. "I was stressed out and

wanted to go home badly. They helped me and encouraged me to stay. I could have not

survived on my own, you know, I always talked to them and my roommate if I feel upset

and they always give me good advice on things." Having experienced difficult times and

knowing the importance of support, Shirley described how she tried to help out her

Chinese friends. "If my friends, you know, if they feel depressed and if they come to me,

I usually stop whatever I was doing, and try to be there for them, because I know they need me, they need this time, I mean, it's more important to them." Although she has very few friends, fewer than what she could "count with one hand", Shirley believed they were the kinds of friends with whom she could have lifelong relationships.

Social Isolation

Perhaps one of most obvious drawbacks of socializing exclusively in the Chinese network was the limited interactions with people from different cultural backgrounds and isolation from the society they lived in. Chris reflected on how he felt alienated from the rest of the world:

> I feel, you know, like I said before, a lot of us came here and live in an isolation, in a small space … it's unrealistic … life is not so simple, like a paper … life is not just about writing a paper, no, it's never like that. I mean if you were in China doing Ph.D. or whatever, you won't feel like you are different from anybody else, won't feel so isolated because you're one of them. But when we come here, it feels like … I'm not in touch with the society, you know, they don't care what I do, and I don't care what they do, and I'm also isolated from those people in China…. I feel like living at the edge of the society.

> Grace related similar feelings of isolation when she spoke of her "depression".

She attributed the lack of social interaction to her excessive work load.

> Since I came to America, I felt … stressed out, I mean I worked a lot, I didn't have a choice but to keep myself away from the world, because I have to commit to research 100 percent, not having a life. I thought my English would get better after a year or two, but it was the opposite…. I don't like it, I want to be able to interact with Americans freely, and I want to feel like home.

Grace missed her busy life and friends back in China. She attempted to socialize with Americans, but was disappointed at not being able to have a sustained relationship with them. She was unable to articulate the reasons: "It's hard to have a deeper relationship with them, I don't know why … in fact I'm the one calling them or going to see them sometimes, but somehow we lost contact, stopped seeing each other." Grace desired a

sense of belonging and connectedness in her attempts to interact with Americans. Such a sense of belonging might have helped with her depression, Grace speculated, because she felt vulnerable and lonely when things got difficult.

Zoe was more articulate about her feelings and the reasons that she felt lonely in her doctoral study. She compared her graduate study at Lakeside to her undergraduate experience at Tsinghua and pointed out her "struggle in doctoral study is a lot different." She explained that her undergraduate years were stressful because of peer pressure. "Everyone was working hard to be the No.1 … I mean I struggled but everyone else was struggling too, so I wasn't alone." However, Zoe felt different about her doctoral study. "But in America, I'm not sure if it's because I'm in a foreign country or in doctoral program … it's different … sometimes I feel so lonely in this struggle.…" Zoe explained that the lack of social life in America exacerbated her feelings of isolation and made her doctoral study even more stressful.

As Zoe illustrated, participants missed their social connections in China and desired a greater sense of belonging and empowerment in the new environment. Some participants tried to immerse themselves in hard work to compensate for a less than satisfying social life. Others attempted to break the isolation and sought social relationships with Americans, but they said they were often frustrated at superficial contacts that they found to be far from meaningful and lasting relationships.

Interactions with Diverse People

Because of the international and multicultural nature of the engineering departments, participants have had opportunities to work with people from various cultural, racial, and ethnic backgrounds in their research groups. They shared differing

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experiences and perspectives about their foreign colleagues. Tao and Chris had positive experiences with their lab-mates and officemates. Tao described with a sense of humor that his research group resembled the United Nations. "There is a Korean, another Chinese, a Taiwanese, an Indian, a Peruvian, and an American," he noted, "I like it. We talk about the group project, our own research, and others things in life … sometimes I invite them to dinner at my place." With many Chinese students in a research group, it was common that they only mingle with each other, and it also seemed natural and convenient to speak Chinese at labs. Tao, however, made conscious effort to "talk to other lab-mates more often and speak more English than Chinese at work." Similarly, Chris also developed a close relationship with a colleague from Tunisia. "He was a post doc in our group … He told me he went out with Koreans and Indians a few times but I was the only Chinese responded to his invitation. We went to bars together a few times and became good friends. We often talk about academics, future and a lot of stuff." These diverse interactions and experiences, according to participants, diversified their social life, offered opportunities for cultural learning, and helped them adjust in graduate school.

Participants shared a view of the need to be more inclusive in their social interactions, but admitted that it was easier to have this goal than to accomplish it. Many described that their interactions with Americans or other international students were limited to work-related communication and they seldom socialized with their non-Chinese colleagues outside of the department or formed personal relationships with them. Even in the office or lab, interactions were rare due to the nature of the engineering discipline. Shirley noted, "there is this one girl, American, in my office. But most of the time we do our own things, I mean we greet each other, like say hi, but that is it."

Additionally, students' personal bias and negative experiences interfered with their desire to socialize with diverse people. Lei and Song, for example, shared with me a "general feeling" and "a common understanding" among Chinese engineering students about people from certain countries. Song noted, "Maybe it's my bias but I think people from certain countries are different … I met a lot of international students, some of them, to be honest … many students from [country], from the [region], they don't work a lot but talk a lot. I heard they are the same in the corporate world."

Larry's description of his "foreign" colleagues represented many participants' experiences.

> From my own experience, I feel, they are quite … they are mostly nice. I don't have any problems with them, not really, I mean they are nice people to work with…. But, you know, it's not easy … to get in their circle, I mean it's not like when we were in China … maybe it's because of differences in lifestyle or cultural backgrounds … it's just not that easy … to get in that big circle. I mean we do talk about work or things like that, but that's it.

Other participants shared Larry's perception of the lack of community. Many reflected on their graduate experience in China and described how they felt a sense of identification with the departments. While they longed for the same sense of community, many were not sure how to forge close relationships with non-Chinese colleagues. Larry noted, "It is obvious, like with Americans, there is a communication barrier. Although I went to academic conferences and did presentations and things like that, I still have difficulty communicating with Americans on a daily basis … like in China it was easy to make jokes or chat about something, but here, I don't know how to interact with Americans, like it's just hard to find a common interest and start a conversation." Larry explained that it was just easier and more comfortable to hang out with Chinese students. In contrast,

it took a great amount of effort to socialize with Americans and these efforts were often accompanied by awkwardness.

Song shared similar feelings although he maintained good working relationships with his colleagues. "With foreign students …we don't usually go to lunch or get closed like that. But with Chinese students, we get together at holidays or… like I'm going to Arizona and need a ride to the airport. It's easier for me to ask a Chinese student for a ride." In addition to his internal sense of difference with Americans, Song also sensed that his American peers, although friendly, were not interested in mingling with Chinese students, and it seemed natural to him that both American and Chinese students would seek out others like themselves.

In spite of the limited scope of interactions with their American and international peers and people in their community, participants felt it important to have more contacts with people from diverse backgrounds, realizing that this was a way to improve English skills, increase cultural understanding, enrich life experience, or simply have more friends. However, they were less certain about how to meet people outside the Chinese circle and develop lasting relationships with them.

In describing their social experiences, participants also discussed barriers that constrained their interactions with people different from themselves. These barriers include language difficulties, the lack of opportunities, and academic pressure. John explained that as a student he did not have a choice but to devote most of his time to study and let go of other things in his life. "I was swamped by the courses and challenges of living alone here, and had no time or energy left to think about other things." The academic pressure and difficulty of communicating with Americans led him to remain in

the circle of Chinese students. Other participants claimed that language problems and

communication barriers made it difficult for them to engage in meaningful conversations

with Americans. In addition, the presence of large numbers of Chinese students in their

academic environment often easily fulfilled their social needs while they were

preoccupied with study and research and had little time for social life. Zoe summarized:

> I could have done better adjusting to the environment, graduate school is different
> from undergraduate, we don't have many social activities as they do, most of the
> time we just focus on our own things. During the five years' of doctoral study,
> maybe in the first two years, we're not sure about English abilities, and we are not
> able to communicate effectively. By the time our English got better and we got
> familiar with things, we face graduation, so we have to expend all our time and
> energy on finishing projects. It seems like when we're ready to be social, time has
> run out.

Zoe also believed that cultural barriers were the major reason that she was unable

to have meaningful relationships with American peers. "I mean there is a cultural barrier,

definitely. Maybe it's just me. Maybe you know some Americans, or go to parties or

whatnot, but it's hard to make real friends with Americans, at least for me it was." Tao

echoed this statement and pointed to culture as a barrier to interact with his foreign

roommates, despite his focus on diversity in his choice of roommates.

> I think cultural difference is a huge barrier, I mean I didn't feel it when we had
> conversations or … but living together in an apartment … brought out a lot of
> unexpected problems because our cultures are different. In the end, I didn't feel as
> comfortable living with them as I did with my Chinese roommates.

Those feelings of discomfort, however, did not deter Tao from interacting with different

people, and he remained positive about his cross-cultural experience. He valued the

educational benefit of interacting with diverse people.

Chris felt embarrassed when he made cultural mistakes in social interactions, and

as a result resisted the idea of interacting with Americans. He attributed his hesitancy to

Americans' lack of interest and desire to understand Chinese culture. In predominantly

American social situations, he often wondered "if they are interested in what I'm talking

about, would they be interested in talking to me." He continued, "I mean a lot of

Americans, unless you meet those who are really interested in Asia, you know, unless

you talk about things that they are interested in, otherwise if you talk about the Great

Wall or, you know, they are not interested, most of Americans are not interested." Chris

was discouraged by what he took to be cultural intolerance and how he had to carry the

burden of crossing cultural differences when interacting with Americans. Other

participants echoed that they felt it easier to overcome discomfort and engage with

Americans who seemed approachable and willing to interact with international students.

Campus Involvement

When asked about their involvement in campus organizations and activities, most

participants acknowledged that they were less than interested. Song, for example, noted

that he would rather stay home and spend time with his wife than go to campus social

events for the purpose of meeting people.

> I'm not attracted to those things [campus events]. I don't know about people in
> other fields, but I believe most [Chinese] engineering students are not interested
> in going to those events … I mean if I really need to kill time, I'd rather surf the
> internet, read books … I just can't imagine going to a place or a party to meet
> strange people.

Others responded they were simply too busy with their study and research to get involved

in other activities. Shirley started to participate more in campus events only recently,

after she achieved candidacy and was able to balance her life and work better. Once she

achieved control over her academic life, Shirley, young and single, expressed interest in

enriching her campus social life.

Only two participants in the study, Tao and Larry, were actively involved in student organizations. Nonetheless, their experiences received my attention because of the significance these students assigned to their engagement with campus student organizations. Both students spent a significant portion of their interviews to discuss the salient experiences of working as a student leader and how these experiences shaped their adjustment. Tao was a frequent volunteer at the international office during new student orientation and also served as the treasurer and president of a large graduate student organization in his department. Like other Chinese students, Tao focused on the academics at the beginning and seldom participated in department activities. The turning point in his graduate experience was, Tao described, when he applied for a treasurer of a graduate student organization in his department. "That's how it all began. I mean, I started to try out different organizations, and became the president of [student organization]." Tao elaborated on the impact of his involvement in student organizations.

> It doesn't necessarily benefit my academics directly, but it helped, I mean, with my attitude, like boosting my confidence, and … it helped develop skills beyond doctoral study and research. The impacts are not always obvious. But, yeah, it was really *important* for boosting my self-confidence. I mean as international students, we came to an unfamiliar country, and face a lot of problems and issues. But when I went out, joined a student organization; when I *stand up* and became *president*; when I was able to organize events, and help others, it made me feel different, really. It definitely raised my confidence … it made a huge difference.

Inspired by his experience in the organization, Tao was motivated to develop leadership skills and volunteered at new student orientations. "I had to do presentations on certain topics, it's not only helpful to new students, but it also helps me because I get to test my *leadership*, *communication*, and *presentation* skills. I always learn something new from it."

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Similarly, Larry has always been actively engaged in student organizations since his student days at Tsinghua. He became involved in a campus-wide Chinese student organization, wanting to volunteer and to meet other people. But he soon realized his responsibility as a group leader was more than just organizing "community service or events like that." "I started to think about *leadership*, like how to interact with people, communicate, including coordinating team members, so I started to pay attention to those things." Larry spoke about how he learned to become a leader of the Chinese student community and overcame the stress of leading such a large group:

> It was stressful … I mean I've been involved in student organizations in China but … I've never been in such a position like this … so I had to start from zero and figure out a lot of things … it was really stressful, I mean sometimes I just wanted to give up …

> I used to do everything myself, like organizing events … but I realized I need to delegate the responsibilities and cooperate with others. It helps to reduce stress, and also involve more students in the organization… like I used to only focus on how to provide better *service* … to the *community*, but didn't think about the development of CSSA as an organization … I think more about it now, I mean after spending sometime on the position …

Larry finally got a handle on his role as the president of the organization and he decided to continue his service for another year. He was pleased with the improvement in his leadership skills and his ability to manage stress and take on new challenges. Based on his experience working with Chinese students, Larry summarized:

> Americans students and Chinese students are very different, I think, in two very important matters. Americans value volunteer work, and leadership. But Chinese students don't, particularly *volunteer[ing]*. Because … many of them are busy with their research and study so they don't want to do volunteer work, or some are interested in leadership experience but don't know how to get involved …

> Chinese students don't want to be leaders. They are always followers. They don't socialize, particularly with Americans … many don't think it's important or necessary to become a leader or to be sociable. There are lots of Chinese students on campus, a lot of them, but you rarely hear their voice; there are so many

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student groups, organizations, but very few Chinese students take on *leader*[ship] roles because they don't like to take the lead … they just work arduously, publishing papers. Maybe they can succeed that way, but to be really successful, I believe *leadership* is important. We need to pay more attention to it.

Summary

This chapter described the themes abstracted from Chinese students' perceptions of and responses to key challenges in graduate school. The themes identified here— academic challenges, language barriers, building relationship with faculty, and socialization— were readily identified by the study participants and are consistent with the literature.

All study participants felt challenged by the intensity of the doctoral programs and their research responsibilities. They sacrificed leisure and worked hard to keep up with coursework and research. Although challenged by academic norms and practices, participants learned the ropes from mistakes, through observation, and with help from other Chinese students. Adapting to the role of an independent researcher required more effort, however. While some participants saw that they benefited from research training, others found research less motivating. Yet, in spite of these differences, all participants seemed determined to complete their doctoral programs. For some individuals the motivation came from a personal intrinsic desire to complete the degree and, for others, career ambitions helped them persist.

Language differences posed highly significant obstacles, particularly in the early stages of their graduate study. Approaches to improving English, especially during the initial stage of their graduate career were similar. They turned to the media, including radio, television, magazines, and movies to improve their listening, and to learn about

American culture. However, their responses to the language problem varied over the course of their graduate study. Some students (e.g., Larry, Lei, Song and Wayne) resolved to live with "average" or limited English proficiency as it did not interfere with their academic performance. Others (e.g., Chris, Grace, John, Shirley, and Zoe) were concerned about their limited English abilities as they advanced in their study and became more concerned with integrating into the university community and the larger society. These students responded with ongoing efforts to make improvements.

Building a close relationship with faculty advisors was another key challenge. Surprisingly, the extent to which participants were able to form close, satisfying relationships with their advisors was not related to whether their advisor was Chinese, American or of another national origin. However, students often compared themselves to American students and other international students from English-speaking countries. They perceived that American students could more readily engage in conversations and connect with American faculty while they were less capable because of cultural barriers. Additionally, five participants had a less than favorable view of their faculty advisors. It was not clear how much of their dissatisfaction and sense of discrimination arose from their perception of their advisors as less invested in them as students and more invested in them as employees expected to produce results. It is also not clear if these perceptions stem from an inability to build close connections with their advisors. Additionally, these participants might have had unrealistic expectations for their advisors in the U.S. based on the relationships they had with graduate advisors in China. Their disappointment might be attributed to their perceptions that they were unable to receive the mentoring and guidance that they hoped for.

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Most participants were preoccupied with doctoral study and research and stayed within their comfort zones—the Chinese circle where they could readily manage relationships and access social and emotional resources. They found comfort and support from other Chinese students in their circle. As a group, they had limited interactions with Americans and international students from other countries. Even interactions with non-Chinese students within their research groups or offices were limited to standard greetings or research-related conversations. Study participants believed they lacked recognition and acceptance by faculty and peers. The majority felt disconnected from the community they live in, and some simply accepted and justified their isolation as the natural consequence of cultural differences. While they desire a sense of community and belonging, many were not sure how to forge close relationships with culturally different others. They believed their social isolation aggravated the stressful academic environment they lived in and undermined their capacity to cope with the stress associated with Ph.D. study and cross-cultural adjustment. Notably, all participants identified benefits and drawbacks of the Chinese community on adjustment to university life in the U.S., but more expressed how it ultimately impeded long term adaptation.

CHAPTER 7

CROSS-CULTURAL ADAPTATION

In addition to identifying and understanding the key challenges Chinese engineering students encounter, another purpose of this study is to examine these students' perceptions of cross-cultural adaptation in the context of their graduate education. To this end, this chapter presents findings about the challenges participants ascribed to cross-cultural differences and how they conceptualize the process of cross-cultural adaptation.

In the second part of the interviews, I asked participants if they attributed any of the previously identified challenges to cross-cultural differences and how they were affected by cultural differences. Most of them readily admitted that they seldom reflected on their difficulties from such a perspective, and yet they found the idea refreshing and thought provoking. Some of them expanded on the issues they identified previously while many identified more challenges. The discussion of challenges associated with crossing cultural boundaries also paved the way for a conversation about what cross-cultural adaptation meant to them. In the following pages, I elaborate on participants' descriptions of the challenges they associated with cultural differences. Then, I describe their varying perspectives on the process of cross-cultural adaptation: what it means, how they have adapted, and how they have changed during the process.

Challenges of Crossing Cultures

When I asked participants to identify the challenges they noted in the previous interview they attributed to cultural differences, participants quickly and unanimously pinpointed language difficulties as the main issue. However, after thinking further, most of them began to describe their adjustment in terms of negotiating cultural differences, gaining social recognition and support, and living with uncertainty.

Negotiating Cultural Differences

While they all agreed on the importance of language, looking back on their experiences and the messages they received from faculty advisors and mentors, participants came to different views about cross-cultural adjustment. Song, for example, asserted that language is the "foundation" of effective communication, but not the "whole part" of it. Similarly, Tao responded that language difficulty was the first thing that came to mind when thinking about cross-cultural challenges. But he added:

> Actually, language is just part of the communication problem, you know, when talking to Americans, my first reaction was I couldn't understand English. My English improved, it's not a problem any more. But there is this big cultural barrier. Like things they are interested are not necessarily what we care for, like football, politics, and many other things. We don't care, we don't know about those things. Even today, I still don't know much about American culture. That's what I mean, cultural differences.

> I remember in Beijing there is a Beijing Language and Culture University. I used to wonder, you know, about the words, language and culture. I kind of understand now that language is just one aspect and culture is much broader.

Moving beyond the language barrier, participants reflected on their limited knowledge of America— its history, contemporary social and political issues and popular culture— and how it caused a major barrier for engaging in cross-cultural interactions. Furthermore, their knowledge of America and its people gained through books and the

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media became less useful in real life. They encountered difficulty following

conversations and or felt ill-equipped to initiate social small talk with American

colleagues or faculty. John shared how he often felt left out in conversations with others.

> I wasn't able to express my opinions or jump into discussions because I didn't know the context, you know, the social, cultural things. Like, I was having a discussion with students from statistics the other day. Most of them were American. They talked about things like their *favorite show*, movie, or football and baseball. It wasn't like I didn't want to participate in the discussion, but I just didn't know about those things. I find … it's impossible to get into their circle.

Participants sought to solve this gap in cultural knowledge and awareness in

different ways. Chris and John often tuned into political debates in the media to become

more informed. Others became involved in popular sports, student groups and clubs, or

church activities. Song, for example, learned how to play golf because "it's an important

socialization venue in America." Interestingly, understanding and going to American

football games was a popular introduction to American culture. Participants perceived

that the popular sport could serve as a great icebreaker, and that they would always "have

something to talk about" when meeting new people. Chris, for example, explained:

> It's easier to interact with people who are similar to us, you know, nobody likes to talk to a complete stranger. Like if you know about college sports, and you know this person graduated from UNC, then you can say "Oh, you guys did great in NCAA this year", or if you meet someone from Michigan, you can say "Oh, it's not a good year" … you can show them that you are interested, and let them know that you have something common to share. Sometimes it helps with making connections with people when you do it right. I mean if you want to get to know someone, you need to talk about things they are interested in, right? You can't just go with the Chinese way and ask about their parents and so on … because they don't know the Chinese ways … but if you talk about what they know, then that's appropriate.

For their lack of knowledge of American culture and society, Chris described

Chinese students as "infants" in their conversations with Americans. He noted:

It's like this. They [Americans] need to *take care* of you because you're like a baby culturally … but in reality, they don't want to *take care of you*. Like when you ask this and that, they need to explain everything to you, just like taking care of a baby, it's *boring* … because American culture is the dominant culture, and Chinese culture isn't, we have to adjust to their interests and find a common ground with Americans. But … what we had learned about America in China is … nothing at all. You can't expect to have a meaningful interaction with that level of knowledge.…

Chris insisted that international students need to take the initiative to learn about America. He disapproved of Chinese students clustering socially because they missed the opportunity for learning. However, he acknowledged that crossing cultural boundaries was not without cost. He shared that he was "emotionally unprepared" and felt overwhelmed with embarrassment and shame when he made "stupid mistakes" in public. He has become "seasoned" and "psychologically ready", and now can laugh about his mistakes without feeling ashamed.

Negotiating differences between Chinese and American cultures was even more challenging, particularly in interpersonal relations, as participants found that their values and beliefs did not map well onto American culture. Larry shared his perspective on cultural difference as a Chinese male student.

We [Chinese men] are not used to… approach someone and ask for help, but when people ask us to do something, we always say yes … even if we don't feel comfortable. We usually don't tell our thoughts and feelings. That's how it is in China. But here it's different. If you don't speak out, nobody knows what you are thinking, and nobody understands what kind of person you really are.

Other participants also spoke about how the American way of public self-presentation and interpersonal interactions were different from what they knew as appropriate in China. Tao shared:

We are raised and taught to be humble. But I discovered that in America, I mean it's not like Americans are the total opposite, but they are different. They are very good at marketing themselves, presenting themselves, and get noticed. It's not

like they are exaggerating, but they do show off themselves. But in Chinese culture, we don't do that, I mean, we don't tell others how good we are. Instead, we let others find out about our abilities and strengths … I mean it's a difference between being active and passive.

Tao eventually learned to adapt by showing "a little more confidence" and being more "aggressive" in presenting his ideas and himself, particularly in group meetings and job interviews.

Similarly, John reasoned that Chinese men were socialized to the virtue of humility and reticence, and were not used to present themselves in a self-promoting manner. "We don't brag about ourselves, we work hard and let others discover and acknowledge our strength. But here it's different. We need to learn to market ourselves and to do so confidently." John argued that many of his Chinese fellow students still operated with the Chinese mindset without adapting, and thus, faculty and other students could not perceive their true capabilities and qualities.

Zoe illustrated the difficulty of reading an American's mind in interpersonal interactions. She quoted a Chinese old saying "Not of my race, he must be of a strange mind" ("非我族类，其心必异", as translated by Dikotter (1994), *The Discourse of Race in Modern China*) to explain "why we are not competent at *social* skills, at work or at school." She explained:

> Maybe technical capability is important, but I feel social networking skills are more important. Maybe we have those skills, but Americans are very different from us, I mean in social relations. When we are with Chinese people, we can tell a lot from looking at their eyes, face or gesture. But we have *no idea* about what Americans are thinking or doing. Like in China, for instance, we get a lot of information by just interacting with supervisors, you know, whether they're satisfied with your work or those things you can't read on paper. But here we are not *sensitive* to… it's hard to tell.

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Zoe pointed out that such an inability to interpret culturally specific behaviors and

messages put her and other Chinese students at a disadvantage in social interactions and

networking.

Five participants suggested that interacting with American people was an

"awkward" learning process and they had become "better at it by doing". In particular,

Chris and Zoe indicated that they increased their "cultural sensitivity" after prolonged

engagement with American people. Larry and Wayne described how they were "pushed"

to interact with American people. Larry worked on projects that required him to

communicate frequently with on-site employees at factories. He shared:

> I went to the site and worked with folks everyday. It was an enormous challenge
> because I never had any experiences of working [with Americans]. I had no idea
> how to position myself. Like I can't talk to them like I talk to professors … it was
> really challenging to ask them to do things the way I wanted … I mean I'm young
> and inexperienced and yet I have to make all these demands … it was very
> awkward.

Larry felt quite disconnected with the people he worked with and struggled to break the

barrier. After consulting his advisor - who is also an immigrant - for advice, he still could

not figure out how to approach people about whom he knew little to ask for what he

needed, without offending them or getting offended. For the first time, Larry was struck

by how he had been living in his own world although he had been in the U.S. for several

years.

Wayne shared how he found his own ways to reach out to American people and

negotiate cultural differences with them.

> I worked with R&D folks, so I had to be proactive and ask for their support and
> help all the time. That wasn't easy. I mean, they were all busy people … so like I
> tried to go to lunch with them, you know, talk about football and China to become
> friends with them.… one thing I learned was that it is important to *ask for help*
> [ask questions]… for example, if you know someone likes fishing, then you can

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ask about fishing, this way you have a conversation … to get to know them better … of course I don't know about football … so I asked them about football. If that person happens to be a football fan, they will keep talking about it… and when you get to know each other like that, it's easier to work with them.

Wayne's strategy helped build rapport with his American co-workers. However, figuring out the right questions was the more difficult task. He often picked up his cues from conversations and showed his genuine curiosity when he was "clueless" about what the others talked about. In exchange, when they showed interest he told them about China and Chinese culture. He summarized his experience with a sense of humor. "It worked out well, if you break the ice, you'll find that they are as curious as you are, about you and China, just like a kid. So I told them about chopsticks and Chinese food…"

Gaining Social Recognition and Support

As individual profiles revealed, all participants in the study attended prestigious Chinese universities. They were respected by their peers and faculty, and treated as the elite by their families, friends, communities and the larger society. Upon arriving in the U.S., however, many discovered that they no longer enjoyed the same social reputation and prestige. Participants believed that people including faculty and their peers did not appreciate their past accomplishments and they felt the pressure to prove themselves all over again. Zoe was analytical about this change in her social position as an international student.

> In China, many of us attended top universities, so we were like the elite of the society, right? We were like … we were on top of the social ladder, even as college graduates, it's obvious that we're gonna have a great career … I do believe that many Chinese students, before coming to America, are the elite in China. But when we come to America, nobody knows and cares. Who are you? Nobody cares … and it gets even worse. I mean there is this discrimination against … although it's not outspoken, I think discrimination against people of color still exists in America … so it's a big change for us … you know, from being the elite to be nobody … it's overwhelming, isn't it? It makes you feel …

so hard to live in a foreign country! It's stressful, I feel like I'm at the bottom of *social class* in America.

Zoe desired the same kind of acknowledgment and affirmation from others in America that she used to enjoy in China. However, she was not sure how she could reestablish her social self in American society.

Other participants shared similar feelings with more specific examples. Larry, a talented student from Tsinghua's engineering program (seen as the best in the field in China), acknowledged his privilege as "an elite student" and how he no longer felt privileged at Lakeside.

> But when I got here, I didn't feel that, especially at the beginning. When I started working with my advisor, I completely lost that sense of confidence, that kind of self-assurance that I had when I worked with my advisor at Tsinghua … I mean I knew I was the best and everybody else knew that too. But here I didn't feel that, that kind of recognition and acknowledgement from others, it was a little disappointing and… to some extent depressing … feeling like you are nobody. Besides you're alone here, all by yourself, and your family is so far away … it's kind of lonely …

John also talked about feeling socially marginalized as an international student, hearing that companies turn away from hiring foreign students even if they were trained in prestigious universities. He thought he "had a chance" in America seeing his fellow international students succeed in graduate school. However, he was disheartened by his perception that he was not judged by his ability, but his looks and status. "Your sense of self depends on how others value you as a person. If people around you appreciate you, then obviously you feel good about yourself, but if they look down on you, it's gonna make you feel bad about yourself." He added, "when the society pushes you to the corner… it makes you feel, not that I feel inferior, but… it makes me feel that I don't

stand a chance in this competition." John was dismayed that he did not "have the power to change anything" but to focus on his studies.

Participants, then, reported that they worked hard to prove themselves, and some believed the commitment to research helped them regain their reputations and respect from faculty and fellow students. Larry received acknowledgment from his advisor when his research was published in one of the top journals in his field. The recognition from "such a respected scholar" that he "was so afraid of" was both rewarding and reassuring. Similarly, John also devoted himself to his studies and focused on pursuing a faculty career as "there is less discrimination toward international students in academe." John sought advice from others and developed close relationships with his mentors. "When I figured out I wanted to be an IOE professor and how to get there, I knew what I had to do." He independently pursued a joint degree in mechanical engineering and industrial operational engineering and he sensed that this creative effort earned him acknowledgement from his advisors.

However, regaining their academic and social status was only part of the challenge. While participants expended a lot of energy on their doctoral studies and research and some thought they had successfully reestablished themselves in graduate school, many found few channels to deal with the daily stresses of graduate school and living in a foreign country. Zoe "never expected it to be this hard to study and live in America." Comparing her student life at Tsinghua and Lakeside, Zoe noted that she thought she had experienced it all after surviving the harsh training at Tsinghua. She explained:

> Maybe because we're in a foreign country, or maybe… in China, we have many ways to decompress after school, but here we don't, I mean we kind of have a

social life, but not really, we don't have many options or … that's why we struggle more … I think Americans struggle too in doctoral program, it's difficult for them too … but it's different from what international students go through.

Chris echoed Zoe's statements, noting that his social life and support system were very limited in America.

In China, we would go out with friends, have a drink or hang out, or do a lot of other things. It makes you feel better, *happy*, *enjoyable*, you know? If you are upset or something happened to you, you can talk to your friends, right? But, here in America, your friends are thousand miles away, you can't talk to them like before … plus, a lot of times you feel helpless when things happen … maybe some problems are temporary, but we don't have an outlet … like hanging out with friends or relaxing … to get over with it. When you don't take care of stress, it goes on for a long time.

Chris indicated that many Chinese students were aware of the need to expand their social support system by "integrating to the American society". Chris affirmed that "if we don't [integrate], we are not going to live a normal life," and not living "a normal life" undermined "the *mission* of academic success." Chris's point about living a normal life is one that many participants understood or desired but were unable to accomplish. Zoe articulated, "You can live more comfortably or stress-free if you integrate into American society, but how?" She explained:

Like I said earlier, it's hard to get involved with them in life. At school, we can sit down and discuss projects, research, but other than that, outside of school, they have a life; they do such and such, they have many different ways to relax and entertain themselves, right? But we don't…. I think that's where the stress comes from, I mean … studying is only part of your life, how do you spend the rest of your life, relaxing and feeling comfortable, I think it makes a difference … because we don't get to relax when stressed out, it gets worse and worse.

Zoe thought that many Chinese students were caught in a vicious cycle: they choose to ignore their stress or deal with it by distancing themselves from others and channeling their energy toward their studies to compensate for the void in their social lives. Although feeling "too lonely", "depressed" or "trapped", not knowing where to go

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for support, participants indicated that Chinese engineering students seldom spoke about their problems and sometimes were "unwilling" to seek professional help. Chris informed me that he knew several Chinese students who suffer from "depression" and need counseling. It is also common that Chinese students turn to each other for much needed support and comfort. Shirley, for example, sought comfort and advice from her roommates and girl friends during the time when she was "extremely frustrated". Being grateful about their support, she remains sympathetic to other Chinese students who need listening ears. "I always try to listen to them, you know, talking about their problems because they really need me to, they just need someone to share whatever they're going through."

Living with Uncertainty

Participants expressed a sense of uncertainty about living in the U.S. This was apparent in statements like these: "I don't feel home here", "I want some sort of security for the family", "I can't even buy furniture or anything without thinking twice if they're shippable.", and "I really want to settle down." The sense of uncertainty partly came from their visa status which only allows them to stay in the country for the period of their study. Students, particularly those who desire to stay in the U.S. after graduate school, constantly thought about acquiring permanent status or a Green Card that gives them the security to stay and work in the U.S. with few restrictions. Grace was the only person in the study who was about to become a permanent resident. She felt relieved that the family was no longer burdened by her foreign student status, and that she finally has the "freedom" to choose a career that suits her interests and family needs. With the big

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change about to come, Grace noted that she was more "optimistic" about her life and future in America.

Three of six married participants lived away from their spouses or children due to work-related situations. They spoke about the ordeal of long distance relationships and separation from their young children. For example, with his wife living across the country and his infant son in China under his parents' care, Song desperately wanted to reunite with his family and live the family life he longed for. Tao's situation was similar. He noted, "We're at a crossroads, so many things are unpredictable. If I could bring some level of stability to my family, whether it's financial or other kind, that's what I'm hoping for." Lei and Wayne have recently reunited with their wives. Wayne became a new father and Lei and his wife were expecting their first child. Both men expressed the desire to provide their families a sense of stability.

For these men, one way of achieving stability for their family was to find a job in corporate America which offered more lucrative salaries than academia. For this reason, they were motivated to finish their doctoral studies without further delay. The four single participants in the study had different views. John and Larry both set the priority on academic success, that is, to establish their research agenda and prepare for a faculty or research career. They both acknowledged that they were committed to their research and academic pursuits and wanted to spend a few more years in their programs to work on their research and to stay competitive. Compared to these two men, Shirley and Zoe seemed less sure about their career goals and future in general. Shirley admitted that she wanted to take time in graduate school and figure out her goals. Zoe, on the other hand, was determined to graduate in her fourth year and remained positive about her future.

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When asked about their plans for returning to China, participants, both those who have already graduated and those who were still in the program, responded with the same uncertainty. A common theme was that they would "go back sooner or later, it's just a matter of time". Many shared that they would consider returning once they establish a successful career in the U.S., which would give them more credentials than being fresh out of graduate school. Even though they were clearly unsatisfied with the job opportunities in the U.S., participants thought the prospect of launching a successful career in China is largely uncertain. Song argued that it is difficult to start a business (which many Chinese young scholars trained overseas desire to do upon returning China) unless one has strong political and social connections. Others compared themselves to their peers in China and noted an American Ph.D. degree alone was not enough to give them a competitive advantage over their peers. John elaborated, "My classmates back in China, they're doing quite well. Last time I went back, they all had their own houses, cars, family, a successful career … I don't have anything yet." He shared that "it might take years" before he could establish himself in the U.S. Overall, participants agreed that returning to China immediately after graduate school would add more uncertainty to their near future. They would rather make the transition from graduate school to the real world and complete their life with a successful career and family in the U.S.

Defining Cross-Cultural Adaptation

As they discussed what cross-cultural adaptation meant to them, participants offered self-evaluations of their adaptation. Lei asserted that he had adjusted well while Song declared that he did not adapt at all. Lei and Song's experiences were somewhat

similar: both men were married and socialized mostly with other Chinese students in their program. They both worked with a Chinese faculty member and in research groups which consisted mostly of Chinese students. Lei felt he was adjusted fairly well compared to when he just arrived in the U.S. He noted, "I can handle things well, it's not like when I just came here, everything was difficult." In contrast, Song replied, "I still live like in China, hang out with the Chinese mostly. Do I feel adapted? No. I feel dissociated." He explained further, "I talk to Americans, have no problem working with them. But most of my friends, I mean real friends, are Chinese. From the beginning, even today I didn't experience any culture shock because I didn't have to most of the time." Song understood that by associating mostly with Chinese students, he was socially and culturally isolated from his surroundings and that it was one of the reasons why he did not experience much impact of cross-cultural differences. Song also asserted that he was "open"-minded and willing to try to adapt if it became necessary.

The other participants remained uncertain about their adaptation. Zoe, who was in her fourth year of study, shared, "Maybe I'm adjusted … I don't know. I didn't do a good job balancing myself." Shirley also shared doubts about her adjustment status. "I don't know. I am getting used to studying in grad school; I'm used to being a grad student. But I'm not sure if I really adjusted to the other ways of life in the U.S. I don't know how to interact with people in other circumstances." Shirley was not alone in her hesitation to claim successful adaptation because she knew that her adjustment was only limited to the encapsulated context of graduate school. Larry, who was in his fourth year of study, expressed similar sentiments as Zoe and Shirley when he spoke of his adjustment: "Maybe I'm only one step in and one step out of the door." He felt accustomed to the

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academic norms and his role as a doctoral student. But he also acknowledged the limitations of his experience. He felt adjusted to student life in the university, which was much insulated from the rest of the society.

As study participants tried to make sense of cross-cultural adaptation, what it means and does not mean, and how they tried to adapt, their comments tended to aggregate around three considerations: rethinking adaptation in graduate school, adaptation vs. assimilation, and personal gains.

Rethinking Adaptation in Graduate School

Participants pointed out that they came to a new, different perspective about their graduate study in America as they looked back. Chris, for example, spoke about the insight he gained. "Actually, grad school is a process. For international students, it's a process of adapting to this country, American culture, and the new environment … there are other important things in this process besides your research topic …" It was an important lesson he learned from his experience, Chris added, and a piece of advice that he would like to share with new Chinese students. He maintained that cross-cultural adaptation was a natural and important part of international students' graduate experience. It involves negotiating cultural differences effectively and taking interest in learning about the American people and society.

Zoe shared a similar perspective, stating that cross-cultural adaptation meant "a lot of things, like having a better awareness about cultural backgrounds, or knowing the country well, or speaking English well… all these things." Although she had difficulty pinpointing what cross-cultural adaption meant for her, Zoe articulated its significance without hesitation.

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Adapting to American culture, maybe it doesn't affect our research *project* directly or make us graduate sooner, but I think it's all about gaining the experience. We have lived in this country all these years after all so we ought to know better, have a better understanding of American people and their culture, you know, why they do things and why they think the way they do. It might sound too vague, and you never know if it's gonna be helpful to you some day, but I think life is about gaining all kinds of experiences.

Three other participants, Grace, Shirley and Tao also shared similar thoughts that adaptation meant having in-depth knowledge of American society and engaging in meaningful relationships with Americans, including peers, faculty members, neighbors, and so on. However, they all acknowledged the difficulty of crossing borders and reaching out to the world outside of the Chinese circle that they have lived in comfortably. As they came closer to finishing their studies and looked to the future, they wanted to be more "involved with Americans", "travel around and learn about America", and "live like I'm part of this society."

John believed that his adaptation took place gradually over time as he adopted American values and beliefs. He readily admitted that turning to the Christian faith was a critical turning point in his adaptation as it made him appreciate more Americans values and beliefs. John shared that he went through some tough times early in the U.S. and it was his newly found faith that helped him "survive and become a new person." Besides, John added, "Since I live in America, I want to know more about American society and people, what they are like." After careful consideration, he decided to leave his Chinese roommates and live with an American family. "I made the decision on purpose but it was a difficult decision … it was a little uncomfortable at the beginning and I made some sacrifices, but I also gained a lot." In hindsight, John asserted that he made the right decision. "I learned a lot about American life. Yes, my English got better. But what's

more important is that I learned how Americans live, how they interact with each other, how they handle things."

John not only tried to improve his English and learn more about American ways of living, he also invested a lot of energy in understanding his adaptation experience, out of curiosity and to be in control. "I think a lot about the mistakes I made, and what I went through, you know. It helps me keep things in perspective and made me kind of wiser, I guess, so that I am always prepared for whatever happens next." He came to a conclusion after a long reflection that "I'm becoming more and more *Americanized*." He shared an incident occurred recently which made it clear to him how he has changed in the process.

> Last week we [Chinese students] got together and talked about our hobbies. They talked about basketball, video games, and so on. I said something about *camping* and going into the woods. They were like "What?" At that moment, I felt I was different from them. I don't know, maybe I spent too much time with Americans or … I think in America, Christianity serves as the basic foundation for many things. When I become a Christian, it's almost natural that I become *Americanized*, not necessarily because I spend more time with Americans, it's just, I've changed from inside, in my heart.

In becoming "Americanized", John also acknowledged that he distanced himself, although unintentionally, from the Chinese circle of friends. He regretted that "my circle got a lot smaller, mainly with church friends. I did lose a lot of Chinese friends. I feel sorry but … I don't know. I try not to think about it too much."

Adaptation vs. Assimilation

Other participants drew a clear line between adjusting to graduate school and social assimilation, distinguishing adaptation (适应, Chinese word that participants used to differentiate the terms) from the notions of integration (融入) and assimilation (同化),

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or what John meant by being Americanized. For example, Larry considered cultural

integration "impossible" or "unnecessary", at least in graduate school. He shared:

> It's impossible to completely melt into American culture, because we're Chinese after all. We grew up in China; we are educated in the Chinese system; and because of our parents' influence on us. All of these influences can't be diminished in just a few years. It's not like … we can be Americanized, it's impossible.

Larry's position was one that several participants articulated. Adaptation meant adjusting

to the new academic community and American lifestyle. It may require them to change

certain ways of "doing things", but these changes are temporary and do not affect the

Chinese identity that has been ingrained in them. Larry pointed out that many Chinese

students in engineering would agree with his view that "you can't change that much,

become Americanized in two or three years. It's impossible. It's not a sad thing that you

don't because it's not necessary."

> We are in America but we are different ... For engineering students, I don't know about others, it's obvious, that we're different from Americans, like the way we express ourselves, the jokes we make. We don't have to become Americanized or become one of them. It's not necessary. Because we are Chinese, and they know we are Chinese. They'll always see us as Chinese, no matter how fluent your English is or how well you fit in.

He insisted that "doing average" was enough for the purpose of adjustment, meaning that

one is capable of "communicating smoothly" and dealing with various issues related to

doctoral study. In the long run, however, he believed that a deeper level of adaptation

might happen, particularly when they were out of graduate school, and that small changes

like "adopting American communication styles" can lead to integration eventually.

Similarly, Wayne differentiated making functional adjustments from "melting

into" American society, and asserted that adjustment can be limited to school or work

related tasks.

Because most of our friends are Chinese, perhaps we won't integrate even after 30 years. Like my advisor, I don't think he did, maybe at work he did, maybe not completely. I don't know. Why should we? I think making adjustment is enough… so that you can *handle* things, like you can do whatever you want to.

He gave an example to further illustrate his point.

I felt adjusted to living in America after having a car. When I didn't have a car, I didn't even know what [this place] looks like, so my recommendation to new students is to get a car as soon as possible. You can drive around and get familiar with the environment. You have … the *mobility*, *flexibility* to do whatever you want … I could *handle* things a lot better with a car. , everything is difficult without a car, like shopping for grocery or other things ... I had to rely on other people all the time, or like … It was difficult. That's why, I mean, if you want to get adjusted to living here, you need to buy a car as soon as possible.

Three other participants who shared Wayne's view also mentioned that buying a car was a big part of their adjustment. For these participants, the distinction between adaptation and integration was clear, although they could not define what integration means exactly. Wayne described:

Maybe integration is a higher level of adjustment, I don't know. It seems to me that integration is, it's like when you are in China but making adjustment means you can *handle* things at work without *difficulty*. But integration, it's like, you belong here, you are part of this place. It's like how you feel when you go back to China or your hometown. But I didn't feel that. Maybe it takes time to get to that point. Maybe we think differently about its definition.

These participants insisted that they have changed little of their Chinese life styles. The adjustment they made was very limited to specific circumstances to accommodate to the new living conditions.

Despite the differing perspectives, participants agreed that it was helpful to have an open mind and positive outlook. Chris indicated that cross-cultural gaps could be overcome by taking interest in different others and finding common ground.

You can't always immerse in your own world, thinking my way is the only way and my culture is the best. That's not necessarily true. You should be able to share other cultures and acknowledge their co-existence. If you change your perspective,

not from the perspective of what you like or don't like, but from the perspective of adapting to American culture, and treat yourself as a member of the community, and care for things that others care, … like if you care for football, and they like football, you will find it's not that difficult to get to know them….

Wayne also reasoned that one's personality has a decisive influence in the adjustment process. He asserted that adjustment is fueled by both "internal" and "external" factors. Because external factors are a common denominator, Wayne explained, personal disposition determines how one approaches adjustment. He reasoned that people who are "open-minded", "extroverted", and "optimistic" are likely to handle the challenges "readily" and adjust "quickly". Wayne's statement about personal characteristics was reflected in other participants' comments about their openness in the adjustment process. Tao, for example, asserted that he always had an "open mind" trying to improve English skills. Shirley tried to open up herself to meeting new (non-Chinese) friends.

Personal Gains

In addition to the academic knowledge and skills they acquired, participants valued their education in the U.S. for enriching their lives. Tao, for example, shared, "It's worth coming here! Academic achievement is secondary to … what I gained as a person." Likewise, Zoe appreciated the opportunity to experience a different culture, despite the challenges and stresses she encountered.

> If I stayed in China I could live more comfortably and would not experience all these difficulties. But I don't feel I lost anything in the four, five years here in a foreign country. I lived in a foreign country, experienced a different culture, and learned a lot from it … things that I won't have the opportunities to learn in China, I feel I gained a lot more.

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Participants reflected that life abroad provided opportunities to grow as a person and brought a new level of understanding of who they are and how they want to live their life. For example, Shirley noted, "I have both gains and losses. They are not all happy experiences, but I learned a lot." Shirley described that she has become emotionally and financially independent. She explained the challenges of living abroad made her a stronger, mature person with an increased "*sense* of *responsibility*". "I might grow up… to be self-responsible as well in China, but I won't have the same attitude toward life and self-understanding as I do now, that's for sure."

John, who is the same age as Shirley, shared similar feelings. "I know I can *handle* things myself, I can *take care* of myself. I can take *responsibility*." He compared his American experience with the time he spent in Tianjin away from home.

> In China, my parents would help me. Honestly, I wasn't afraid of anything because I knew no matter what happened my parents were always there for me. But I knew from *the first day in America*, I can't depend on them anymore. I don't feel the same here. I need to *pay my own bill*. I knew I had no one to count on here. *I had no one for help*.

Becoming more confident and independent, John shared his new perspective. "What I learned most from my American experience, I guess, is how to live my life, you know, I should live for myself, not for others." John indicated that he used to study hard to live up to his parents' expectations. Reflecting on his past experience and also observing how his friends back home were surrounded by all sorts of external pressure and influences, John came to terms with how he wants to live his life. "It's my life and I want to live like it's my life. That's most important." John believed that his experiences were particularly developmental as he tried to reflect on his past and redefine his life purposes.

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All participants pointed out the "extra" or "additional" benefit of their graduate experience in America. That is, it provided opportunities for cultural learning and understanding. Tao, for example, summarized the insights he gained from interacting with foreigners: "Cultural differences, maybe in many ways, are similar to individual differences. You can't say they are or wrong, they are just different." These insights prompted him to react more positively to different others, increasing his tolerance and sensitivity towards their cultural values and practices. Larry also noted that his graduate experience in America enabled him to discern the political messages he received through Chinese media from multiple perspectives.

Similarly, Zoe commented that the American experience broadened her horizons and increased awareness and openness to different ways of living and thinking. She spoke about her growing interests in learning about other cultures. "Experiencing different cultures helped open my mind. I understand my culture and other cultures better, and it made me even more interested in going to different countries." Zoe noted that she gained a deeper understanding of differences between "the East and West". This awareness, she believed, has profound implications, for example, for "how I see things or how I want to raise my children in the future."

John found a new understanding of religious freedom and how religious practices varied in different cultural contexts in America and China. Having been a believer of Buddhism and after developing his faith in Christianity, John learned to respect people who have different values and beliefs than himself. He noted, "I respect them. I do. I have a lot of lab-mates who are Hindu. I respect their lifestyle. Our beliefs are different, other

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than that we respect each other. I can't convince them that Christianity is the only truth, and I don't want to."

Summary

This chapter presented participants' perceptions of the challenges associated with cross-cultural adaptation, how they responded, and what cross-cultural adaption meant to them. Participants' limited cultural awareness and knowledge of America, its history, sociopolitical context and pop culture, contributed to major barriers for engaging in cross-cultural interactions. Some students sought information from media and others got involved in popular sports, student organizations, and church activities to overcome these barriers. Negotiating cultural differences became particularly challenging in inter-personal interactions, and some individuals increased their "cultural sensitivity" with consistent efforts to engage with others, while others remained in their comfort zone.

Additionally, without the supportive ties they had in their home country, participants had to find new ways to cope with the stress of graduate school and living in a foreign country. Although most of them were aware of the need to expand their social support system by "integrating into American society", they often turned to other Chinese students. They felt a need to reestablish the social reputations they enjoyed in China and desired to be acknowledged and accepted in the new community. And finally, they lacked a sense of security and stability living in the U.S. and they attributed this difficulty, in part, to their status as international students.

Students' personal conceptions of cross-cultural adaptation varied, as did their sense of personal adaptation to life in the U.S. In general, participants defined adaptation as being Americanized, integrating into the university community and American society,

or adjusting to specific circumstances at school and work. Most of them believed that adaptation occurred gradually and that they were still in the process. John felt he internalized American values and beliefs and in the process became Americanized, while others considered their new found American mindset to be an addition to their existing belief system. Lei, Wayne and Larry differentiated adaptation from assimilation. They believed temporary adjustments and short-term adaptation helps with accomplishing their goals and they do not need to assimilate into the American mainstream. The significant presence of a Chinese student community in engineering departments and the university made cross-cultural adaptation less necessary and, to some extent, very difficult.

Despite their differing understandings of cross-cultural adaptation, participants agreed that having a positive orientation toward cultural differences helps with the adjustment process. They also collectively acknowledged their personal gains and cultural learning as a result of their cross-cultural experience.

CHAPTER 8

INTERPRETATION OF FINDINGS

The themes identified in Chapters 6 and 7 related to participants' descriptions of key challenges and perceptions of cross-cultural adaptation form the foundation for how I interpret the phenomenon under study—cross-cultural adaptation that Chinese engineering students undergo in the context of graduate school. My interpretations will focus on four primary areas that appear to be central to my study participants' understanding of their academic, social and cross-cultural adjustment experiences. They are: academic success, integrating into the university community, the meaning of cross-cultural adaptation, and personal transformation.

Academic Success

Participants readily identified an array of difficulties that pertain to academic success. Some of these challenges were more prevalent in the initial stages of navigating the new academic system and adjusting to the roles of a doctoral student and a researcher in a prestigious American university. All participants struggled initially with language problems that interfered with their academic performance and they turned to mass media such as radio, television, magazine, movie, music, and the like to improve their English skills and acquire information. It reminded me of the scenes that I observed on campus buses over the years. I often noticed Chinese students have their ears plugged into the radio or read newspapers out loud—enough for me to hear from nearby.

Kim (2001) theorizes that the adaptation function of mass media is particularly significant during the initial phase of adjustment because during this phase, sojourners have not yet developed sufficient communication competence to interact directly with the people in the host country. Participants in the study showed resourcefulness in finding ways to improve their English skills by utilizing public media that also helped with cultural learning and interpersonal interaction. The use of media helped them expand the scope of their adaptive learning and gain exposure to American values, beliefs and life styles without direct involvement in interpersonal interactions.

Another reason that language difficulties became salient for participants was the frustration and embarrassment they experienced when they failed to communicate competently. The inability to express themselves eloquently discouraged students from seeking further contact, a finding that is consistent with the results of a study conducted by Wan, Chapman, and Biggs (1992) that examined international students' dual appraisal process of cross-cultural situations. They found that international students' self-perceived English abilities affected both their evaluation of situations as stressful and their perception of their abilities to cope. International students who considered themselves competent in English reported feeling less stressed and more confident about adjustment than those who felt more self-conscious about speaking English.

The study participants resolved to live with limited English proficiency when it did not interfere with their academic performance. As Larry pointed out, communicating in English was a typical challenge for Chinese students in engineering but he did not want to overstate the issue.

> It's important [to communicate well with others] but again it's not absolutely critical. Even if you don't speak English well, it doesn't affect you too much. It's

better for us to focus on our strength. Our strength is *research*, so in terms of *communication*, I think, doing *average* is enough …I mean if you want to be very successful, it might be very important. But if you just want to be an *average* student then … I don't think it's that important.

Larry's statement reflects the context in which Chinese students in engineering departments work and study. Most participants worked independently on projects that overlap very little with other group members. Therefore, even in a group setting, engineering students can become loners, as Zoe illustrated. Additionally, because of the significant numbers of Chinese students in classes, labs, offices and departments, some even found no need to speak English for the entire day. Their interactions with non-Chinese colleagues were often limited to job-based talks. Even if they wanted to improve language abilities, as John and others pointed out, they simply did not have the time and energy to deal with the issue.

Nevertheless, their motives to improve English skills reemerged in the latter stages when they advanced to candidacy. Their motives were a combination of the following: 1) many had more discretionary time for extra English classes or participation in other activities; 2) as they neared the completion of graduate study, their primary concerns shifted from academics to life outside the ivory tower; and 3) they wanted to improve their overall communication skills as they prepared to search for jobs and considered long-term residence in the U.S. Therefore, at the final stage of their graduate study, more participants seemed aware of the significance of speaking fluent English.

In this study, participants not only identified academic difficulties that were commonly discussed in the literature, but they also raised issues that were distinct to this group of engineering students. Specifically, previous academic experience and accomplishment largely influenced the internal and external pressures they felt to succeed

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in their doctoral studies. Individually, they felt the pressure to maintain a high GPA, to persist and complete their doctoral studies in a timely fashion, and to build their reputations as researchers in the U.S. They found doctoral study in an American university was more intense than they had expected, particularly so in the early stages of their doctoral education, and they had a difficult time meeting the demands of coursework and research groups. The experience was particularly challenging for two women participants in atmospheric science. Both found themselves spending significant amounts of time learning new disciplinary content while struggling to complete research assignments. Compared to these women, other participants who went through rather rigorous training in their Chinese graduate schools felt well prepared for the coursework and it was the research responsibilities that consumed most of their time and energy. Many committed themselves to work, often sleeping in the lab, living between the department, library and home, foregoing a social life.

Additionally, participants were challenged to become independent learners and researchers due in part to differences in the Chinese and Western intellectual traditions. This was evident in complaints of being given less "instructions" and "care" by faculty advisors. Another part of the challenge could be attributed to their motivations for attending graduate school in the U.S. They said they had given little thought to what doctoral study entailed and what they wanted. As Larry described, "I never thought about why I wanted to study in America in college. I thought I might have a better future … like what people say, you know, get a Green Card and live in America. We all have this American dream, don't we?"

Lacking specific goals, some participants found it difficult to be intrinsically motivated by their doctoral study and research. Those with better-formed goals seemed to be able to navigate the creative independent learning process and they appreciated the academic freedom and independence they found in the U.S. For example, Larry and John, inspired by other researchers and their interests in research, decided to pursue a career in academia early in their doctoral studies and committed to developing their niche in research. In the process, they actively sought role models and mentors for advice on becoming a faculty member in their respective fields.

Consistent with the literature, keeping a close relationship with faculty advisors was critical to academic success. The formation of close, satisfying relationships with their advisors for study participants was not related to whether they had a Chinese native, an American or faculty of other nationalities as advisors. However, students who worked with Chinese faculty pointed out that they benefited from being able to culturally identify with their advisors and socially engage with them in and beyond academic settings. Other students who worked with American faculty often compared themselves to American students and other international students from English-speaking countries whom they thought had a better command of English and thus developed relationships with faculty more easily. They attributed misunderstandings and misperceptions in their relationships with their advisors to cultural barriers and in some cases, they perceived American faculty advisors as insensitive to international students' circumstances, and thus, unaccommodating.

Participants' thoughts and feelings regarding their interactions with their faculty advisors reveal a desire for faculty acknowledgement and affirmation of them as human

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beings, not just a graduate student, a Chinese student, or a research assistant. Trained under an apprenticeship-like model in China, they desired more personal connection with their advisors whom they often considered to be role models and on whom they depend for academic as well as personal and professional development.

Nearly all participants described their faculty advisors as "tough" and "pushing", that is, faculty advisors demanded their complete commitment to their advisors' research projects and challenged them to produce high quality work. While some students understood the value of hard work and appreciated the challenge, others raised the issue of inequity in the academic labor system and questioned whether faculty members have their students' best interests at heart in such employer-employee relationships. These study participants often held the perception that faculty advisors cared more about their research projects and were less invested in students' interests and development. One possible explanation for this perception is cultural differences in faculty-student relationships. As a well-known Chinese saying— 一日为师, 终身为父（Even if someone is your teacher for only a day, you should regard him like your father for the rest of your life）illustrates, teachers tend to be viewed as a role model, an authority, and a parent. Traditionally students are encouraged to be deferent and respectful to teachers, and as such they learn by listening and reflection. This type of teacher-student relationship is very different from the dynamics between faculty and their advisees in the U.S. that can be characterized as independent, equal, and less personal. Without comprehending the difference, participants might have had unrealistic expectations for their advisors and their disappointment can be a result of their inability to replicate the same kind of relationship with faculty at Lakeside.

Many participants also believed that Chinese students were treated unfairly in engineering departments as faculty members tended to expect them to work harder. Indeed, two recent studies suggest that faculty, particularly those in science and engineering, prefer to hire Chinese and other international students (both doctoral and post-doctoral) from Asian countries because these students are hard working and unquestioning (Cantwell, 2009; Rhee & Sagaria, 2004). Both studies, however, are limited in scope and it is not clear how prevalent these faculty's views are among other faculty members in science and engineering programs.

Hofstede's (1991, 2001) cultural theory provides an alternative perspective in explaining the problematic nature of the relationships between faculty and international students—how cultural differences can foster confusion and frustration, and thus influence their perceptions of one another. Hofstede (1991) argues that cultures differ in individualism vs. collectivism, uncertainty avoidance, power distance, and masculinity and femininity. Individualistic cultures emphasize personal goals and autonomy while collectivistic cultures value group goals, collective needs and interdependence relations. In collectivistic cultures, "people belong to in-groups or collectivities which are supposed to look after them in exchange for loyalty," while in individualist cultures, "people are supposed to look after themselves and their immediate family only" (Hofstede, 1991, p.51). In Hofstede's view, Chinese culture is collectivistic and American culture is individualistic. Accordingly, Chinese students may expect their advisors to "look after" them while they remain loyal to their advisor and work hard on research projects.

Hofstede (1991) also distinguishes individualistic and collectivistic cultures in terms of uncertainty avoidance. Individualistic cultures demonstrate a low degree of

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tolerance for uncertainty and ambiguity because of their preference for straightforwardness and specificity. Collectivistic cultures value indirect modes of discourse. This may explain why Shirley was so shocked by the straightforward message—"I pay you"—from her advisor regarding her research responsibility. It is possible that Chinese students perceive direct communication of expectations and role responsibilities from faculty as hostile or inappropriate, and thus, experience difficulty in relationship building.

Power distance is used to explain the ways in which unequal people interact. In high power distance cultures (China), there are strict hierarchical relationships between superiors and subordinates. In contrast, low power distance cultures (U.S.) stress egalitarian and democratic relationships. This difference in the faculty-student relationship, however, was less problematic as participants welcomed the informality and horizontal relationship with professors and assumed an active role in their own learning.

The study participants often described their academic difficulties in relation to their experiences in China. However, few of them explicitly noted differences in cultures and how these differences affected their perceptions and relationships with faculty members. It seems quite natural that these participants evaluated their relationships with U.S. faculty members based on their previous academic experiences and what they knew as appropriate. As Hofstede (1991) stated,

> Because they are tied to value systems shared by the majority, issues of collectivism-individualism carry strong moral overtones. Americans see their own cultural as very individualistic, and this individualism is interpreted as a major contributor to the greatness of the United States. (P.150)

Integrating into the University Community

The challenges regarding interacting with individuals from the host country, building relationships with them, and gaining social recognition and support can be understood as demands of integrating into a campus community and the larger American society. The engineering students in this study believed they were less successful in their social integration than they were in accomplishing academic goals. As Zoe pointed out, most Chinese students chose to "hide" in their comfort zones to avoid the risk of discomfort and embarrassment arising from cross-cultural interpersonal exchanges. The Chinese community on campus provided a safe space for most of the participants in the study. For these participants, studying in the U.S. involved being uprooted from their families and social support system in China. The Chinese circle, as the community was commonly referred to by participants, helped create a "personal community" (Hirsch, 1981, as cited in Kim, 2001) that provided informational, technical, material, and emotional support (p.75). They relied on their Chinese peers prior to their arrival and during their study in the U.S. for important information and advice on academic issues, more so than their advisors and other faculty members. The circle was also their primary social venue. The experiences of Larry, Lei, Grace, Shirley, Song, Wayne, and Zoe exemplify the voluntary segregation of Chinese engineering students in their academic departments and social life.

More importantly, the congregation of a large number of Chinese students in engineering schools made cross-cultural adaptation less "necessary". They were able to maintain their Chinese life styles at home and school throughout their graduate study, easily avoiding situations that required them to deal with cultural differences. Therefore,

Lei, for example, even asserted that he "adjusted well from the beginning" and had not experienced much "culture shock". As he explained,

> I was fine with food and things like that. Besides, I was mostly studying so I didn't feel much difference. I mean studying is about the same anywhere. Of course, language was an issue [at the beginning] but it got better after a while.

Lei further pointed out that he did not feel it necessary to interact with American or other international students for social or other purposes, although he would communicate with other researchers and students in his field for the purpose of networking and sharing information.

In interpreting the phenomenon of Chinese students' self-segregation, I borrow perspectives from research on racial balkanization and self-segregation on college campuses in which, in similar ways, culture and identity are the focal issues. Regarding African American students' self-segregation, Tatum (2003) wrote in her book, *Why are all the Black kids sitting together in the cafeteria?,* the identity that is most salient to others becomes the identity that is most salient to us. Tatum asserted that for students of color in a predominantly white college, their salient identity becomes race because it is what others notice first. As race becomes their most salient identity, students of color often turn to people who will understand their experiences feeling like "the other" or with racism (Tatum, 2003). Consistent with Tatum's interpretation, Chinese students are drawn to the Chinese circle as it provides a support system based on common experiences and understanding, and allows them to be Chinese, to practice their culture and maintain their cultural identity while they are far away from their home country.

In another study of college students' friendship groups, Antonio (2004) described the affiliative needs of African American students; because of racial discrimination in the

U.S. and the marginalized social position of African Americans, race was a deliberate choice of survival for African American students and they shared a sense of interdependence and joint responsibility with their friends. The bonds of their friendship consisted not only of support but also of mutual responsibility, dependence, and security. Similar arguments can be made that the Chinese students see the Chinese circle of friends as a matter of protection or survival in the foreign environment. Shirley and Chris's comments about reaching out to contribute to the welfare of the Chinese friends in need powerfully illustrate this point.

Albrecht and Adelman (1984) theorized that sojourners are inclined to affiliate with their ethnic groups. They prefer to seek support from other sojourners of the same ethnicity to going through the uncertainty and anxiety of interacting with natives and risking inadequate performance in the unfamiliar host society. Furthermore, Kim (2001) noted that ethnic social activities provide sojourners with opportunities to speak their own language and maintain familiar cultural practices. Similar to the Chinese students in this study, research has shown that international students rely extensively on other students from their home country, co-nationals, or those who share similar cultural traditions and religious beliefs (e.g., Trice, 2004). According to Kim, the reliance on an ethnic community for socialization and support is influenced by the degree to which the community has established its own systems in the host country. Because of the large Chinese community and their historical presence at many research universities, Chinese student organizations are typically well developed and students are likely to become involved even before they arrive in the U.S.

Nevertheless, based on evidence from an extensive body of empirical studies, Kim (2001) also pointed out the long-term impact of ethnic socialization on cross-cultural adaptation. "Although ethnic support systems play a potentially vital role in cross-cultural adaptation, they become counterproductive beyond the initial phase of resettlement if strangers are to be better adapted to the host environment" (p.141). This is because:

> The maintenance of original cultural attributes may serve many useful purposes for individuals who value and desire cultural preservation. For the purposes of cross-cultural adaptation, however, it delays the acquisition of host communication competence and meaningful engagement in host communication processes. (p.145)

The experiences of most participants in the study illustrate how the presence of the Chinese community in the university environment can be a double-edged sword. In fact, over half of the participants acknowledged that they could have better integrated with the campus community, if they had done things differently. Many arrive at the end of their doctoral study with an understanding that their interactions with Americans are limited in scope and depth, and they regret that they have missed opportunities for cultural learning.

Participants who made conscious efforts to interact and integrate with Americans found their experiences rewarding. Cross-cultural interactions helped them understand U.S. culture, feel a sense of belonging, and bring balance to their busy, stressful lives. As Kim (2001) noted, communication with the natives can provide support to strangers in different ways than ethnic relations by "helping to ease the loneliness, stress, and difficulty that strangers encounter. The sense of security that strangers gain from supportive relationships with natives generally outweighs the difficulty and anguish that they may go through in establishing such relationships" (p.123). Perhaps, this is why

participants understood both the positive and negative impact of the Chinese community, but discussed more explicitly the negative influence on integration.

Study participants believed that the challenges associated with building relationships with American students and faculty members may not be entirely of their own doing. In addition to cultural differences, they perceived disinterest in other cultures among the Americans with whom they came in contact. Cross-cultural interaction is largely voluntary and a function of mutual interests and a willingness to interact. Perceptions of disinterest and intolerance of differences on the part of individuals from the host country can discourage sojourners and make them withdraw from further participating in cross-cultural interactions. As Lee and Rice (2007) suggested, although perhaps unintentional, Americans' indifference to other ways of life can "marginalize anything not American, anything not understood. Such apathy and unwillingness to understand others translates to the rejection of international students' cultural identities" (p.403).

Kim uses the term host receptivity to describe the openness and willingness of the environment to accommodate sojourners, allowing them to participate in the local social life. Host receptivity can be manifested in many different ways. At a national political level, for example, host receptivity can be seen in foreign-born individuals' opportunities for participation in the mainstream society through access to citizenship and political rights. When a society or a community undergoes a stressful period due to economic recession, political turmoil, or international conflict, there is often a lack of general host receptivity (Frey & Tilove, 1995). On an interpersonal level, host receptivity is manifested in explicit and implicit messages and behaviors of individuals in day-to-day

encounters. Kim states that "associative" messages and behaviors such as expressions of interest and goodwill through greetings, initiation of small talk, and offering support and help indicate openness, acceptance, and support of the local people toward sojourners. Regarding language differences, host receptivity is also shown in the native speakers' accommodation to non-native speakers through slowing down, using simplified sentences, and selecting simpler conversation topics that do not require a high level of cultural and linguistic understanding.

In one of very few studies that focused on how institutions and individuals may purposefully or inadvertently marginalize international students, Rhee & Sagaria (2004) conducted a critical discourse analysis to examine the portrayal of international students in the U.S. higher education community. They found dominant themes in the messages from faculty, university administrators, and representatives from other key educational organizations: constructions of international students as capital, diligent migrant workers, and individuals with diminished identity. These constructions convey that international students are valued less than domestic students, that U.S. students are the priority of U.S. higher education and Third World students lack parity with them. Research like this certainly increases the visibility of what otherwise might not be apparent and generates new questions about campus climates. Research findings also indicate that international students, particularly those who have a smaller representation on U.S. campuses and those who are from third world countries, are subject to negative stereotyping, bias, and discrimination, by peers, faculty and members of the local community (Beoku-Bett, 2004; Lee & Rice, 2007; Rajput, 1999). These negative experiences further isolate international students from cultural immersion.

Cross-Cultural Adaptation

Study participants' interpretations of the cross-cultural adaption process emerged as they considered the challenges they faced at the current stage of their lives, reexamined past experiences, and looked ahead to their future careers and life in the U.S. They perceived and approached cross-cultural adaptation in distinctively different ways, depending on the circumstances to which they felt a need to adjust, and circumstances to which they were able and unable to adjust. My comparison of their perceptions over the course of their study in the U.S., suggests that adaptation is a continuum, with distinct phases and tasks. Figure 8.1 portrays this continuous process.

Figure 8.1. **The Continuum of Cross-cultural Adaptation**

Work/School	Interpersonal & Social Interactions		General Environment
Functional Adjustment	Social Integration	Cultural Integration	Assimilation

The collective remarks of participants suggest their cross-cultural adjustments can be segmented into qualitatively different types of tasks. At one end of the adaptation continuum is functional adjustment to work/school—their doctoral student roles, job tasks, and university environment. On the other end of the continuum is assimilation within the general societal environment that encompasses comprehensive changes in individuals' values and beliefs. In the middle is integration or adjustment within the context of direct interpersonal and social interactions with individuals with different

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racial, cultural, and religious backgrounds and with social groups within the university and other social contexts.

Participants' reflections suggest differential attention to these three areas of adjustment over the course of their graduate studies. The dominant task of adaptation in the first years of graduate school is functioning effectively in their doctoral studies and research. The majority of participants also indicated a need to broaden their interpersonal and social interactions with Americans while in graduate school and wished they had been more involved with Americans. As they approached graduation and considered careers in the U.S., they contemplated decisions about integrating into American society and becoming "Americanized" in ways that resemble the divergent views of assimilationism and pluralism found in the literature.

The traditional assimilationist (Taft, 1977) view holds that acceptance of the host country's dominant norms and values as one's own is a natural outcome of cross-cultural adaptation. The pluralist perspective assumes that adaptation is a matter of individual choice to identify with either or both the dominant culture and their native culture (Kim, 2001). The majority view among study participants (Chris, John, Larry, Tao, Wayne, Zoe, and maybe Song) is that they need to better adapt to the general environment by integrating into the American society. At the same time, these participants resist cultural assimilation and oppose the idea of becoming absorbed into the mainstream culture. For example, John's story reflects the pluralist view: He described himself as being Americanized and noted that he embraced both cultures, and has become bicultural. He shared:

> It [adaptation] doesn't mean giving up your past. Of course, we should keep our culture. But when it's necessary, for example, when certain cultural differences

get in the way, when certain aspects of our [Chinese] culture affect our life and advancement in new environment negatively, we need to change, to adapt to the new place.

John's statement powerfully recalls Bennett's (1993) ethnorelative intercultural sensitivity. That is, adaptation can be an "additive" process where new skills of relating to and communicating with people of other cultures are acquired while maintaining one's original world view, so "the adaptations necessary for effective communication in other cultures extended, rather than replace, one's native skills" (p.52). Similarly, Chinese students in the study made explicit choices to identify with both American and Chinese cultures.

It appears that many factors help shape participants' perceptions of and approaches to cross-cultural adaptation, including their previous adjustment experience in college, advice from friends, advisors and mentors, experiences of working with Americans, consideration for their children, and observation of Chinese immigrants. While reflecting on their experiences, most participants were aware of their own role in cross-cultural adaptation. They could see how their own personalities, skills, and experiences impacted their adjustment. Several participants said that having an open mind or a flexible, positive personality helped them adapt. In fact, personality attributes have often been examined in the context of cross-cultural adaption. Personal variables that participants used to label themselves such as open-mindedness (Chris, John, Song, Tao), extroversion (Shirley, Wayne), readiness (Chris, John), optimism (Larry, Wayne), and willingness to communicate (Chris, Tao, Song) often positively correlate with adaptation as opposed to variables such as a reserved personality (Grace, Larry) or shyness (Grace, Shirley). Shyness, in particular, has been found to be associated with

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spending more time on self-focusing and more anxious feelings in interacting with

culturally different others (Melchior & Cheek, 1991, cited in Kim, 2001, p.174).

Personal Transformation

According to participants in the study, living and studying in the U.S. was an

exceptional personal learning experience. Larry summarized his American experience in

a powerful statement:

> Studying in America, it really opened doors for me. People always say life is
> about making different choices. We open different doors and follow different
> paths. I'm not sure how other paths would be, but I can say for sure that this one
> is right for me. I will continue on this path, because it already opened up many
> great opportunities for me.

These opportunities, Larry explained, allowed for personal and academic advancement.

Other participants agreed that their graduate experience not only expanded their

knowledge base and enhanced their scholarship but also provided opportunities for

personal growth. Many claimed that encountering cross-cultural challenges and

adaptation allowed them to mature as a person and develop a new sense of self and

identity. They reasoned that aging to some extent contributed to their maturation.

However, the experiences of overcoming the challenges of living in a foreign country,

coupled with self reflection "accelerated" growth. As Larry noted,

> Maturity, I guess, comes from reflecting on the past. Like before, maybe I had
> some ideas about what I want to do in grad school, but I never thought about life,
> about myself as a person. Since I came here, I constantly think about myself,
> those challenges that I've experienced, and my own struggles. These all together
> made me more mature, made me a better person.

For the study participants, cross-cultural adaptation was also a process of

"working through" cultural differences, making sense of and resolving these differences.

Kim (2001) states cross-cultural adaption allows for profound personal transformation.

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> The process of crossing cultures challenges the very basis of who we are as cultural beings. It offers opportunities for new learning and growth. Being uprooted from our home brings us understanding not only of the people and their culture in our new environment, but of ourselves and our home culture…. Despite, or rather because of, the hardship and ambivalence we undergo when we cross cultures, we gradually find ourselves uniquely privileged to define ourselves and others anew with clarity and insight that we could not have cultivated without leaving home. (p.9)

Simple attitude change, raised awareness, or sustained interactions with different others reflect such new learning and growth. For participants in this study, exposure to and interaction with culturally diverse others provided a foundation for the development of intercultural sensitivity (Bennett, 1993), the ability to experience and comprehend differences among cultures in more complex ways.

Encountering culturally different others and negotiating differences was not always comfortable, particularly for study participants who had negative experiences with a cross-cultural encounter early on which left them with negative stereotypes and biases toward people with certain cultural backgrounds. Over time, however, for many individuals in this study, sustained involvement with people of different races and ethnicities helped them resolve such dissonance and gain a deeper understanding of their own and other cultures. This is evident in participants' expressions of growing interests in learning about different cultures and exploring different ways of living. As individuals' competence with English improved, they were able to interact with people outside the Chinese circle and developed a deeper, more complex understanding of their host culture. This understanding allowed them to move in both their native and host cultures with increasing intercultural sensitivity. As Zoe noted,

> I changed a lot. I guess what I want to say is, when I become a *Dr.* some day, what I earned is not just that degree or that title, or the academic stuff. What's more influential to me is how I learned to integrate into a new society, to interact

with many … I changed from being an arrogant, self-centered person, who doesn't tolerate others to become, have the ability to negotiate and cooperate with different people under different circumstances.

CHAPTER 9

DISCUSSION, LIMITATIONS AND IMPLICATIONS

This study has explored the cross-cultural adaptation experience of Chinese engineering students— how they negotiate new, unfamiliar academic and cultural environments and how they experience and construct cross-cultural adaptation in a particular academic context. My main research questions asked, "What do Chinese engineering students believe are the key challenges they encounter as they study in a U.S. graduate school? How do they experience and perceive cross-cultural adaptation?" I recruited 10 advanced engineering doctoral and post-doctoral students from Mainland China who studied at a prestigious research institution in the Midwest. Then, over a three-month period I interacted with participants through open-ended interviews to learn about their: 1) perceptions of and responses to key challenges experienced in graduate school, 2) perspectives on which of the challenges they encountered stemmed from cross-cultural differences, and 3) their conceptualization of cross-cultural adaptation.

In this final chapter, I continue my interpretation of the findings by reflecting on how I have made sense of cross-cultural adaptation as described by the Chinese engineering students. I also discuss limitations, directions for future research, and implications for international education practice.

Continued Interpretation

As I explained in Chapter 4, my approach to research was grounded in a constructivist interpretive paradigm with the belief that people create realities from

their own experiences within particular social contexts. In Chapter 5, I told the stories of each participant, their backgrounds, motivations, personalities, career aspirations, and personal experiences during graduate school. The themes identified in Chapters 6, 7 and 8 portray what I interpreted as participants' understanding of their own adjustment as graduate students. Piantanida and Garman (1999) noted that when qualitative researchers portray individuals' understanding of a phenomenon, they are not claiming that they have discovered or verified the truth. Rather, the claim is about portraying the essence of individuals' experience with and understanding of the phenomenon. Furthermore, Creswell (2003) noted that qualitative researchers position themselves in the research and acknowledge that their own personal, cultural, and historical experiences shape their own understanding of the phenomenon being studied and their interpretations of others' views. The following sections reveal how I have made sense of Chinese engineering students' cross-cultural adaptation experiences. I continue my interpretations of the findings by reflecting on my role as a researcher—how my own mind set, my relationship with participants, and my approach to analysis shape my understanding of respondents' experience in graduate school.

I come to this research as both an "insider" and an "outsider." I am an insider in that I have spent the past decade studying at two American universities as an international graduate student from Mainland China. I am also an insider in that my scholarship focuses on international students' experiences and cross-cultural adaptation within the context of American higher education. I have devoted my graduate career to researching and working with international graduate students. As an insider, I share with my participants an experience of completing a doctoral program, overcoming personal and

cultural challenges, adjusting to a new academic environment and American lifestyle, and making choices about how to adapt to a new society. I am also an outsider, despite these experiences, because I am not an engineering student and my graduate training in social sciences may not resemble their preparation in engineering. While my experiences have helped me to easily build rapport with participants and to access their world, they have also shaped the lens I bring to my interpretation of the findings.

My goal in this study was to understand the challenges and processes of cross-cultural adaptation that Chinese engineering students experience during their doctoral studies in the U.S. Although I attempted to bracket my underlying assumptions throughout the research process, I recognize that my interpretations may be shaped by my adjustment experience as an international student and my passion for promoting better awareness and adjustment for international students. My primary assumption is that cross-cultural adaptation is emotionally intense and stressful for international students, and as they strive to meet environmental challenges, they achieve new learning about self, others, and the world.

Prior to my analysis, I would have argued that although academic achievement is important for Chinese students, cross-cultural adaptation is equally important as it is a natural and inevitable part of the student's journey in the U.S. The quality of their educational experience is influenced by how they perceive and adapt to challenges posed by cultural differences. I found that for most of my study participants, the major challenges they noted were academic problems they attributed to cultural differences and difficulties they associated with crossing cultural boundaries and establishing themselves in a new societal environment. As Chris noted:

In fact, I think for most Chinese students, the *intellectual challenge* is not so much of a real challenge because we were among the best, from the *top* 5, 10 universities in China…. However the *cultural challenges* … we struggle more with cultural differences, you know, from the very beginning. How we deal with these challenges makes a big difference. I think that's why some students are more successful than others, you know, like having a better relationship with advisors and so on….

The belief that learning to adapt to American university life and society was far more consequential than initially imagined became stronger as individuals came closer to finishing their graduate study. More than half of the participants shared that they wanted to pass this important message to new Chinese students: graduate school involved more than learning disciplinary knowledge and developing research expertise; it was not simply about obtaining a degree and achieving academic goals. Graduate study involved cross-cultural adaptation, a process of re-establishing themselves in new academic, social, and cultural communities. For those who chose to remain in the U.S., adaptation was necessary for their personal and professional advancement. Some intentionally broke out from the Chinese circle as part of the process of integrating and becoming a member of American society. In the process of adaptation, they tried to resolve the tension between maintaining their Chinese identity and adjusting to the American society. It was clear to them that cultural assimilation was not their goal, and that they choose to embrace both American and Chinese cultures.

Although there were variations in their conceptions of cross-cultural adaptation, most of study participants believed it is a process that involved discovering who they are, their goals, what they were capable of accomplishing, and how they wanted to live their lives. Moreover, encountering cross-cultural challenges triggered a process of self-reflection, an attempt to make sense of their experiences and identity.

As John, Larry, Shirley, Tao, and Zoe claimed, adjusting to cross-cultural challenges, coupled with the reflective sense-making, enhanced their abilities to deal with life challenges and stress in general, and enabled them to redefine and clarify their identity, values and worldview. Furthermore, they understood how their own personalities, skills, and experiences affected their adjustment, and asserted that having an open mind and a positive orientation toward adjustment helped them cope with challenges and stress, and eventually, adjust well.

One of my original purposes for studying Chinese students' cross-cultural adaptation was to understand their intercultural learning process. Influenced by the work of Kim (2001) and Bennett (1993), my assumption was that cross-cultural adaptation involved intercultural learning, experiencing different cultural dynamics, making sense of cultural differences, and resolving these differences. I assumed that students would achieve a level of intercultural sensitivity that enables them to respond to cultural differences in a more complex way. Moreover, the intercultural sensitivity that they gain from their cross-cultural experiences would allow for greater understanding not only of different people and cultures, but also of themselves and their own culture. Although nearly all participants in the study acknowledged that their journey in graduate school was a valuable cultural experience, the ways in which these students deconstructed intercultural interactions and diversity suggested that they were not yet operating at the level of cognitive complexity I thought they would have achieved. Many acknowledged the fact that they gained exposure to different cultures and people, but did not articulate

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how these experiences changed their mindset or led them reexamine their values and beliefs, prejudices, and stereotypes.

For many students in the study, coming to the U.S. was their initial exposure to life outside China. Therefore, it is possible that they may not yet possess the vocabulary and socio-cultural understanding necessary to convey the nuances of their experiences. Many admitted that they had few opportunities to interact with people who are different, often because of their preoccupation with study and/or lack of intention to socialize beyond the Chinese circle. They said that they struggled to establish and maintain stable, reciprocal, and functional relationships with a broad network of people outside of their Chinese circle, but they felt detached and retreated to the group of Chinese students who provided a sense of community and belonging. The presence of a large, strong Chinese peer network diminished their willingness and opportunities to interact with individuals outside their comfort zone.

According to Chinese students, language barriers and cultural differences were the main challenges to engaging in cross-cultural interactions. Additionally, a more subtle theme was how the indifference they perceived from American people discouraged them from further interactions. The Chinese students acknowledged that they became hesitant and discouraged by interactions that led them to believe their American peers were not interested in engaging in conversations with them or learning about their Chinese heritage. This finding may in part explain why religious organizations in local communities become an important venue for cultural exploration and intercultural socialization. Grace, John, Shirley, and Song recounted that they knew many Chinese students regularly attended religious and other social events hosted by local church groups. Religious

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organizations, sometimes partnered with universities, often reach out to international students and families on university campuses with welcoming messages and to offer support. Limited evidence in the study suggested that, whether they believed in religious faith or not, Chinese students were attracted to these groups because they appreciated interacting with local people who not only expressed interest in other cultures, but initiated small talk, and made other friendly gestures and accommodated to their limited cultural and linguistic understanding. John's experience was a special case that demonstrated how his newly found faith played a significant role in his meaning-making and his emotional and motivational "drives" to deal with the various challenges of interacting with Americans and integrating into American society.

I did not engage in a thorough analysis of Chinese students' involvement with religious institutions and how adopting religious faith or attending church events was related to their cross-cultural adaptation. I offer these interactions as examples of how the receptivity of local people and communities and students' engagement with the host culture outside of the university could influence students' adaptation.

A goal of many study participants was to stay in the U.S. after graduation and establish themselves in America socially, financially and professionally. Hence, I became curious what, if anything, they would do differently to adapt as they envision a different life outside of the university. Their answers led me to wonder how their motivations for studying in the U.S. may have shaped their graduate experience. Most of these Chinese engineering students seemed to have arrived in the U.S. with limited knowledge about the possible challenges of studying and living in the U.S. All participants admitted that their initial goals for graduate study were not well formulated. For some, the goal was to

obtain an American doctoral degree that would pave their way to a successful career and a decent living in America. For other participants, it took years to clarify their academic and career goals and achieve a better understanding of what they wanted from their graduate education. Without a specific goal, they found it difficult to be intrinsically motivated by their research activities and to undertake self-initiated learning. If they had more carefully considered the purpose of their doctoral studies, would they have navigated their way through graduate school more purposefully?

I was unable to discern in this study how the students' motivations and experiences influenced their career choices. For example, what role does the relationship with faculty advisors play in their choice of career paths? How is their career decision related to their original motivation to study in the U.S.? What are the potential effects of anticipatory socialization given that the Chinese student circle is an important source of information and knowledge for Chinese students? Answers to such questions have important implications for examining issues related to admitting and training international students in engineering graduate programs and should be asked in future studies.

Overall, the adjustment processes that international engineering graduate students in the study went through did not reflect the stages or learning curve suggested by adaptation theories. The study findings offer preliminary evidence that for Chinese engineering students, adaptation takes different meanings and forms at different times, depending on their needs and purposes. Although most of them intended to remain in the U.S. when they embarked on the journey to graduate school, they had different insights into what it would take to attain this goal and they chose different paths to adapt to the

university community and the larger American society. However, they all made it clear that cultural assimilation was not their purpose. Rather, they wanted to become bicultural by maintaining their Chinese identity and embracing changes necessary for cross-cultural adaptation.

Limitations

This study examined a relatively small number of Chinese engineering graduate students at a single institution. Therefore, the study findings may be unique to this group. In addition, the majority of participants in this study were advanced doctoral students nearing completion of their study, therefore, the challenges, experiences, and perceptions they described may also be specific to this particular cohort and may be affected by retrospective accounts of events early in their studies.

I was able to develop a trusting relationship with most of the participants. However, I do not know how much of what they shared was truthful or what they left out. Participants might have been selective in sharing their experiences or feelings. Whether intentionally or not, participants might have shaded their responses to present a positive picture of themselves or they might have been less than candid about sharing certain kinds of experiences or emotions. During the first interviews, participants seemed reluctant to recount negative experiences, emotions and opinions. In the second interviews, however, they seemed more accepting, communicative, and opened up to questions about personal life and opinions. Additionally, participants might be affected by the gaps in their memories as they were asked to recall events and incidents that occurred several years ago.

My identity as an international graduate student and my own experience of adjusting to American universities may have limited the study as they shaped how I designed the research, how I interacted with participants, and my interpretations. For example, I sometimes interjected observations about my own experiences to facilitate interview responses and did not sufficiently take into account the effect such prompts might have on participants. Earlier consideration of this issue may have allowed me to come up with alternative strategies to reduce this risk. My closeness to the experiences of participants may also confound the coding procedure and my analysis. Having an independent researcher code the transcripts as a crosscheck of my interpretations could have enhanced the reliability of the research procedures.

Resource constraints limited the amount of time that I spent interacting with the participants. Longer time may have enabled me to build stronger interview partnerships with some individuals who seemed uncomfortable and reluctant to volunteer information. This was more likely for male participants as some of them presented discomfort with vague, sparse responses or did not reveal their inner feelings despite of my efforts to engage in an interactive communication.

I communicated with participants in Chinese during interviews and transcripts were transcribed primarily in Chinese. Only salient quotes were translated into English and included in the findings. Because of the differences in linguistic expression, translating participants' narratives became a daunting, time-consuming task. I tried to maintain the authenticity of each participant's narratives and their communication style during translation. Despite these efforts, the dynamics of participants' personality might be lost to some extent. This was most likely in cases where participants frequently quoted

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Chinese idioms that are not readily translatable in English. In those cases, I consulted

Chinese students in humanities and social science fields and also referred to relevant

literature on Chinese studies for more accurate translation.

Implications

This study aimed to illuminate how international graduate students in engineering

departments perceive the challenges they face in their graduate study, particularly those

that they believe involve cross-cultural adaptation. It is not the purpose of the study to

assume that all international students' experiences are the same and reach generalizable

conclusions. Rather, the findings offer insights into Chinese students' perspectives that

can open new possibilities for further research, for support of international students and

international education. I will discuss these implications more specifically in the

remaining sections.

Future Research

The findings from this study could serve as a platform for examining how

different groups of international students perceive and approach adjustment in response

to their unique needs and contexts. The insights provided here also open doors for

understanding the interconnections among international students' academic life,

socialization, and cross-cultural adaptation. Here I suggest a few that pertain to

international graduate students in science, technology, engineering and math (STEM)

fields.

An important direction for future research is to closely examine how international

students navigate relationships with faculty members, especially their advisors. Faculty

advisors are important to all graduate students, however, they are "the central figure in

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the lives of these [international graduate] students" (Charles & Stewart, 1991, p. 174).

Research suggests that whereas American students seek faculty supervisors' help for academic problems and friends' help for personal problems, international graduate students tend to desire help from a faculty advisor for both types of problems (Leong & Sedlacek, 1986). Additionally, high-quality relationships with faculty members, including faculty members' interest in students' personal and professional development, have been found to provide "a strong protective function against the development of depression in international students undergoing stress" (Mallinckrodt & Leung, 1992, p. 76).

Chinese engineering students in this study often found it was difficult to connect psychologically, socially and culturally with their faculty advisors. Even students who formed good relationships with their faculty advisors said they went through difficult periods initially. It is not clear from this study whether these difficulties stemmed from students' competence with cross-cultural interpersonal relationships or faculty members' expertise regarding working with international students. A recent investigation of both international graduate students and faculty supervisors reported instances of student-supervisor conflict due to lack of openness, time, and feedback; unclear expectations; discrimination and unfair treatment based on cultural backgrounds, and poor English proficiency (Adrian-Taylor, Noels, & Tischler, 2007). It was found that both international students and faculty were unwilling to confront or address conflict as both sides assumed doing so would not help. Such findings from previous research and the current study lead to a number of questions. How do international students and faculty navigate cross-cultural differences and negotiate conflicts that arise in their interactions? Do faculty advisors expect more problems and spend more time working with international students?

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Do international students assigned to faculty whose culture is similar to their own have fewer problems than those assigned to faculty whose backgrounds are culturally distant from their own? Research needs to explore these issues from both faculty and student perspectives. For example, future research could direct attention to alternative sources, such as faculty advisors, international student affairs administrators and American students, and examine how their understandings of issues surrounding international students' cross-cultural adaptation compare to international students' perception.

Another important area of study is to further examine international graduate student socialization patterns and the factors that influence their social interactions. For example, what roles do English language skills and a more nuanced understanding of U.S. culture play in international students' social contact with Americans? Do these skills and knowledge help students construct more complex responses to cross-cultural interactions? What motivates students to participate in cross-cultural interactions? How do they balance socializing with conational and cross-cultural groups?

One remaining question from this study concerns international student adjustment from an organizational perspective, particularly in relation to departmental characteristics and culture, curriculum, faculty practice, and institutional mission for diversity and internationalization. Chinese students' experiences in this study indicate that departmental culture (such as the nature of research groups, voluntary segregation among students, physical structure of facilities) and other environmental factors influence their perceptions of challenges and adjustment. How do institutional and departmental climates influence international graduate student socialization experiences? How do faculty and departments respond to international students differently based on department

characteristics? How do organizational awareness and responses to international students' needs influence their adjustment? These questions are particularly important in STEM departments that enroll significant numbers of international graduate students.

Finally, the analysis presented in this study shows that cross-cultural adaptation is an ongoing learning process and students' perceptions and approaches to adjustment change over time as their academic motivation and focus of life shift. Much could be learned from a longitudinal examination of their experiences and perceptions over a period of time and across contexts.

International Education Practice

This exploratory study provides insights into Chinese engineering students' experiences as they pursue graduate education in a prestigious American university. Faculty, administrators, and student affairs staff that are interested in international students' experiences as well as international students, particularly new students, may benefit from the insights and advice shared by the participants. Here I offer a few suggestions that institutions, departments, and academic and student service units may find useful when developing policies and programs for their international student community.

First, faculty members' capacity to advise and connect with international students may be enhanced when they are aware of and interested in the challenges these students face. Although it is impossible to make all faculty members go abroad to gain personal insights into the adjustment process and international students' experience, those with international backgrounds and those who successfully work with international students

can share their knowledge and experiences, particularly with junior members of their departments.

Two of the faculty respondents who served as key informants in the study held associate dean positions in their respective schools and or colleges. Individuals in these leadership positions, if they are concerned about the adjustment of international students, can initiate changes in organizational policies and culture. For example, one of these administrators mentioned that his department was in the process of creating a physical space in the main building where students from all engineering programs and cultural backgrounds could mingle and interact outside their labs and offices. The other associate dean proposed to hold a focus group with international graduate students to discuss issues related to adjustment and integration. Departments and units wrestling with issues related to international students and looking to making changes need to be aware of and take initiatives to meet these students' needs.

Second, engineering students in the study shared a desire to integrate with Americans and feel a sense of community in the American university. However, many found themselves in learning environments with limited opportunities to speak English and interact with students who are different from them, for example laboratories where Chinese is the dominant language. Peer interaction is the most cited factor for adjustment and colleges and universities would benefit from developing cross-cultural programs to facilitate interaction between and integration of domestic and international students. Involving domestic students in programming serves the dual purposes of learning and adjustment for all students.

It is clear that Chinese students often turn to conationals for essential information related to both academic and personal matters. Both correct and incorrect information circulates among students. Therefore, student organizations, graduate student support staff, and other service units should work together to create an effective peer mentoring system. They can organize forums and have information available on websites about key topics such as how to improve English skills and communicate effectively with faculty.

Students from China still constitute the largest applicant pool and student body in many doctoral programs in STEM fields. As this study shows, Chinese students may begin their studies with a poorly formed understanding of what graduate study in the U.S. entails.. The contrast between their expectations and reality contributed to how they felt it challenging to adjust to their doctoral study and research. Given that most international admissions are based on limited correspondence between faculty and students, universities should develop recruitment strategies that better assess applicants' understanding of the nature of doctoral study on their campuses and their motivations for pursuing graduate study. Additionally, institutions should consider providing information sessions and pre-departure orientations, for example, by utilizing their international alumni networks abroad to help prospective international students with the transition to the U.S.

Third, cross-cultural adaptation is a new experience for most international students. Many institutions across the country designate one office unit to assist international students with academic procedures and immigration matters. These offices often operate with limited budget and staff to take on the responsibility of providing professional psychological counseling and advising on cross-cultural adaptation.

Universities should consider the levels of funding for these services and how to best support international students so that they do not depend entirely on one office for all their needs. Various academic departments and student support units across campus can be involved in the provision of English language training, academic advising, psychological counseling, programs on cross-cultural adaptation, community service, and social and cultural events. A critical part of developing a diverse and sustainable support structure is seeking input from faculty and staff with relevant expertise in language training, multicultural pedagogy, cross-cultural psychology and counseling, and international education.

This leads to another practical implication. This study suggests that international students seldom seek assistance from professional resources on campus as they try to cope with stress, depression, and other problems. Most often they turn to faculty advisors who likely vary in their capacity to assist. Therefore, student affairs' professionals need to identify effective ways to reach out to and educate international graduate students about programs and resources available on campus. International students may feel that they bear the burden of making adjustments almost exclusively on their own as they study in an American university. Therefore, universities and educators need to pay special attention to creating a culturally responsive and sensitive environment and should provide a venue for intercultural development where students—with the assistance of trained intercultural educators—can safely share their emotions, reflect, deconstruct, and reconstruct their experiences.

Appendices

Appendix A

Participant Information

Preferred Name/Pseudonym_____

Age_____   Gender _____

Department_____

Year of study

Achieved candidacy in   (year)

Graduated in   (year)

Contact Information:

Phone_____   Email_____

Notes:

Appendix B

Consent for Participation in Interview

I volunteer to participate in Xinquan Jiang's dissertation research titled Cross-cultural Adaptation of International Graduate Students. I understand that the research is designed to explore the experience of Chinese students in graduate school.

1. My participation in this project is voluntary. I may withdraw or discontinue participation at any time without penalty.
2. Participation involves being interviewed by a researcher from the University of Michigan. The first interview will last approximately 90 minutes. A follow-up interview will be conducted shortly after the first interview. The second interview will last approximately 60 minutes.
3. I understand that I will be asked reflective and thought-provoking questions. However, I have the right to decline to answer any question or to end the interview at any time.
4. I voluntarily agree to be recorded digitally during the interview. I understand that the conversation will be transcribed and the interview dialogue will be used for the dissertation research and in reports or articles generated from this research. The recordings will be securely stored in the researcher's personal computer. Transcriptions of the interview will be made within 4 weeks at which time the audio recordings will be destroyed.
5. I understand that the researcher will not identify me by name in any reports or articles using information obtained from this interview. My confidentiality will remain secure through the assignment of a pseudonym. All information collected will remain confidential except as may be required by law.
6. I understand that I will receive $50 for my participation in the interviews. If I withdraw or discontinue participation at any time, I will not receive full payment.
7. Xinquan Jiang is available at 734-975-0908. Dr. Janet Lawrence can be contacted at 734-647-1977.
8. I understand that this research study has been reviewed and approved by the Institutional Review Board for Studies Involving Human Subjects: Behavioral Sciences committee at the University of Michigan. Should you have questions regarding your rights as a participant in research, please contact the Behavioral Sciences Institutional Review Board, 540 East Liberty, Suite 202, Ann Arbor, MI 48104-2210, 734-936-0933, email: irbhsbs@umich.edu.
9. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction. I have been given a copy of this consent form and a description of the research project.

Please sign below if you are willing to participate in this study:

_____   Date_____
Participant's Signature

Sign below if you are willing to be audio taped. You may still participate if you don't want to be taped:
_____   Date_____
Participant's Signature

_____   Date_____
Interviewer's Signature

Interview Protocol and Chinese Translation

<u>Phase I:</u>

1. Please tell me a little about yourself and your background.
   请你做个简单的自我介绍。

2. Describe your college/graduate school experience in China. What kind of adjustment did you go through?
   在国内大学或读研究生时，你有没有经历过一个适应的过程？

3. How did you decide on pursuing your doctoral study in America?
   你是怎么决定来美国的?
   Prompts:
   (1) What other options did you have? 除了来美国你当时还有什么选择？
   (2) How did you choose this particular university? 你为什么选择这所大学？考虑的因素有哪些?
   (3) How did you prepare yourself for graduate study in the US? 你为来美国做了些什么准备？

4. What were the major difficulties and challenges you experienced when you arrived here? How did you deal with them?
   刚开始，你碰到了什么困难/问题？你是怎么解决的？
   Prompts:
   (4) How was the graduate school different from the university and/or graduate school in China? 刚到美国时，你觉得这儿和国内大学有什么落差？
   (5) What was your impression about your advisor, the department, your peers, and the university in general? 你对导师，同学，院系,整个学校的印象如何呢？
   (6) What was it like studying and working with American students and students from other countries?你对和美国同学以及来自其它国家的同学一起工作或学习有什么感觉？
   (7) What challenges do you think are typical to students from China? 你认为中国人碰到的典型的问题或者困难是什么？
   (8) What do you think students from China do well and not so well in graduate school? 据你观察，中国学生有什么明显优势和劣势? 优点和缺点？

5. What are some of new issues/challenges you face most recently?
   你在最近两年有碰到新的问题和挑战吗？
   Prompts:
   (9) What were the remaining challenges? 你刚来时的问题还存在吗？

(10) How do you make sense of these new challenges? How are you going to deal with them? 你怎么理解这些新问题？打算如何应对？

Phase II:

6. How have cultural differences affected you and your graduate study? 文化差异对你和你的学习有什么影响？
   Prompts:
   (11) What challenges do you think exist because you are an international student from China? 回想一下你在这儿碰到问题, 你认为那些是由于中美文化差异造成的？
   (12) How are things different for you vs. American students?
   和美国学生和其他国家来的学生相比，你有什么优势和不足的地方？

7. How do you make sense of cross-cultural adaptation that you went through in graduate school?
   你是怎么理解 cross-cultural adaptation 的? 适应美国意味着什么?
   Prompts:
   (13) What do you think about your adjustment experience? 你适应了吗？
   (14) How did you adjust differently than other Chinese students?和其他中国人相比, 你在哪些地方做的不一样？
   (15) What would you recommend to new students?根据你的经历你会给新生什么样的建议？
   (16) Do you have a role model who has inspired you in these years? 有没有让你受启发的榜样? 跟他相比, 你在那些地方做的不够？

8. How has your perception about graduate school and doctoral study changed?
   对留美读研你的观念上产生了什么变化吗？
   Prompts:
   (17) Have you changed in any ways? Did you do things differently than when you just came here? 和刚来的时候相比，你有哪些变化呢？
   (18) What was the turning point in your experience? 有没有特别的转折点？

9. How is cross-cultural adaptation related to your success in graduate school?
   你认为适应美国和学业上成功有什么关系吗？
   What does success mean to you?

10. What lessons have you learned from your experiences as an international student?
   从你的经历, 你总结出什么经验？

Appendix D

Code List

Categories and Codes	Sources	References
Academic Challenges		
Academic pressure	8	18
Classroom and learning practices	7	10
Motivation for research	6	13
Academic writing	5	6
Doctoral research	4	6
Student background		
Motivation for Ph.D.	10	26
Previous college exp	5	6
Barriers for social interaction		
Focus on academics	3	3
Cultural differences	6	2
Environmental factors	4	6
Language difficulties	2	2
Career aspiration	5	7
Language barrier		
Feelings of incompetence	5	5
Ways to improve English	8	11
Lack of opportunities	6	7
Language problems	10	13
Interpersonal communication issues	4	5
Incompetent public speaking	5	7
Cross-cultural adaptation		
Culture shock	7	9
Dealing with stress	6	14
Cross-cultural differences	3	4
Self-evaluation of adjustment	8	11
Feelings of stress	5	12
Importance of having a car	4	5
International student status	10	12
Importance of adjustment	5	12
Losing social status	4	4
Meaning of adaptation	4	8
Cultural knowledge and awareness	7	9
Having an open mind	5	11

Difficulty in forming relationships	9	10
Gains		
Personal accomplishment	4	5
Experiencing diversity	3	3
Maturity	3	3
Self understanding	10	10
Valuable learning exp	10	10
Return decision	5	8
Image of Chinese students	2	3
Meaning of success	5	6
Relationships with faculty		
Cultural barrier	4	10
Dissatisfaction	5	10
Funding constraints	1	4
Perception of faculty advisor	3	3
Positive experience	5	9
Understanding faculty roles	2	3
Social experience		
Campus involvement	3	6
Chinese circle	10	12
Social isolation	4	6
Interaction with Americans	6	11
Interaction with int'l students	2	3
Turning point	7	12
Typical Challenges	4	9

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