

ESSAYS ON TRANSNATIONAL BIOSCIENCE ENTREPRENEURS:  
EVIDENCE FROM AMERICA, CHINA, AND TAIWAN

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ESSAYS ON TRANSNATIONAL BIOSCIENCE ENTREPRENEURSHIP:  
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Although there are previous studies on transnational migrants, no studies have been done on transnational bioscience entrepreneurs (TBEs) from either China or Taiwan. This dissertation is the result of grounded theory methodology and extensive on-the-ground fieldwork from April 2008 to May 2010 in Taiwan to yield conclusions that are convincing and accurate.

Following Mills (2000), Paper 1 situates the researcher and respondents' personal experiences in their social structures and traces the transformation of these social structures in their cultural, historical, and political contexts. In so doing, this paper attempts to understand the extent to which a social scientist's training and transnational identity impact his work as a collector and analyst of qualitative data.

Paper 2 documents the arc of TBE's transnational migration from Taiwan to America before circling back toward China. Through the crucible of immigration and the desire to succeed, TBEs developed their own global sensibility, which empowers them to discover, evaluate, and exploit opportunities beyond political borders. Their global sensibility defines what is transnational about TBEs. As a coda to their already highly distinguished careers, TBEs seized the opportunity to learn what their true capabilities are absent the institutional barriers that are present in America and to leverage their

expertise in upgrading China and Taiwan's global bioscience competitiveness.

Paper 3 reveals how a group of individuals who are defined as extreme cases based on the surface metrics of professional achievement and personal net worth are, in fact, driven by motivations common to all people. TBEs are motivated by nostalgia for their country of origin, obligation to family members, and opportunities for self actualization. As human beings, TBEs want to return to their home, support their family, and reach their full potential both inside and outside the workplace. Their proclivity for entrepreneurship together with their nostalgia for their country of origin explains why, instead of choosing early retirement amid the material comforts of America, they opted to return to Taiwan and continue working throughout the autumn of their careers. TBEs recognized an opportunity where self actualization and economic and scientific development converged.

## BIOGRAPHICAL SKETCH

Born in Taiwan, Jonathan Ying immigrated to America at age nine and attended public schools in Los Angeles before entering St. John's College, Annapolis, Maryland, where he double majored in Philosophy and in History of Science and Mathematics. He earned an M.T.S. in Religions of the World from Harvard University, and an M.I.L.R. in International and Comparative Labor from Cornell University. He was a U.S. Department of Education Foreign Language and Area Studies Fellow at National Taiwan University and a junior visiting scholar at the Institute of History and Philology and the Institute of Modern History, Academia Sinica, Taiwan. Prior to his academic career, Jonathan Ying held a variety of human resource positions at Amgen, General Mills, and Texas Instruments. He was also the founding assistant dean of students for Asian American affairs at the University of Illinois at Urbana-Champaign where he partnered with faculty and students to develop an academic program in Asian American studies that has grown to include 15 full-time and 8 affiliated faculty members.

To Kathryn, Sophia, and Alexandra

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# **Innovation Begins When You Leave Home: Reflections on Biography, History, and Social Structure in the Study of Transnational Bioscience Entrepreneurs**

“Surely we ought occasionally to remember that in truth we do not know much about man, and that all the knowledge we do have does not entirely remove the element of mystery that surrounds his variety as it is revealed in history and biography.”

C. Wright Mills, *The Sociological Imagination*. (p.164)

## **I. INTRODUCTION**

This paper is premised on C. Wright Mills’ call to understand the linkage between biography, history, and social structures (Mills 2000). This paper is also premised on the belief that the meaning of being Chinese and Taiwanese is a discourse that is multifaceted and therefore cannot be defined solely by Beijing or Taipei (Tu 1991). Following Mills, this paper situates the researcher and respondents’ personal experiences in their social structures and traces the transformation of these social structures in their cultural, historical, and political contexts. In so doing, this paper attempts to understand the extent to which a social scientist’s training and transnational identity impact his work as a collector and analyst of qualitative data. On one level, this paper endeavors to explore how a social scientist’s seemingly disparate experience with an authoritarian regime contributes to his ability to conduct fieldwork in a foreign land. On another level, this paper critically analyzes the orthodox meaning of being Chinese and Taiwanese and its concomitant cultural devotion to filial piety and the obligation of the Chinese and Taiwanese to their families and their native land.

My respondents consisted of a group of transnational bioscience entrepreneurs (TBEs) who immigrated to the U.S. to earn life science doctorates at leading research universities in the late 1960s and early 1970s. After earning their doctorates, my respondents became research scientists in the pharmaceutical industry, faculty members in the academy, and entrepreneurs throughout the U.S. During the past decade, these highly successful TBEs began returning to their native land as bioscience entrepreneurs to help build Taiwan's nascent bioscience industry.

This paper analyzes my experience as a field researcher in Taiwan from April 2008 to May 2010. Put simply, the story in this paper begins and ends in Taiwan. After immigrating with my family as a child to the United States, I returned to Taiwan for the first time in 32 years in order to improve my Chinese and to conduct research for my dissertation. First, I shall provide cultural and historical background information. Second, I shall discuss two stories of immigration including my own and that of my respondents. Next, I shall discuss how my foreign language training, scientific knowledge, and transnational identity were critical to the collection of robust data. In conclusion, I shall draw insight from the parallels between these stories of immigration.

## **II. BACKGROUND**

### **A. SELF**

Growing up in Taiwan, I shared a room with my grandmother in our traditional Japanese house, which was built during the Japanese occupation of Taiwan from 1895 to 1945.

My grandmother told me the story of how my grandfather was in his junior year as a political science major at Peking University when the anti-Japanese forces sent him home to the City of Wuhan in Hubei Province to gather intelligence. She told me that my grandfather cracked the code of a Japanese aerial attack of Wuhan. In recognition of his service, after the Kuomintang relocated to Taiwan in 1949, the government awarded my grandfather a job in the Central Trust of China and a Japanese house, which formerly belonged to a colonial administrator during Japan's rule of Taiwan. I cannot imagine the glory days of this house, which had paper doors and tatami floors. During my childhood in Taiwan, I remember that we lived with a leaky roof and termite infested wood frames.

In China, my grandmother had given birth to eight or nine children. With the exception of my father and his younger sister, all of her children died either in childhood or during their 20s. Like millions of women in the last dynasty, my grandmother was illiterate and had bounded feet. My aunt, who inherited my grandfather's academic excellence, graduated from Taipei Girls' First High School (*Bei I Nu*), the most prestigious secondary school for girls in Taiwan. During my childhood, my father often told me that his father was selfish. My father used to say that my grandfather had guests over so often that the only quiet place for his sister to study was the outhouse.

The frugality I developed as a young child is largely a product of the 1960s and 1970s era in Taiwan. My grandmother would give my sister and me a dollar each after school. Everyday, I would place my dollar in my drawer. Then, I would follow my sister to the noodle stand near our home. My sister alternated between buying sesame noodles and wonton noodles. I always asked for plain soup, because this item was

free. Through daily exposure to the conversations of my grandmother, my grandfather's guests, family friends and relatives, and this noodle vendor, I learned to understand Mandarin Chinese colored with accents representing various regional dialects of China. To this day, I have the ability to comprehend Mandarin Chinese spoken by individuals from China's coast and hinterland.

Like my research subjects, my father went to America for graduate school. Unlike my research subjects, he earned a master's degree in leisure studies from George Williams College, the training ground for future Young Men's Christian Association (YMCA) administrators, and returned to Taiwan even before his own commencement. My father explained to me that he could not wait to return to Taiwan to save the nation, because he was on a government scholarship. Hence, for a large part of his professional life, he applied the organizational and leadership skills he learned from his American graduate training to the political apparatus that was aptly named "Save the Nation Corps" or China Youth Corps in English.

When we immigrated to America in 1976, my father's first job was as a gardener at White Memorial Medical Center, the same Seventh Day Adventist hospital where my mother was employed as a nurse. Despite his love of the outdoors and plants, he hated that job because he viewed it as below his former status as a lecturer and dean of international students at National Taiwan Normal University, an institution that enjoyed a similar level of prestige in Taiwan as Columbia University Teachers College in the City of New York does in America. He lasted less than a year as a gardener.

Shortly thereafter, he decided to place an advertisement in the *World Journal*, the newspaper for Taiwanese immigrants, to sell apples to individuals to bring back to

Taiwan as gifts. In this venture, he did all he could to persuade customers to buy Red Delicious apples and no other fruit because he thought that was absolutely the best gift one could bring home to Taiwan. His business model required him to go to the Downtown Los Angeles fruit market to buy 40 pound boxes of Red Delicious apples from Washington State, stored them in a cool corner of the house during the day, and pack them in the late afternoon before driving to Los Angeles International Airport (LAX) to meet and deliver the apples to his customers curbside at the loading and unloading area. He often recruited me to help him pack and deliver apples.

Beginning in 1976 until I left home for college, my father received in the mail a weekly listing of YMCA administrator job openings. Through all his job changes and business failures, the YMCA job listings was a constant reminder of the excellent professional opportunities that could have put his organizational and leadership skills to good use. As an added bonus, the stability and responsibility offered by a YMCA administrator position might have even reduced the violence that he attributed to his career frustrations. Not until I was in high school did I develop the insight and courage to ask my father why he never applied to a single YMCA job. In response, he gave me a concise answer: I do not ever want to work for white folks.

If his response can be understood as a vestige of the shame that China suffered at the hands of the European powers beginning with the First Opium War in 1839, then the Kuomintang's (KMT or Chinese Nationalist Party) effectiveness at fanning the nationalist flame cannot be questioned. To be sure, after its retreat to the island of Taiwan in 1949, the KMT received more than a billion dollars of American agricultural, military, and technical support to develop the Taiwanese economy. China and America were also

allies in the war against Japan in the Second World War. In my view, for my father, nationalist shame and racial inferiority converged somewhere on the way to assuming the responsibilities of a father and provider. Perhaps as a manifestation of the convergence of this nationalist shame and racial inferiority, he minimized his need to speak English by asking my sister and me to serve as his interpreter whenever possible.

For as long as I can remember, my father complained bitterly about how he was never given the chance to head the Boy Scouts of China. His opportunity came when President Chiang Ching-kuo appointed Lee Huan premier in 1989. As a longtime organizer of various China Youth Corps-sponsored leadership development programs, including when Lee Huan headed the same organization, Lee Huan knew how to reward the loyalty of his protege and fellow Hubei native. Just as Lee Huan's own tenure as premier was cut short due to disagreements with the first Taiwan-born president, Lee Teng-hui, my father returned to America in 1990 (Brown 2010).

Discipline through physical violence is not the first thing that comes to mind when one thinks of the General Secretary of the Boy Scouts of China. Besides his anger and violence, what I hated most about my father was how he always wanted me to help him in the garage, clean the yard, water the plants, and accompany him when he visited his friends. He did not care about academic excellence. In fact, he belittled my need and desire to study. What he cared most was my eagerness to satisfy his needs, obey his commands, and do chores around the house. If I displayed the wrong attitude toward the work that he assigned, he disciplined me through physical violence.

Through the Down to the Countryside Movement, Mao Zedong emasculated intellectuals during the late 1960s and early 1970s by sending them to the countryside and replacing their pens with shovels. My father, in fact, often explained that he was sending me down to the countryside when he ordered me to water the plants, repair the faucet, and help him around the garage when I should have been studying. Admiring Mao's policy insights from afar, my father may well have wanted to replace my pen with a water hose and a screwdriver so as to neutralize a budding intellectual who would one day question the legitimacy of his father's violence and authority.

When my father was in his 20s, he was recognized by Chiang Kai-shek as an outstanding youth leader. In my mind's eye, I can still see the professional quality black and white picture that hung in my dilapidated childhood home memorializing a day in the 1950s when Chiang Kai-shek sat at his presidential desk with my father and six or seven other proud young men, each of whom dressed in their Boy Scout khakis and stood behind the Generalissimo at attention. Although I cannot recall how the other young men looked, seared into my memory is the vintage smiles that are on the faces of Chiang Kai-shek and my father.

As someone who referred to Chiang Kai-shek as the "elder president" (*lao zong tung*) to signal his reverence, my father's strategy to replace my pen with a water hose and a screwdriver eerily suggests a strategic hybrid between KMT's reign of white terror, which was designed to suppress dissent among Taiwanese intellectuals during the period of martial law, and Mao's Down to the Countryside Movement. My firsthand experience growing up in a household where dissent was met with brutal beatings behind drawn curtains prepared me to empathize with my research subjects when they

articulated the immense sense of liberation they felt after they left the authoritarian KMT regime on Taiwan to become graduate students in 1960s and 1970s America.

I arrived in America in May 1976, 13 months after Chiang Kai-shek's death and 28 months before the U.S. normalized diplomatic relations with the People's Republic of China. My parents, my sister, and I qualified under the family unification category through the sponsorship of my mother's elder sister Betty and her husband David. As devout members of the Seventh Day Adventist Church (SDA), Betty and David Fang immigrated to America from Taiwan with their only daughter in 1964 with the hope that David would earn admission to SDA's Loma Linda University School of Medicine. In the intervening years, Betty and David gained U.S. citizenship, gave birth to two more daughters, and by the time my family arrived in Los Angeles in 1976, David had just completed his resident training at the White Memorial Medical Center. For the next 30 years, Betty stayed home with the children, and David became a highly respected surgeon.

Like hundreds of thousands of other Chinese and Taiwanese immigrants, Betty and David yearned for their native land. The Fangs hosted many dinner parties on traditional American and Chinese holidays where home-cooked turkeys were eaten alongside beef and pickle stir-fries. What I remember most was that my uncle always found time to play a round of Chinese chess with me and the evening always ended with him singing traditional Chinese songs while his eldest daughter accompanied him on the grand piano in their living room. I also remember the chasm that existed between the safety of the Fang household where culture and science were held in high

esteem and the violence of my own home where dissent and academic freedom were met with violence.

These dinner parties taught me an important lesson that I would remember while collecting data from my research subjects in Taiwan. Despite his success at the upper echelon of the American professional hierarchy, David felt most comfortable expressing himself in the safety of his own domestic sphere. Similar to my research subjects, David's professional success, longterm residence, and American citizenship belie his inability to express his true self in English. Put differently, if you wish to understand fully the social process of his experience as an immigrant, physician, and TBE, you must communicate with him in Chinese, his native tongue. As I transitioned from college to graduate school to work, Betty's immigration sponsorship and David's work ethic served as a reminder of what I could achieve in my own life. That is, for me, Betty and David were the closest model of parental responsibility and professional success that I had.

Beginning in 1979, David channeled his nostalgia for his native land by initiating a formal scientific exchange program between Loma Linda University and China that ultimately trained over 200 nurses and physicians who all returned to China to assume senior leadership roles in their respective healthcare facilities. In 1993, building on this foundation and in partnership with Loma Linda University and China's Zhejiang University, David was instrumental in bringing into reality China's first 400-bed Western-style teaching hospital, named after Sir Run Run Shaw, the Hong Kong movie magnate, who was the major benefactor. Indeed, my uncle, Dr. David Fang is himself a transnational bioscience entrepreneur (TBE).

The TBEs, who are my research subjects, left Taiwan in the 1960s and 1970s to pursue life science doctorates in America. Without exception, my research subjects spoke of their desire to pursue a career in the sciences. During the 1960s and 1970s, America offered the best training and career opportunities for them. Upon completion of their doctorates from leading American universities, the TBEs worked as post-doctoral fellows before becoming industry research scientists, university assistant professors, and high technology entrepreneurs. The professional profile of these TBEs is remarkable in its uniformity: they studied and worked in America for upwards of 30 years before returning to Taiwan to serve as policy advisers, investors, research directors, and more importantly, change agents.

The advocacy of democracy and human rights on Taiwan led some TBEs to be blacklisted by the KMT government, thus preventing an earlier return. For others, ensuring that their own children receive an education that encourages creativity and innovation coupled with a large salary differential prevented them from returning to Taiwan before their children completed college. Taiwan's transition to a free and democratic society along with the opposition Democratic Progressive Party's entrance into the Presidential Office in 2000 accelerated the return of a critical mass of TBEs. These TBEs were highly encouraged by DPP's ardent commitment to advancing democracy and human rights alongside bioscience. For these TBEs, returning to Taiwan marked a watershed moment in their personal journey, which began with the pursuit of a science doctorate, followed by a science-based career propelled by "ambition, invention, perseverance, and a strong tolerance for risk" (Rigger 2011) and independence from the violence characteristic of strongman politics.

For TBEs, innovation began when they left home for graduate school. For me, my childhood home hid a similar authoritarian regime. Eventually, innovation began for me when I left home for college. How did I begin to innovate? Until I was free from any possibility of unprovoked violence at the hands of a ruthless father, I was unable to enjoy a constant free state of mind where ideas are judged on their own merits, not the benchmark of a strongman's ideological stricture. In the discussion-based curriculum of my college, I learned how to articulate, support, and defend my ideas without fear of retribution. From the gentle guidance of my teachers, I learned that questions are asked for the sake of learning through intellectual sharing, not to follow the script of Mao's 1957 Hundred Flowers Campaign, to exterminate those who voiced dissent. Over time, I recognized that my ideas are worthy of articulation, because they are often unorthodox.

A theory about the TBEs emerges from the rich details of their lives and careers and goes beyond cataloging important variables. The richness of my qualitative data provides significant clarity at the individual, group, organizational, industry, and national levels. My data reveals the intricacies of how TBEs teach independent thinking and creativity to the next generation of life scientists on Taiwan, how TBEs call on the assistance of the world's top legal and scientific experts to develop Taiwan's new drug development capability, how TBEs overhaul Taiwan's regulatory environment to support its nascent bioscience industry, and how TBEs advocated for democracy and human rights on Taiwan. TBEs initiated transnational collaborations between themselves and those in their transnational social networks to realize these intellectual, scientific and political milestones.

## **B. SCHEMAS OF DEVOTION**

In her study of highly successful women executives, Blair-Loy (2003) argued that choice rhetoric distorts the cultural reality that pressures women to conform either to the family devotion or work devotion schemas. For Blair-Loy, “schemas of devotion” are “moral and emotional maps: like articles of faith, they evoke intense moral and emotional commitments” (Ibid). Blair-Loy found that non-conformist women were labeled as heretics by those who adhere either to the family devotion or work devotion schemas. Blair-Loy has found, for example, that adherents of the family devotion schema chided equally those who adopted a variant of the family devotion schema, and those who hewed to the work devotion schema.

## **C. FILIAL PIETY**

Just like religious belief, devotion to filial piety is a moral and emotional map that draws a bright line between right and wrong. It defines its believers' worldview. It narrates a life that is worth living. By questioning the root of what is right and wrong through their behavior, transgressors of cultural schemas are outliers that are by definition, deviants. As doubters of a fundamental cultural norm, they elicit intense emotional responses from believers. The act of chiding heretics allows believers of the cultural devotion to filial piety an instance of reaffirmation of their faith in the undeniable bond between parent and child.

In March 2010, I interviewed a sixty-something TBE who returned to Taiwan after a highly successful career in the American pharmaceutical industry. This TBE left Taiwan

after college to earn a doctorate in chemistry in the U.S. She returned to Taiwan near the turn of the century to found her own business, while her husband, children, and grandchildren remained in the U.S. During my interview, she asked me about my parents' background and age to illustrate her point that Taiwan's population of 23 million is in fact a small enough community that affords minimal degrees of separation between individuals. When I informed her that I did not know my parents' precise age, she came close to chiding me for deviating from the Chinese cultural norm of filial piety. Realizing the need to reciprocate her information sharing, I reluctantly told her that I am an adult survivor of child abuse, and as a result, I had decided to have minimal communication with my parents in order to maintain my focus on family and work.

A similar situation occurred when I was employed at the University of Illinois at Urbana-Champaign in the 1990s. In response to probing by a professor of political science who was then in his 60s and had immigrated to the U.S. as a college student, and with whom I worked closely to establish an academic program in Asian American studies, I informed him that as an adult survivor of child abuse, I had decided to have minimal communication with my parents in order to maintain my focus on family and work. In response, he also came close to chiding me about my deviation from the Chinese cultural norm of filial piety. I believe the TBE and the Illinois professor who were both ethnically Chinese and in their 60s at the time of our conversation refrained from going beyond a polite rebuke of me only because of the professional nature of our relationship.

Taken together, the consistent responses from the TBE and the Illinois professor who were both in their sixties demonstrate that even after living and working in the U.S. for

some 30 to 40 years, immigrant professionals maintain their adherence to the Chinese cultural devotion to filial piety. As moral and emotional maps, the Chinese cultural devotion to filial piety evokes intense moral and emotional commitments from its believers, including rebuking other ethnic Chinese who do not subscribe to this fundamental belief.

As early as 1917, May Fourth Movement intellectuals consisting of a large number of returned and domestic students, including Hu Shih, who earned degrees in philosophy from Cornell and Columbia Universities, criticized the Chinese cultural devotion to filial piety for its unique ability to engender personal suffering (Chow 1960; Hsu 1983; Whyte 1996). The May Fourth reformers, moreover, argued for the eradication of the Chinese cultural devotion to filial piety and the heavy obligation of individuals to their families, among other things, if China was to have a chance in its modernization (Whyte 1996). This was the case because filial piety functioned as deadweights on individuals' geographic mobility and professional aspirations. Individual obligations to their families had the dual function of favoring family members while discriminating against outsiders within both economic, political, and social spheres. Sun Yat-sen, a returnee physician who led the revolution against the Qing dynasty in 1911, credited foreigners for criticizing the Chinese as a "sheet of loose sand" (Sun 1927). One commentator has extended this metaphor to explain how ". . . with each family "grain" caring only for its own interests and refusing to cohere with others," family obligations' ultimately worked to society's detriment (Whyte 1996).

For a segment of the TBE population whose parents are/were still alive, the desire to be close to family is a reason to return to their country of origin. Here are three TBEs that spoke to that emotion:

Dr. Penelope Wei:

In terms of family, I thought it would be nice to be closer to my family given that I've been abroad for more than ten years. This was my own feeling. There was no pressure from my parents. I felt this way because I saw my parents gradually getting older and older each time they went to visit me in the U.S.

Dr. Elliot Lee (a pseudonym):

The third thing is more personal for both my wife and me. My wife's dad recently passed away last year and her mom is sick. She's in rehab. My mom's getting old, too. One of the thoughts that we had was that maybe it's about time that we are close to our families. My wife's family is in Hong Kong. The other thing is that my children's memories of their grandparents on my wife's side is that they're always sick because they're a little older. Wouldn't it be nice if my children's memories of their grandparents is while they're still lively and taking vacations with them?

Dr. Olivia Bai (a pseudonym):

My in-laws were getting old, and I have no other relatives on Taiwan. It's good that we came back because we were able to spend the last few years with them. Both of them have since passed away.

The desire to be nearby one's parents is a basic human trait that cut across cultures. Confucianism does not have a stranglehold on this fundamental human emotion. In America, we often find individual from all walks of life who either stay within close proximity of their parents throughout their lives or try hard to return to their home town, and if that proves hard to achieve, at least their home state. For the three TBEs above, their decisions to return to their country of origin to be with their parents is not something that can be characterized as primarily Chinese/Taiwanese. Rather, it is at heart human.

## D. HEAD OF STATE

Amidst an entire island of then-20 million believers of the cultural devotion to filial piety, Chiang Kai-shek rooted Taiwan's need for martial law in (1) the military goal of reclaiming the mainland and (2) the KMT regime's claim to be the sole legitimate government of China. Because Chinese mainlanders consisted of no more than ten percent of the total population on Taiwan, he assumed that instituting martial law was the quickest route to controlling a Taiwanese society that did not speak Mandarin Chinese because it had lived under fifty years of Japanese occupation. Tapping his own self-proclaimed status as the leader of all of China, and as he aged, Chiang capitalized on the Chinese cultural norm of respecting the wisdom of age and experience.

By branding pro-democracy activists as heretics, Chiang and his domestic security structure leveraged the political orthodoxy devotion schema. Knowing that it was the intellectuals' responsibility to speak out against wrongdoing in government, Chiang jailed domestic dissidents and blacklisted their overseas counterparts from returning to Taiwan. In so doing, Chiang labeled dissidents as individuals who dared to question him, the leader of all China, whose source of imperial legitimacy had traditionally been granted by the Mandate of Heaven. As such, the divide was no longer between an individual and the state. Rather, it was between an individual and the Mandate of Heaven.

## E. HEAD OF HOUSEHOLD

Within the social structure of Confucian thought that is prevalent in cultural China, including China and Taiwan, however, the distance between an individual and Heaven is as close as his family. According to the *Great Learning*, a classic of the Confucian school:

. . . . The ancients who wished to manifest their clear character to the world would first bring order to their states. Those who wished to bring order to their states would first regulate their families. Those who wished to regulate their families would first cultivate their personal lives. . . . [W]hen the mind is rectified, the personal life is cultivated; when the personal life is cultivated, the family will be regulated; when the family is regulated, the state will be in order; and when the state is in order, there will be peace throughout the world. From the Son of Heaven down to the common people, all must regard cultivation of the personal life as the root or foundation. (Chan 1963, pp. 86-87)

Just as a head of household must cultivate his personal life before he can regulate his families, a head of state must prove his ability to run his household before he can govern. As the above equations show, the relationship from individual to family to state to world can be imagined as a series of concentric circles that are interconnected, allowing an individual whose personal life is cultivated to have the same ripple effect as the Son of Heaven / ruler. The foundation of a regulated family and a well ordered state is the same: cultivation of the personal life. What does cultivation of the personal life mean? Attaining a mindset where an individual is free of bias toward those he loves, hates, fears, and reveres (Chan 1963). What does peace throughout the world mean? When the ruler shows respect toward the elders as well as compassion toward the young and the helpless, the people will likely demonstrate filial piety (Ibid).

In this way, the Chinese cultural devotion to filial piety can be understood as representing the microcosm of an ideal society. That is, respecting the wisdom that

comes with age and experience underscores the fiduciary nature of a community founded on mutual trust (Tu 1989). Within the Confucian tradition, rectification is synonymous with statecraft in the sense that the aim of government is “to establish a fiduciary community through moral persuasion” (Ibid). In other words, within the concentric circles connecting the individual to the Son of Heaven / ruler, the aim of rectification is to prepare the Son of Heaven for leadership through rectification of his selfhood (Ibid).

Returning to the symmetrical roles that the Son of Heaven / ruler has to the head of household and to the individual and how the cultural devotion to filial piety can be understood as representing the microcosm of an ideal society, the head of household shares the same aim to establish a fiduciary community within the family through moral persuasion, not violence or terror. Therefore, at the heart of the cultural devotion to filial piety is not blind obedience to fatherly commands. Rather, it is the ability to help the father become the ideal of fatherhood. Just as a son helps his father to become a better father, Chinese intellectuals throughout history have taken seriously their duty to help the ruler embody the ideal of rulerhood through moral persuasion. In the final analysis, as the Sage-King Shun has shown in *The Doctrine of the Mean*, a classic of the Confucian school, sons, and by extension, daughters, and intellectuals alike may find themselves relying on their inner strength and deviate from powerful cultural norms and be labeled a heretic or dissident in order to do what they believe is right (Ibid).

### **III. LEAVING NATIVE LAND**

#### **A. TAIWAN UNDER MARTIAL LAW**

The KMT's chief rival is the Chinese Communist Party (CCP). Following the overthrow of the Qing Dynasty, Sun Yat-sen co-founded the KMT in 1912. Upon Sun's death, Chiang Kai-shek assumed leadership of the KMT. The CCP, under instructions from the Communist Party of the Soviet Union, however, was instructed to obey the KMT in order to defeat the northern warlords, who controlled various parts of China after the fall of the Qing. Once the warlord problem was contained, Chiang Kai-shek's KMT reignited its feud with the CCP. Following Allied Forces' defeat of Japan in 1945, the KMT and the CCP fought in a civil war to determine who would rule the Chinese mainland. The KMT and the Republic of China retreated to the island of Taiwan in 1949 following its defeat by the CCP. In October 1949, the CCP established the People's Republic of China.

Both the 1943 Cairo Conference and the Potsdam Declaration of 1945 determined Taiwan to have been "stolen" by Japan (Copper 2003). As an outcome of the First Sino-Japanese War over the control of Korea, "China cede[d] to Japan in perpetuity and full sovereignty the island of Formosa [or Taiwan]" as stated in Article 2(b) of the Treaty of Shimonoseki (Taiwan Documents Project 2005). Despite uncertainties surrounding Taiwan's legal status, and some would argue that these uncertainties linger even today, in 1945, KMT officials replaced Japanese colonial administrators who had ruled the island since 1895 (Cooper 2003).

Despite his defeat in the Chinese Civil War, Chiang Kai-shek saw his retreat to Taiwan as merely temporary. Leveraging his son's twelve-year training in the Soviet

Union, the senior Chiang appointed Chiang Ching-kuo responsible for Taiwan's internal security. Father Chiang Kai-shek, son Chiang Ching-kuo, and KMT party members held firm to the mission of recovering the Chinese mainland from Communist "bandits." As improbable as the recovery was to outsiders, Chiang Kai-shek devoted vast amounts of Taiwan's resources to realizing this goal, including the use of the military police to repress dissent. As a result, all of my respondents grew up in a society dominated by the violence and repression characteristic of an authoritarian regime.

Because Chiang Kai-shek only viewed the island of Taiwan as a temporary base from which to launch a military assault that would allow KMT to reclaim mainland China, he instituted martial law to maintain a constant state of war beginning with his arrival on Taiwan in 1949. The Taiwan Garrison Command and the military arrested and tried individuals suspected of advocating Communism, overthrowing the government, criticizing the Chiang family and KMT's devotion to recovering the mainland, and the KMT's belief in Taiwan's status as a province of China (Roy 2003). Freedom of assembly and association were outlawed. Union activities, textbooks, newspapers, and magazines were strictly regulated. Mail was censored. Travel, telecommunications, and mail between Taiwan and the mainland were outlawed (British Broadcasting Service 2007). In the name of martial law, the KMT blacklisted many of my TBE respondents for participating in protests and panel discussions while they were graduate students in America. As a result, many TBEs were denied visas to return to Taiwan. KMT agents visited the families of these TBE respondents on Taiwan on a regular basis as part of the regime's surveillance program.

## **B. VIOLENCE AND REPRESSION AT HOME**

During my childhood in Taiwan, I saw the military police with their shiny stainless steel helmets and intimidating bayonets standing ready at nearly every public space. I also remember how my father at times spoke in a hushed tone whenever certain of his friends visited our traditional but dilapidated Japanese house. Years later, when I was studying Taiwanese history as a graduate student at Harvard, I learned that the most ubiquitous symbol of Chiang Kai-shek's martial law—the military police—was part of Chiang's security structure to suppress domestic activities supporting democracy and Taiwan independence. My experience with Chiang Kai-shek's white terror and martial law is rooted in the political indoctrination that I received in elementary school.

Beginning in first grade, I was taught the superiority of the Mandarin Chinese dialect over its regional Taiwanese kin. I was taught that Taiwanese is only spoken by the dregs of society. In fact, under martial law, the KMT government banned students from speaking Taiwanese in schools and transgressors were fined (Berkeley Students for a Sovereign Taiwan 2005).

My Taiwanese public school education also taught me to hate the Japanese for their aggression and brutality against the Chinese during World War II and to distrust the Chinese Communists because they were bandits who were willing to do anything to sabotage Chiang Kai-shek and the KMT's legitimate rule over all of China. When I first arrived in the U.S., I told my parents not to buy a Japanese car. I warned them against patronizing Japanese businesses for all the innocent Chinese who were killed by the Japanese forces during World War II. Likewise, I also told my parents not to buy prepared food from China because the Communist hooligans most likely poisoned the

food. These instances of my embargo of Chinese and Japanese goods throw into relief the efficacy of political indoctrination within an authoritarian regime.

In 1976, I immigrated to the United States from Taiwan at age nine. Like many other Taiwanese immigrants of the past forty years, my parents cited the island nation's political instability as their main push factor and educational opportunities in the U.S. for their children as their main pull factor. While in Taiwan, my parents had had some exposure to American culture. My mother grew up in a Seventh-day Adventist Church family and attended the Taiwan Adventist Hospital Nursing School. Upon graduation, she worked at the Taiwan Adventist Hospital for many years before becoming a nurse at Taipei American School. When she arrived in the U.S., my mother quickly found work as an intensive care unit nurse at White Memorial Medical Center, a major teaching hospital in East Los Angeles founded by the SDA in 1913. Active in the Boy Scouts of China, my father had earned a master's degree in recreation management from George Williams College in Illinois, which was founded in 1890 as the YMCA Training School in Chicago.

Unlike the vast majority of his study abroad cohorts who chose not to return to their native land, my father heeded the Confucian-KMT call to "save the nation" (*jiu guo*), and returned to Taiwan as soon as he completed his graduate coursework. Years later, he explained to me that he chose to return to Taiwan so that he could continue working for China Youth Corps (*zhongguo qinnian jiu guo tuan*), literally "China Youth Save the Nation Corps." Founded in 1952 by Chiang Ching-guo, the junior Chiang implemented multiple security and propaganda functions he learned from the Soviet party and Red Army of the 1920s into the China Youth Corps (Mendel 1970). China Youth Corps'

guiding principle remains: “We serve the Youth, and the Youth will serve our country” (China Youth Corps 2011). The principle is a clear reinstatement of the orthodox meaning of being Chinese and its concomitant cultural devotion to filial piety and the obligation of the Chinese to their native land. Its officers worked in senior high schools and universities. Student-members practiced paramilitary training, studied KMT literature, and were trained to spy on classmates and teachers (Mendel 1970).

Later when he arrived in the U.S., my father found work as a gardener at White Memorial Medical Center. Despite his experience attending graduate school in the U.S. and his love of the outdoors and plants, his job as a gardener was only a short stint because he was unable to adjust to his drop in social status in a foreign land. Although I was only nine years old, I remember how my father punched a hole in the kitchen wall of our second floor apartment in an effort to vent his frustrations with work and life as an immigrant. But this was only the beginning of his physical anger. On almost a weekly basis, my father would either beat me, my sister, or my mother, or all three of us. At dinner, he would often pick on my mother if he did not like how she cooked a certain dish by berating her about her cooking methods. On more than one occasion, he threw an entire dish of food, including the ceramic plate, onto the kitchen wall to show his anger. Neighbors, friends, and relatives were aware of my father’s explosive anger and attendant violence but no one ever intervened.

By throwing an entire dish of food onto the kitchen wall, my father demonstrated not only his anger at my mother’s cooking, but more importantly, the ever increasing physical distance between him and Taiwan. Quoting literary critic James W. Brown, Professor Sau-ling Cynthia Wong of the University of California at Berkeley explained

that “appetite attests to, and even comes to symbolize, the space existing between subject and object, between ‘me’ and the ‘world’” (Wong 1993). In this context, my father’s anger is a manifestation of his wish to return to his country of origin and his increasingly difficult search for his “origin markers and affirmations of identity” in the relative unfamiliarity of America.

On a sunny Saturday afternoon during my junior year in high school, I was wearing my sunglasses while washing the car in the California sunshine. When I came in the house to get a towel, my father told me to take off my sunglasses when I was indoors. I did not do as I was told because I was in the house for only a few seconds. After I finished drying the car, he told me to close all the windows and blinds in the house so that he could beat me. I obeyed as he explained that it was my fault for causing him to beat me for showing disrespect by not taking off my sunglasses.

In a separate incident, while he was talking to a friend in the living room of our small house, I decided to watch ABC’s Wide World of Sports on television. My father told me not to watch TV while he was chatting with his friend, but for whatever reason that I can no longer remember, I told him that I can put the TV on mute and not bother him. And so I did. After his friend left about an hour later, my father beat me without any restraint, again after telling me to close all the windows and blinds in the house.

Similar to the instance when I did not take off my sunglasses, my father explained that it was my fault for not following his orders. He went on to say that it was his duty as a father to discipline me like a sapling needs a stake to help it achieve proper vertical growth. My father also told my mother, my sister, and me that we should keep his methods of discipline private because, as he quoted the diplomatic language of the

People's Republic of China (PRC) , that the physical beatings are the “internal affairs of our family.” Similar to the PRC's use of electronic filters to block out all discussions of the Tiananmen massacre of 04 June 1989 on the Internet, my father prohibited us from talking about how he uses violence to silence our dissent from his repressive orthodoxy.

Each time that my father yelled at me and beat me, I distinctively remember telling him that not only what he was doing was wrong, but it was unbecoming of a father. In hindsight, I recognize how my open criticism of his violence agreed with the Chinese artist and activist Ai Weiwei when he said, “If you don't act, the danger becomes stronger” (Klayman 2011). I also told my father that he should foster an environment where different viewpoints are welcomed and not beat his wife and children whenever they disagreed with him or not do as he said.<sup>1</sup> For this suggestion, I was awarded a more severe beating than usual.

Growing up in a violent lower middle-class immigrant family, I had to rely on myself to figure a way out of this situation. During my junior year in high school, after an extremely violent series of beatings, I convinced my mother to take her two children and leave her husband for good. Given that my mother, a licensed vocational nurse, was the main breadwinner, we were not dependent on my father for income. We were gone for about two weeks before my mother gave in and decided to return home. Despite my father's promises to my mother, we returned home to the worst beating I had ever

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<sup>1</sup> The prevalence of authoritarian fathers among recent immigrants in the U.S. from East Asia has highlighted a need for interventions such as Father School. As if following the footsteps of the migrants themselves, Father School arrived in Southern California from Korea in 2000 to help fathers who are “not emotionally linked with their children or their wife” (Laporte 2011). Using an eclectic curriculum that draws from Christianity and 12-step recovery, Father School offers the familiar and the foreign to participants that are products of a Christian-Confucian Korean society.

experienced up to that time. It was spring in Los Angeles so my classmates thought it was odd that I wore jackets and long sleeves. For me, it was how I covered my bruises. I never thought to call the police to report my father's abusive behavior. During high school, however, I promised myself that I would leave home for college, never to return. I knew that if I could make it through high school alive, I would be free from my father's physical and mental abuse.

Later when I was studying modern Chinese history at Harvard, I discovered that my father in fact frequently imitated Mao's strategy in the Hundred Flowers Campaign of 1957 by temporarily encouraging dissent in order to identify critics of the state and to use these very same dissenting views against those who dare to challenge the orthodoxy. Likewise, my father often encouraged me to share my ideas with him, however, whenever he found my ideas too critical of his own orthodoxy, he would become angry and violent. It was a lose-lose situation for me because if I pretended to say that I had no ideas or that my ideas were the same as his, then he would become angry and violent while calling me an idiot. There is so much similarity between how my father abused me and how Mao attacked his critics that when I read about Mao's Hundred Flowers Campaign of 1957 for the first time, I immediately felt as if I had firsthand experience with that horrible part of Chinese history. In this way, history intersects biography to allow me to understand firsthand the extent of my respondents' appreciation for freedom and democracy in American laboratories and society.

## IV. RETURNING TO NATIVE LAND

### A. THIRTY YEARS LATER

As the longtime head of internal security on Taiwan, few people expected Chiang Ching-kuo to be instrumental in the island's democratization. According to one analyst, it was Chiang Ching-Kuo's response to the convergence of five major forces in the early- to mid-1980s that allowed Taiwan to become a full-fledged democracy. First, Taiwan had achieved a 98% literacy rate, high social mobility, (66% of the population identified themselves as part of the middle class), urbanization, and a vibrant civil society. Second, the first force had engendered a fierce opposition or *dang-wai* movement that was willing to stage vocal demonstrations in the face of martial law. Third, liberal elements within the KMT saw to it that large numbers of Taiwanese members assumed much greater leadership roles within the party itself. Fourth, the murder of Henry Liu in his California home by KMT-hired assassins combined with major financial fraud committed by a powerful KMT lawmaker embarrassed Chiang Ching-kuo deeply. Fifth, China's peaceful campaign to unify Taiwan with the mainland pressured the younger Chiang to show the world that Taipei was a much more democratic place than Beijing (Tsang 2001).

Finally, in an interview with *Time* magazine in 1985, Chiang promised that he would not allow any member of the Chiang family to succeed him. In 1986, Chiang told the KMT Central Committee that it was his duty to uphold the rule of law and the Constitution of the Republic of China on Taiwan (Ibid.). In 1987, Chiang lifted martial law, paving the way for Taiwan's democratization. In 1995, Lee Teng-hui, a Cornell-

trained agricultural economist became Taiwan's first popularly elected president.

Taiwan's democratization reached full circle when the Democratic Progressive Party entered the Presidential Office in 2000 (Taiwan Government Information Office 2008).

By planting the seeds of capitalist ideology in Taiwanese primary and secondary curricula during the 1950s and 1960s, U.S. policy advisers saw their work bear fruit in the propensity the Taiwanese demonstrated for capital formation and entrepreneurship (Liu and Cheng 1994). In the aggregate, both the U.S. and Taiwan are classified as advanced economies (International Monetary Fund 2008; Central Intelligence Agency, 2009). In a recent global assessment of quality of life, Taiwan ranked only eight places behind the U.S. at number 21 (The Economist Intelligence Unit 2005). In 1965, to put Taiwan's economic development in historical perspective, the island's nominal per capital GDP was \$220 (at current prices), \$394 in 1970, \$2,397 in 1980, \$8,132 in 1990, \$14,519 in 2000, and \$17,116 in 2008. (Taiwan Executive Yuan, Director General of Budget, Accounting and Statistics 2008). By comparison, American per capital GDP was \$12,080 in 1980, \$22,660 in 1990, \$34,463 in 2000, and \$46,841 in 2008 (Taiwan Ministry of Economic Affairs, Department of Investment Services 2009). Taiwan's dominance in the global electronics industry is even more dramatic. In 2005, Taiwan captured a 70% market share of the world's integrated circuit foundry business, 72% in PC notebook computers, 78% in motherboards, 68% in liquid crystal display monitors, 89% in routers, and 83% in wireless local area network products (Digitimes.com 2005).

As world-class life scientists and entrepreneurs, the Taiwanese government heavily recruited my respondents to save the nation (*jiu guo*) by helping Taiwan transition to an economy based on bioscience entrepreneurship to supplement the mature

semiconductor and personal computer industry. For my respondents, the decision to return to their native land was facilitated by the convergence of (1) their own nostalgia for Taiwan and (2) the milestone of reaching the final decades of their professional lives with (3) Taiwan's transition to democracy and (4) improvement in Taiwan's bioscience infrastructure. According to Tu Wei-ming, the preeminent scholar of Confucian thought, ". . . for those who are politically sensitive, being Chinese implies the practice of a code of ethics (e.g., loyalty and filial piety) toward one's homeland, the "mother country" (*zu guo*)." In this sense, Beijing and Taipei become the parent, which for intellectuals and peasants alike means devoting oneself to "save the nation" (*jiu guo*) (1991).

After a highly distinguished career in American academe and industry, Dr. Glen Zheng (a pseudonym) returned to Taiwan in the early 2000s. Dr. Zheng clarified:

*Luoyeh guigen* (falling leaves returning to their roots) is actually genetic. Look at salmon. It returns to its place of origin to spawn when it matures. This is genetically determined. People return because they want to return to a place of familiarity.

Consistent with his identity as a scientist, Dr. Zheng viewed his decision to return to his country of origin as biological in nature. Like the odyssey of the Atlantic salmon that are genetically preprogrammed to travel to distant places but somehow find their way back to the place of their youth to spawn (Klekowski 1997), Dr. Zheng cited the Chinese phrase *yelui guigen* (falling leaves returning to their roots) to emphasize the basic desire of living things to return to a place of familiarity.

After a distinguished career in American academe and industry, Dr. Audrey Jiang (a pseudonym) returned to Taiwan in the late 1990s Dr. Jiang stated: "I was born here on Taiwan. If I could bring my experience back to Taiwan and accomplish something, then I will give it a try." Clearly, Dr. Jiang is willing to leverage her explicit and tacit

knowledge of business and bioscience acquired over her distinguished career to enhance her country of origin's competitiveness in the global pharmaceutical marketplace. As stated, Dr. Jiang's primary motivation is to help the land of her birth.

Dr. Matilda Duan (a pseudonym), a highly distinguished scientist and entrepreneur who returned to her country of origin in the early-2000s, explained the difference between teaching Taiwanese and American students:

Those who become returnees do so because they want to make a contribution, to help out. For 20 to 30 years, they've been teaching blue-eye students. Isn't it a good feeling to be teaching our own students? It's just not the same. I've only had one Taiwanese PhD student and two post-docs in my entire career. So to be able to return here to teach our own people is a good feeling.

For those who are academics and have had little opportunity to teach Chinese and Taiwanese students, the emotions attached to the familiar asserted themselves and made TBEs wonder if it would be that much more satisfying teaching Chinese and Taiwanese versus American students. For Dr. Duan, the answer was yes, it is a good feeling to have the opportunity to teach Taiwanese students in her country of origin. Dr. Duan's experience demonstrated how as a voluntary exile in the relative unfamiliarity of America, she evinced the human tendency to find further affirmations of the familiar in the ancestral background of her students.

Dr. Vance Yen (a pseudonym), a highly successful scientist and entrepreneur, continued to spend considerable time in America, China, and Taiwan. Dr. Yen recounted:

After my two-year post-doc, I considered returning to my alma mater on Taiwan because they had kept my earlier teaching spot open for me and wanted me to serve as department chair.

I thought about this opportunity seriously because I had taught at my alma mater for three years before going to America for my PhD. After all, my roots are on China and Taiwan.

This time, I decided to return to Taiwan because it's natural for migrating birds to return home. I also wanted to help Chinese people to do something.

Like Dr. Glen Zheng, Dr. Yen cited migrating birds to illustrate the genetic nature of humans to want to return to their homes. Upon completion of his post-doctorate fellowship, Dr. Yen had seriously considered returning to his alma mater to serve as department chair. Instead, Dr. Yen spent his entire professional career as a professor and entrepreneur in America. To strike a balance between his American identity and his Chinese and Taiwanese roots, Dr. Yen traveled between America, China, and Taiwan to foster academic collaboration for a good part of his career. In retirement, he has continued to serve as a visiting professor on both sides of the Taiwan Strait. A major motivator of Dr. Yen's transnational academic collaborations and entrepreneurial investments can be found in how he continued to see himself having Chinese and Taiwanese roots. Similar to Dr. Audrey Jiang, Dr. Yen expressed his desire to help the Chinese/Taiwanese people accomplish something important because he saw China and Taiwan as his countries of origin.

## **B. NEW TAIWANESE**

When Cornell Ph.D. alumnus Lee Teng-hui became the first Taiwanese to assume the office of president of Taiwan in 1995, he introduced the term *xin tai wan ren* ("New Taiwanese"). He defined this term to include any individual who loves Taiwan and calls Taiwan home. Included in this concept of the New Taiwanese were millions of individuals who made up the successive generations of Taiwanese with mainlander ancestry. My parents and grandparents were part of the one million who immigrated to

Taiwan from mainland China when the Chinese Nationalist Party was defeated by the Chinese Communists in 1949. Hence, I trace certain cultural and linguistic practices to pre-1949 mainland China. When I attended public school in Taiwan between the late 1960s to 1976, mainlanders consisted approximately ten percent of the island's population. Consequently, most of my classmates were Taiwanese. Although I do not call Taiwan home, I have cultural, historical, and linguistic ties to the island of my birth. In this vein, I understand myself to be a New Taiwanese.

What I am discussing here is similar to W. E. B. Du Bois' use of double consciousness in his "Strivings of the Negro People."

Although in the essay Du Bois used "double consciousness" to refer to at least three different issues—including first the real power of white stereotypes in black life and thought and second the double consciousness created by the practical racism that excluded every black American from the mainstream of the society, the double consciousness of being both an American and not an American—by double consciousness Du Bois referred most importantly to an internal conflict in the African American individual between what was "African" and what was "American." It was in terms of this third sense that the figurative background to "double consciousness" gave the terms its most obvious support, because for Du Bois the essence of a distinctive African consciousness was its spirituality, a spirituality based in Africa but revealed among African Americans in their folklore, their history of patient suffering, and their faith. (Bruce 1992, p. 301).

Although the focus in this paper is more on the cultural, historical, and linguistic ties of my identity to the island of Taiwan, I acknowledge the history of exclusion suffered by Chinese-Americans and Taiwanese-Americans by virtue of their status as racial and ethnic minorities in the U.S. As such, I am drawing on Du Bois's notion of the double consciousness of being both an American and not an American, of being a Chinese and not a Chinese, and of being a Taiwanese and not a Taiwanese. While I was in Taiwan conducting field research, I felt the internal conflict between what was "Taiwanese," "Chinese," and what was "American." Consistent with Du Bois, I explained above that I

understand myself to be a New Taiwanese.

Therefore, the essence of my Taiwanese and Chinese consciousness are based in Taiwan and China through my birth and ancestry, respectively, and defined by the Japanese occupation of Taiwan from 1895 to 1945, the Second Sino-Japanese War from 1937 to 1945, the civil war between the Chinese Nationalists and Chinese Communists from 1945 to 1949, by American military aid to China during Second Sino-Japanese War from 1937 to 1945, by direct American economic and military aid to Taiwan from 1951 to 1965, and by direct American investment and statutory military assistance to Taiwan 1965 to present. My spiritual connection to Taiwan and China are revealed in my memory of Chinese folklore from the ideological indoctrination that I received from the Chinese Nationalist-controlled public education system, my history of patient suffering through my father's abuse and violence toward me, and my faith that one day I would leave that autocratic rule. It is also revealed in the collective Taiwanese experience of patient suffering through Chiang Kai-shek's combination of martial law and white terror, and the Taiwanese's faith that Taiwan would one day become a thriving democracy.

## **V. MEETING THE RESPONDENTS**

### **A. FOREIGN LANGUAGE TRAINING**

Drawing from my direct experience working with immigrant engineers in a multinational semiconductor concern, I wanted to do all I could to eliminate any cultural and linguistic barriers between my respondents and me. I had worked with immigrant electrical

engineers in a professional setting where they were clustered on the technical ladder at least in part because of their inability to fully express who they were in an English-speaking corporate environment. I could safely assume that for virtually all of my respondents, the language in which they were most eloquent was Chinese. I knew that if I wanted to collect the most robust interview data from these TBEs, I would have to use a level of Chinese that was commensurate with my educational attainment.

Although I could have taken the easier route of simply conducting all of my face-to-face interviews in English, I knew that the quality of my data would suffer because my respondents would either respond in English or a watered down version of Chinese, thereby unnaturally limiting the extent to which they could express themselves. Given that I was interested in the totality of my respondents' immigration experience, including their roles as Taiwanese college graduates, foreign graduate students in American life sciences doctoral programs, university professors, industry scientists, and entrepreneurs, I wanted to create an interview environment where my respondents were completely at ease in terms of culture and language.

I knew that only these overachieving TBEs would only be willing to share their personal vicissitudes with a stranger if they found themselves in an environment where they felt at home and relaxed. Put differently, I did not want to diminish the quality of my interview data by my own inability to speak Chinese at the native professional level. After all, I was interviewing TBEs in Taiwan, not in the United States. Therefore, I should be interviewing in Chinese, not English. In addition, because I was interested in my subjects' immigration experience, a topic that can be highly emotional, I wanted

them to be able to share aspects of themselves with me using the same language in which they experienced and analyzed these emotions and experiences.

Again, drawing from my personal experience of growing up in a first generation immigrant family from Taiwan, I knew that there was a certain stigma when parents branded their children as either American-Born Chinese or American-Born Taiwanese whether or not the children were in fact born on American soil. From the parents' perspective, this appellation connotes an American of Chinese or Taiwanese descent who is completely acculturated in American culture, history, language, and values at the expense of their Chinese or Taiwanese heritage. I did not want to degrade the quality of my interview data by inviting TBEs to see me as either an American-Born Chinese or American-Born Taiwanese. To minimize this risk, I invested twelve months of full-time total immersion language training at National Taiwan University to improve my ability to speak and to read Chinese to the functionally native professional level. In so doing, I was able to maximize my ability to come across as a highly educated native speaker of Chinese in order to elicit responses to my questions from my respondents in their own native tongue.

## **B. SCIENTIFIC KNOWLEDGE**

As a way of self introduction at the beginning of each interview, I openly shared my background as a first generation immigrant from Taiwan. I also told my research subjects that my visit to Taiwan from April 2008 to May 2010 was my first trip to the island since 1976. From what I was able to gather, TBEs seemed pleased to learn that I have many things in common with them in terms of native land, years living in the U.S.,

transnational travel, and educational attainment. Our shared cultural, educational, geographic, and linguistic commonalities on both sides of the Pacific made it easier for TBEs to feel comfortable with me, which in turn, facilitated the ease with which to collect robust qualitative data.

Our commonalities, however, were not limited to the above variants. For some TBEs, my interest in and knowledge of the life sciences were also crucial to their willingness to spend two hours out of their busy schedule with me. For a particularly busy TBE, gauging my knowledge of the life sciences was like a type of mental tennis that informed him whether his interviewer was worthy of his time. One TBE, for example, about thirty minutes into our interview, subtly tested my knowledge of physiology before deciding to spend more time with me. His second test occurred about forty-five minutes into our interview, and was likely designed to test my knowledge of the American biotechnology industry.

His first test consisted of a description of homeostasis, in Chinese, without using the term homeostasis itself. Fortunately, I was able to understand his use of Chinese scientific terminology and intuitively responded with “homeostasis.” Only after seeing the smile on his face did I realize that he was testing me. His second test was cloaked in his description of a Taiwanese-American scientist whom he thought I should interview. Upon hearing his description of the work of this scientist, I named a major medical devices manufacturer headquartered in the Midwest. Fortunately, I responded correctly and he was willing to share more valuable information about the pioneer days of the biotechnology revolution with me.

### **C. TRANSNATIONAL IDENTITY**

Many TBEs were motivated by the intersecting desire to help the younger generation and to tell their stories to an informed researcher bounded by the rules of confidentiality. In these instances, helping a doctoral student with his data collection sounded like an altruistic thing to do. When the research topic happens to be the TBEs themselves, it naturally piqued their interests as people generally enjoy sharing their own experiences and lessons with others, especially the younger generation.

Despite their busy schedules, all of my subjects happily participated in my study and were, for the most part, generous with their time. Initially, I was surprised by the amount of time each individual TBE was willing to spend with me. But it did not take long for a pattern to emerge. That is, the interviews seemed to go beyond the willingness to help a graduate student gather data. In fact, the depth and details of their responses and the rapport established by our conversations suggest that something akin to a hybrid of data gathering and fireside chats was taking place. When I probed a few interviewees on this topic, the responses were consistent: They had each been pondering independently for some time about the questions I raised during my interviews. Yet, they had not had the opportunity to talk to anyone about them. When I asked why they did not talk to others within their own cohort, they explained that it was not something they can speak freely about with their peers.

Upon hearing this, I told my interviewees that I was puzzled, for only those in their same cohort can understand firsthand what they have experienced in their professional and personal lives as TBEs. Again, the unanimous response from the TBEs was that they could not let their guard down in front of their peers because doing so would signal

weakness among competitors within the nascent Taiwanese bioscience industry. But when I asked why they felt comfortable talking to me as if they were in a therapy session, again the response was that I, too, lived a transnational life, and have spent some thirty years in America before visiting Taiwan. And because I was bounded by my institutional review board (IRB) confidentiality agreement, I would always hold their responses in confidence.

As bioscience researchers and entrepreneurs who were intimately familiar with the new drug discovery process, they appreciated the immense power of the IRB approval process and all the strings that piece of paper attaches to the researcher. In so doing, TBEs saw in my interviews an opportunity to release their pent-up frustrations with bureaucratic obstacles in Taiwan. By the same token, why do the TBEs not talk to their Taiwanese colleagues? Again, the response was that they needed to talk to someone who understood firsthand the vicissitudes of transnational identities and yet is not part of the bioscience community. In this way, I happened to have stumbled into the lives of these TBEs at a moment in time when they were ready and willing to talk.

## **VI. CONCLUSION**

The cultural devotion to filial piety and the obligation of the Chinese and Taiwanese to their families and their native land are deeply embedded in what it means to be Chinese and Taiwanese. Given that analysts estimate 80% to 95% of firms in Taiwan are family based (Whyte 1996), how do we understand the role of filial piety, family, and native land in the management of Chinese and Taiwanese firms? This paper situates the researcher and respondents' personal experiences in their cultural, historical, and

political contexts. In so doing, this paper endeavors to explore how a social scientist's foreign language training, scientific knowledge, and transnational identity contribute to his ability to conduct fieldwork in a foreign land. This paper demonstrates the need for more qualitative research on Chinese and Taiwanese transnational entrepreneurs to be conducted in Chinese and focused at the intersection of biography and history.

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# What is Transnational about Transnational Bioscience Entrepreneurs?

## I. INTRODUCTION

Recognized to be among the world's most productive bioscience researchers and entrepreneurs, transnational bioscience entrepreneurs (TBEs) are building Taiwan's bioscience capability through a university-industry-government partnership. Recruited for their explicit and tacit knowledge of business and bioscience, TBEs are leading Taiwan's economic development beyond the accomplishments of the information and communications technology (ICT) industry. Resolving problems such as outdated regulations, haphazard research, inadequate quality controls, and insular attitudes, TBEs are leveraging their transnational identity to enhance Taiwan's competitiveness in the global pharmaceutical marketplace.

The pattern that emerges from the individual efforts of these TBEs is the transnational nature of their solutions to Taiwan's problems. More specifically, TBEs are individuals who solve problems that transcend political borders. By nature of their transnational identity, TBEs have the knowledge and flexibility to exercise their global sensibility to observe, analyze, and solve local problems. Throughout their daily existence, TBEs shuttle between multiple cultures, languages, and societies. It is this daily back and forth between different cultures, languages, and societies that affords TBEs the opportunity to sharpen their global sensibility.

The ability to employ their global sensibility is the defining element of what is transnational about TBEs. This paper is divided into three parts. First, I shall discuss the definition of transnational and my methodology. Second, I shall discuss why this

group of TBEs came to America and stayed, including the historical impact of the Formosa Incident upon their personal and professional lives. Third, I shall discuss how TBEs are developing Taiwan's bioscience industry to meet world-class standards and leading this island-nation beyond the ICT-based economy. In conclusion, I shall provide insight into the reason why Taiwan so desperately needs TBEs to jumpstart its bioscience project.

## **II. BACKGROUND**

### **A. TRANSNATIONAL DEFINED**

In an effort to break free from the sojourning nature of immigrant experiences, several anthropologists coined the terms "transmigrants" and "transnational migration" to more accurately represent individuals "whose daily lives depend on multiple and constant interconnections across international borders and whose public identities are configured in relationship to more than one nation-state" (Glick Schiller *et al.* 1992; Basch *et al.* 1994). In this definition by Glick Schiller *et al.* and Basch *et al.*, transmigrants' daily lives depend on connections across international borders.

Later Glick Schiller *et al.* defined transmigrants as individuals who "maintain connections, build institutions, conduct transactions, and influence local and national events in the countries from which they emigrated" (Glick Schiller *et al.* 1995).

Reflecting the emphasis within each discipline, economic geographer Yeung wrote that transnational entrepreneurs must have the following three attributes:

- (1) control of resources in different countries (e.g. capital, information, and knowledge);
- (2) capabilities in strategic management in different countries (e.g.

innovative and creative deployment of resources); and (3) abilities to create and exploit opportunities in different countries. (2002).

A troika consisting of sociologists Portes, Haller, and Guarnizo defined transnationalism as the “continuing relations between immigrants and their places of origin and how this back-and-forth traffic builds complex social fields that straddle national borders” (2002).

Management scholars Drori *et al.* proposed an analytical framework that viewed transnational entrepreneurship “as a social realm of immigrants who operate in a complex, cross-national habitus, consisting of dual cultural, institutional and economic features from which actors can formulate their entrepreneurial strategies of actions” (2006). Like Portes, Haller, and Guarnizo, Drori *et al.*’s framework limits the number of “cultural, institutional, and economic features” to two.

In the scholarly definitions discussed above, the usage of the nouns “nation-state,” “countries,” “national borders,” and “cross-national domains” proclaims the existence of political borders. To this extent, it is important for researchers to note that a defining feature of transnational migrants’ lives is the diminishing importance of national borders and the ability of cultures and political ideas to transcend the water’s edge (Glick Schiller *et al.* 1995).

The following four quotes from TBEs are just a sample of the multiple data point which make clear that TBEs’ activities go beyond national borders and are, therefore, transnational:

Dr. George Pan (a pseudonym): You know that we have operations in China. So our relationship building is far beyond politics. You can call yourself Taiwanese or Chinese, but ethnically, racially you belong to this common class.

Dr. Glen Zheng (a pseudonym): People return because they want to return to a place of familiarity.

Dr. Vance Yen (a pseudonym): After all, my roots are on Taiwan. This time, I decided to return to Taiwan because it's natural for migrating birds to return home. I also wanted to help Chinese people to do something.

Dr. Martha Tan (a pseudonym): I returned to Taiwan because my husband had already returned to Taiwan.

Dr. Kevin Du (a pseudonym): How about China? Why not? I have no political issue. I want to fully utilize my capability as a human being.

What is significant here is that none of the TBEs mentioned that they are returning to their nation-state. Instead, what they do mention goes beyond politics: a place of familiarity, biology, race/ethnicity, human emotion, and reaching their full potential.

Throughout their daily lives, TBEs shuttle between multiple cultures, languages, and societies. Moving back and forth between different aspects of their globalized existence, TBEs sharpen their global sensibility. Before leveraging their global expertise and social networks, TBEs use their global sensibility to observe, analyze, and solve local problems. This global sensibility is the defining element of what is transnational about TBEs. My theoretical contribution, therefore, is in finding that transnational bioscience entrepreneurs, by nature of their transnational identity, possess a global sensibility that includes cultural, linguistic, and social flexibility.

TBEs' global sensibility resembles W. E. B. Du Bois's concept of double consciousness described in his "Strivings of the Negro People." Dickson. D. Bruce explained:

. . . the double consciousness of being both an American and not an American—by double consciousness Du Bois referred most importantly to an internal conflict in the African American individual between what was "African" and what was "American." (Bruce 1992, p. 301).

TBEs' experiences entailed earning their doctorates as international students from Taiwan in America, working on their ventures, research, and advocacy as Americans,

Chinese, and Taiwanese in American society, and investing in China and Taiwan as overseas Chinese and Taiwanese. Depending on the observer's perspective, TBEs are perceived as Americans and not Americans, Chinese and not Chinese, and Taiwanese and not Taiwanese. This triple consciousness is inextricably linked to the internal conflict between what is (and is not) American, Chinese, and Taiwanese. This internal conflict can be detrimental and beneficial. Building on Shane and Venkataraman's (2000) definition of an entrepreneur as someone who "discovers, evaluates, and exploits opportunities," my current working definition of transnational (bioscience) entrepreneurs is:

Transnational (bioscience) entrepreneurs are individuals who use their global sensibility to discover, evaluate, and exploit opportunities while shuttling between multiple cultures, languages, and societies.

## **B. METHODOLOGY**

For the purpose of this study, I used an inductive method of grounded theory building. Grounded theory building is a constant bi-directional process involving data collection, coding, memoing, and theory generation that is solidly based in reality. The primary goal of grounded theory is to generate theory rather than to verify theory. This process aims to formulate a theory that captures the social reality as people in the situation understand it (Glaser and Strauss 1967; Strauss 1987; Yin 2003). I used multiple sources of evidence, including (1) archival records; (2) organizational documents; and (3) open-ended, face-to-face in-depth interviews to yield conclusions that are convincing and accurate. To increase reliability, I maintained a chain of evidence (Yin 2003). The use of multiple sources of evidence to study TBEs who have commercial interests in

Taiwan but shuttle between Taiwan, the U.S., and China required me to be in Taiwan to collect this data.

Between May 2008 and May 2010, I collected archival records in Taipei, Taiwan, about TBEs from sources such as individual CVs, Web of Science publication database, Google and Yahoo! searches, and organizational documents. Archival records on Taiwan's bioscience industry come from Ministry of Economic Affairs's *Biotech Industry in Taiwan* and major Chinese-language periodicals, including *Business Weekly*, *China Times*, *Commercial Times*, *CommonWealth*, *Economic Daily News*, *Global Views Monthly*, *Liberty Times*, and *United Daily News*. Organizational documents of the firms founded by TBEs include annual reports, company brochures and web sites, financial, new drug discovery, and clinical trial milestones data from Google, *New York Times*, *Wall Street Journal*, and Yahoo searches.

Although my subjects have lived in the U.S. for approximately 30 years, TBEs are more forthcoming about the vicissitudes of their odyssey when conversing in Chinese primarily for two reasons: (1) They were born and raised in Taiwan and did not leave the island until they finished college; (2) The sensitive nature of my interview questions triggers memories of events that are personal and thought of by my subjects in Chinese. Conducting interviews in Chinese affords TBEs the ability to articulate their recollection and reflection of the social reality as they themselves best understood it. Had I conducted these face-to-face interviews in English, my subjects would not have had any difficulty understanding my questions, however, the richness of their responses would have been limited by their English speaking abilities. With the exception of three interviews where the respondents felt more comfortable switching between Chinese and

English, interviews with the remaining 28 TBEs were conducted entirely Chinese. About 90% of the first interview was conducted in English because the TBE preferred to speak English. The second interview was in Chinese during the first half and English the second half – at the request of the TBE. We switched to English because this specific TBE said that he thinks in English, not Chinese, making English his preferred language. The third interview was conducted almost entirely in English once pleasantries were exchanged. The transition to English was natural and the TBE did not explain his decision to switch to English. He clearly preferred to speak English.

My decision to conduct interviews face-to-face is grounded in the necessity to establish legitimacy and to cultivate trust with my respondents. Interviewing face-to-face is also important because it creates an opportunity to decode the complex American, Chinese, and Taiwanese cultural-specific nonverbal cues (e.g. facial expressions, gaze, gesture, bodily movements, position, and stance) given by TBEs. This is significant because nonverbal cues can carry between four and eight times more information than verbal language (Elman and Kennedy-Moore 2003; Henley 1975). Unless my respondents felt that I was legitimate and trustworthy, it is unlikely that they would feel relaxed enough to share their personal and professional experiences with me. I had the usual items of legitimacy: institutional review board approval and confidentiality form, Cornell University email address, invitation letter from my dissertation committee, junior visiting scholar affiliation at Academia Sinica, Taiwan, business card, and suit. Within the tight social network of which TBEs are a part, I suspect being referred by three highly successful and credible TBEs near the beginning of my interviews gave me the legitimacy that counted the most.

In August and October 2009, I conducted two pilot face-to-face interviews to test the efficacy of my questions and modes of establishing rapport. To complete my interviews I continued to be based in Taipei, Taiwan, until May 2010. My archival research suggests that to date, Taipei can count approximately 50 TBEs who have worked in American academia and industry for some 30 years before deciding to invest in Taiwan. The small number of TBEs among the thousands of Taiwanese-American bioscientists is consistent with the findings of scholars in sociology (Portes 2003; Waldinger 2009). Portes found that the small number of transnationals among Columbian, Dominican, and Salvadoran immigrants in America were “solid, family men [who are] educated, well-connected and firmly established in the host country” (Portes 2003; Waldinger 2009). In contrast to Portes’ findings, 26% of the TBEs are women. I identified my research subjects (n=31) through archival research and snowball sampling. Based on my own estimate, I interviewed 62 percent or 31 individuals from a cohort of 50.

Table 1. Profile of Research Subjects

	<b>Education</b>	<b>Men</b>	<b>Women</b>	<b>Returnees</b>
PhD	24	19	6	17
MD/PhD	3	2	1	3
MS	1	0	1	0
PharmB	2	2	0	0
DVM	1	1	0	1

Eighty-seven percent (twenty-five) of my subjects earned doctorates in the life or physical sciences from leading American research universities (See Table 1). Nearly ten percent (three) earned both an M.D. and a Ph.D. Three percent (one) earned a

master's degree. Three percent (one) earned a doctor of veterinary medicine degree. Six percent (two) hold a bachelor's of pharmacy degree. Sixty-eight percent (twenty-one) of my interviewees are returnees, defined here as individuals who have decided to spent at least six months per year in Taiwan or individuals who have sold their homes in the U.S. and returned to Taiwan permanently. Twenty-six percent (eight) are women and eighty-one percent (twenty-five) are men.

I contacted every TBE initially by email and followed-up with a telephone call either directly to the TBE or to his / her executive assistant to explain the nature of my email and answer any questions. Many TBEs accepted my email invitations personally within 24 hours. Every interview was digitally recorded. I conducted in-depth interviews with all 31 TBEs. With the exception of two interviews that took place in coffee shops, all the TBEs were interviewed in their respective offices. Initial interviews ranged between 90 to 210 minutes, with an average of 120 minutes. Follow-up interviews ranged from 30 to 90 minutes, with an average of 60 minutes. All subjects were guaranteed confidentiality and anonymity. As a result, pseudonyms are used throughout this paper to protect the identity of my research subjects. I transcribed and translated (from Mandarin Chinese to English) relevant sections of each interview for coding and analysis. I have shared this report with participants to ensure accuracy, generate additional evidence, and increase construct validity (Yin 2003). I also conducted follow-up interviews to discuss new insights in depth until conceptual saturation. Follow-up interviews were spaced out by several weeks in order to allow for data analysis and relationship building. My fluency in Mandarin Chinese and cultural competency greatly facilitated my effort to cultivate the trust of my research subjects.

This sample is biased toward bioscience entrepreneurs who either decided to invest in Taiwan or travel to Taiwan on a frequent basis. This means that bioscience entrepreneurs who either do not have commercial interests in or do not visit Taiwan on a regular basis were excluded from this study. Because TBEs are individuals who fit a specific, well-defined profile, snowball sampling is an efficient method to identify and to reach them. At the same time, the data generated through snowball sampling is by no means random; it is also not generalizable to a larger group of individuals. Yet, my findings may throw light on our understanding of similarly situated individuals who have undergone similar social processes (Blair-Loy 2003). Naturally, individuals who do not fit the profile of TBEs and are not familiar to other TBEs were not included in this study (Atkinson and Flint 2001).

### **III. IMMIGRATION**

#### **A. LEAVING COUNTRY OF ORIGIN**

Upon completion of their postdoctoral training, TBEs did not return to their country of origin. Instead, they stayed in America for personal and professional reasons. TBEs cited the lack of employment opportunities for highly trained scientists in mid-1970s Taiwan as their primary reason. According to Dr. Matilda Duan (a pseudonym), a highly distinguished scientist and entrepreneur who returned to her country of origin in the early-2000s:

When I graduated from college in Taiwan in the late-1960s, I knew that I really wanted to pursue academic medicine so I had no choice but to go the the U.S. for graduate school. No, I did not say to myself that I wanted to become an American as the reason to go abroad.

If I returned to Taiwan right after earning my PhD, I would have found a rudimentary academic environment on campus, in labs, absence of the reagents needed for experiments, and an inability to leverage the skills I had learned in graduate school for lack of equipment and related reasons.

Dr. Glen Zheng (a pseudonym) faced the same situation. He explained, “We left Taiwan more than 30 years ago not out of choice, but necessity. Taiwan simply did not have the right environment to do scientific research.” Likewise, Dr. Howard Hsieh (a pseudonym), a world-renowned scientist of the highest caliber, noted, “We had no idea what would become of us yet we wanted to study science with a passion. So we went abroad. But we did not have immigration per se on our minds.” What TBEs had on their minds was science. They excelled in schools on Taiwan and in America through a combination of hard work and raw intellect. TBEs found motivation to study abroad in America in their love of science and a desire to pursue science-based careers.

If mid-1970s Taiwan had the economic prowess that it has today to build a bioscience industry from scratch, then most of the TBEs would have returned to Taiwan shortly after their postdoctoral work. There simply were no jobs for science doctorates in 1970s Taiwan. Dr. Albert Wu echoed:

When our children were little, biological and biomedical research funding and infrastructure in Taiwan were way behind the U.S. Therefore, it would have been very difficult for those who had the space to develop their skills in the U.S. to return to Taiwan, in light of the research differential and their children’s education. Even today, there still exists some distance between Taiwan’s elite universities and their American counterparts.

Given that the island’s nominal per capital GDP was \$394 (at current prices) in 1970 and \$2,397 in 1980, (Taiwan Executive Yuan 2008), it makes sense that Taiwan was unable to afford the requisite high-priced laboratory equipment and reagents for bioscience research and development. As we can see, TBEs studied and remained in

America out of economic and intellectual necessity. It took another 25 to 30 years before Taiwan was had the economic wherewithal for building a bioscience industry. Consequently, some TBEs became research scientists in pharmaceutical firms, while others began their careers as assistant professors in research universities, and still others as stay at home moms. With minor exceptions, TBEs followed a career trajectory that saw entrepreneurship as an option either once they made breakthrough laboratory discoveries or through serendipity.

According to Dr. Stewart Wong (a pseudonym), a world renowned bioscientist with a highly distinguished career in academe, he and his cohorts left Taiwan because it was an authoritarian state and became returnees after they were finally convinced of the island's full-fledged democratization:

We left Taiwan for a more open society that offered us space to explore. Taiwan used to be a closed society. There was no special reason to return to Taiwan. But later on, Taiwan's entire society opened up, it democratized. I think this is very important.

A scientist cannot just stay within a given, predetermined discipline. If Taiwanese society did not open up, there was really no use for us TBEs to do anything even if we decided to return . . .

For Dr. Wong, assuming the responsibilities of a scientist who are actively engaged in the public sphere is fundamental to how he was taught in American graduate school by watching the political activism of his dissertation advisors. For Dr. Wong, unless Taiwanese society fully democratized, it would not be able to foster an environment that embraces Dr. Wong's need to work simultaneously at the leading edge of bioscience entrepreneurship and democracy.

For Ms. Christine Liu (a pseudonym), a highly successful repeat bioscience entrepreneur, extraterritorial loyalty demands through campus surveillance by Chinese

Nationalist Party or KMT spies was a factor in why she and her husband did not return to Taiwan when they finished graduate school in America. Ms. Christine Liu explained:

My husband was head of the Taiwanese Student Association at First National Public University [a pseudonym], the epicenter of Taiwanese student activism in the U.S. during the 1970s. We were relatively low key. We did not even join the pro-Taiwan independence movement. We simply cared deeply about events on Taiwan. On campus, those who roomed with KMT agents used the Taiwanese *liuxuesheng* network to communicate who were these agents and how much the KMT government paid for each report filed by the agents.

My husband and I were both planning to return to Taiwan as soon as we finished our graduate degrees. My husband had an offer from a prestigious university here in Taiwan, however, as we were preparing our move back, we learned that the KMT government placed us on a blacklist and would not let us return. We always wanted to return, but we were not able to, so we just stayed in the U.S. to work and to raise our kids. Then after our kids went to college, and Taiwan's situation improved, we somehow moved back.

Ms. Liu and her husband were student leaders while earning their graduate degrees in America. At First National Public University (a pseudonym for a major American research university), a major center of bioscience research and Taiwanese student activism in the U.S. during the 1970s, Ms. Liu and her husband supported the Taiwanese Student Association and participated in its conversations with students from China and Hong Kong over the politics of the Gang of Four. Because the KMT government were on targeting students like Ms. Liu and her husband who preferred to name their student association with the words "Taiwanese" or "Formosan" and not "Chinese," her husband's leadership in the student association triggered surveillance by KMT agents to file reports to the KMT government on Taiwan about the couple's activities. To be sure, the couple did not overtly advocate for Taiwan independence. They simply wanted to more accurately name the Taiwanese student association at First

National Public University. As a result, KMT government blacklisted the couple and refused them entry visas. The couples' American campus activities led to regular surveillance of and visits by KMT agents to their families on Taiwan. Despite this difficult experience, as tempered by the island's democratization, Ms. Liu still decided to return as a bioscience entrepreneur in hopes of successfully bringing to market the first new drug developed and commercialized on Taiwan.

Dr. Chris Fan is a highly successful repeat bioscience entrepreneur. In 1990, Dr. Fan's first startup, Pacific Biotech, was acquired by Eli Lilly and Company (Brown 1991). In 2001, his second startup, Wyntek Diagnostics, was acquired by Genzyme Corporation for \$65 million (*Boston Business Journal* 2001). Dr. Fan's graduate education in the U.S. was not limited to the life sciences. According to Dr. Fan, his pro-democracy and human rights advocacy began shortly after reading a critical history of the geopolitics of China-Taiwan-U.S. relations that was banned in Taiwan:

When I was in graduate school, I read George H. Kerr's *Formosa Betrayed* about six months after I arrived in the U.S. and realized that the KMT lied to us. This was about 1970. One afternoon, the campus antiwar society approached me to see if I would be a panelist at their seminar that same evening.

The antiwar society was against the training of nearly twenty Taiwanese military academy students on American guidance missile technology at MIT. The student society wanted me to give some background information on the dictatorship of Chiang Kai-shek and I agreed.

I talked about how Chiang was a dictator and that there was no democracy and human rights on Taiwan. I also said that the U.S. government should support democracies, not dictatorships. While I was talking, there were KMT-sponsored Taiwanese *liuxuesheng* who were taking pictures of me and American students in the audience got a hold of these photographers.

For several weeks after this seminar, the campus newspaper published daily reports explaining in great detail how some Taiwanese graduate

students, who were also KMT agents at MIT, conducted extraterritorial surveillance of fellow Taiwanese-American graduate students for any activities in the U.S. that could be considered to be against the Chiang Kai-shek regime.

Then other campus newspapers in the area also started to carry the same stories. This was how the story got bigger and bigger. And so I was blacklisted by the KMT government and denied entry to Taiwan.

In 1970, amidst frequent campus protest against the Vietnam war, Dr. Fan denounced Chiang Kai-shek's dictatorship and criticized America's support of the Chiang regime at a student antiwar seminar at Massachusetts Institute of Technology. MIT enjoyed extensive involvement in the American military industrial complex. The campus antiwar society, a strong opponent of MIT's training of KMT military officers in the use of American guidance missile technology, sponsored the seminar.

Dr. Fan's courage to describe Chiang Kai-shek as a dictator and inform his audience that there was no democracy and human rights on Taiwan triggered KMT agents to file reports of his so-called unpatriotic activity. For this, the Chiang regime blacklisted Dr. Fan and denied him entry visas. Dr. Fan's frankness at the antiwar seminar and the KMT agents' decisions to photograph Dr. Fan led to extensive coverage in student newspapers about how the Chinese Nationalist Party or KMT exercised extraterritorial loyalty demands through campus surveillance by spies. Consequently, other universities in Boston began to publish the same articles. Dr. Fan's boldness promoted greater understanding of the extent to which KMT spies conducted extraterritorial surveillance of Taiwanese graduate students at major American research universities. Ms. Liu and Dr. Fan's experiences with KMT's exercise of extraterritorial loyalty demands through campus surveillance by graduate student-spies confirm earlier studies of Haitian and Eastern Caribbean migrants in New York by anthropologists (Basch *et al.*

1994)

## **B. THE FORMOSA INCIDENT**

On 10 December 1979, the newly formed *Formosa Magazine* celebrated International Human Rights Day in Taiwan's southern port city of Kaohsiung. This celebration took place despite the government's prohibition against any public display of political opposition under martial law. Building on the momentum they had gained in the previous months, supporters of *Formosa Magazine* decided to protest against the KMT's stranglehold on power and the absence of any progress toward democracy on Taiwan. According to one participant of the Kaohsiung Incident who is now a professor at National Taipei University of Education's Graduate School of Taiwanese Culture, "[the protest] was not a single incident — it was the culmination of 20 to 30 years of the pro-democracy movement. The people rebelled against an authoritarian government . . . the more [protesters] the [government] arrested, the more people came out to support [the protest] (Chao 2009). During the event, protesters clashed with military police, leading to eventual arrest, torture, coerced confessions, and trial by military tribunal of all eight leaders of *Formosa Magazine* (Formosa Association for Public Affairs 2001). Although the KMT government meted out sentences ranging from twelve years to life imprisonment to the key organizers, major figures of the Formosa Incident would later become president, vice president, and premier of Taiwan after tectonic shifts in the Taiwanese political landscape combined with the Democratic Progressive Party's entrance into the Presidential Office in 2000.

Lin Yi-hsiung, a provincial assemblyman elected at the time of the Kaohsiung

Incident, was arrested by military police along with fellow human rights activists. According to multiple sources, frustrated by Lin's refusal to cooperate with KMT interrogators, on 28 February 1980, assassin(s) went to Lin's house, which at the time was already under twenty-four hour KMT surveillance, and stabbed Lin's mother and twin daughters to death (Roy 2003). Lin's third daughter, Judy, who was eight years old when she was stabbed six times and left to die, miraculously survived the attack (Linton 2007). To this day, the murderers have yet to be identified. Released from prison in 1984, Lin, a National Taiwan University Law School graduate, became a senior associate researcher at Cambridge University and earned a master's degree in public administration from the Kennedy School of Government at Harvard University (Chilin Foundation 2006). In 1998, Lin assumed the post of chairman of the Democratic Progressive Party and led the DPP to its first island-wide electoral victory at the presidential level.

During my interview on Taiwan with Dr. Chris Fan, I learned that beginning in early 1979, several TBEs maintained a hotline with the founders of *Formosa Magazine*. Aware of the risk to themselves and their families, the magazine founders wanted a direct channel in the U.S. that could inform the American media of events related to *Formosa Magazine* and its advocacy of human rights and democratization on Taiwan. When the 28 February 1980 stabbings took place, several U.S.-based TBEs risked their lives to provide Judy, the third daughter who was stabbed six times and left to die, with a loving American family with whom she lived until she left for college.

When the Kaohsiung / Formosa Incident took place in 1979, Dr. Fan chaired the Formosa Association for Human Rights (FAHR), a national organization based in

America. The main goal of FAHR was to support Taiwan's opposition party and U.S.-based pro-democracy activities. FAHR kept the American media informed of events in Taiwan and wrote to the U.S. Congress to request assistance whenever any pro-democracy activists were jailed by the KMT. Dr. Fan described his continued support of pro-democracy activities in Taiwan:

When KMT deported Linda Gail Arrigo, we thought that we needed to inform the American media. We knew that if the American media did not report this event, then no one would care about it. Originally, Linda Arrigo planned to stay at her parents' San Diego home for a few days before flying to Washington, D.C. to visit various members of Congress.

But I suggested that she should fly to major U.S. cities with significant Taiwanese populations for a total of ten or so cities before arriving in Washington, D.C. Because we thought that airports are natural settings for holding news conferences, prior to Linda Arrigo's arrival at each city, we had informed local media, including print and television, human rights organizations, and the Taiwanese community.

We educated local media about Linda Arrigo's background and how her husband is a political prisoner in Taiwan because of his role in the Formosa Incident. We made sure that there were 40 to 50 local Taiwanese waving the *Formosa Magazine* banner along with those that said "Human Rights for Taiwan" to welcome Linda Arrigo at each airport.

Beginning with San Diego, Los Angeles, San Francisco, Seattle, Chicago, etc., the media in every metropolitan area showed a lot of interest. Because the local media gave this story so much coverage, the *New York Times* had no choice but to cover it, too. So before Linda even arrived in Washington, the media was well informed of the challenges facing Taiwan.

Dr. Fan's pro-Taiwan and anti-KMT stance led him to be an ardent U.S.-based supporter of Taiwan's pro-democracy activities. He transferred many of the lessons he learned as a highly successful and innovative bioscience entrepreneur to his leadership of the Formosa Association for Human Rights. For example, he leveraged sophisticated marketing techniques – holding news conferences in major international airports throughout the U.S. and petitioning a well-known human rights advocate, Senator Ted

Kennedy – to heighten public awareness and to change American foreign policy toward Taiwan. To guarantee success of his marketing campaign, Dr. Fan did more than simply mail the thousands of signatures he collected to Senator Ted Kennedy. To maximize impact, he had the signatures hand delivered through a trusted intermediary. In addition, instead of trying to convince a national media outlet such as the *New York Times* to cover the Kaohsiung / Formosa Incident, Dr. Fan invited local media to American researcher and wife of Shih Ming-teh, a *dangwai* or opposition party activist who was jailed for his role in the Formosa Incident, Linda Arrigo's news conferences at major airports throughout the U.S. In so doing, the *New York Times* was left with little choice but to compete with local media in its own coverage of the Formosa Eight trial.

Dr. Fan recounted:

We also wrote letters and brought them to different campuses. Students were highly supportive and many signed petitions and listed their contact information. There were thirty signature lines per petition letter. We collected all the letters here and organized them into volumes. The stacks were this high.

When we sent all of the volumes to Washington, and our friends took the letters to Senator Ted Kennedy, the Senator remarked how he has never seen this many letters in support of a single issue. This was how we won support in Congress.

As a result, the U.S. pressured Chiang Ching-kuo to hold open trials for those arrested, meaning that the media was welcome to attend. Chiang Ching-kuo agreed . . .

Dr. Fan's triangulation strategy of educating American media with the necessary background knowledge, petitioning Senator Ted Kennedy to win American Congressional support, and scheduling Linda Arrigo's visits with key U.S. legislators on the Hill succeeded in pressuring Chiang Ching-kuo, Chiang Kai-shek's son, who was elevated to the presidency of the Republic of China on Taiwan in 1978, to hold an open

trial for the Formosa Eight. Dr. Fan's triangulation strategy also illustrate the depth of Dr. Fan's understanding of how democracy works in America, and, in turn, how to leverage his sophisticated understanding to devise a strategy for the promotion of human rights and democracy on Taiwan.

Senator Kennedy and the American Congress intervened and Chiang Ching-kuo allowed open trials for the Formosa Eight. Dr. Fan recalled the results of the open trial:

Each of the Formosa Eight was very brave. Facing certain death, they nonetheless gave succinct testimonies of the need for democracy and human rights on Taiwan – something obvious in the U.S. At first, KMT propaganda labeled the Formosa Eight as Communist insurgents.

Journalists from the *China Times*, however, were excellent because they wrote down verbatim each of the testimonials and published all eight of them. When *China Times* published the testimonials the next morning, the public realized that the content of the testimonials ran counter to KMT propaganda.

As a result, things really turned around overnight [in favor of the *dangwai* activists]. Foreign media also gave a lot of coverage to the story. This is a major contributing factor as to why Taiwan's democratization accelerated in the 1980s and why the Democratic Progressive Party was formed a few years later.

As luck would have it, a major Taiwanese newspaper, *China Times*, decided to test the elasticity of the island's martial law and published verbatim transcriptions of the Formosa Eight's 1980 testimonials. The published testimonials afforded the Taiwanese people a rare opportunity to judge for themselves the *Formosa Magazine* founders's impetus and actions. It also encouraged the Taiwanese people to think about the need for as well as the pace of democratization on Taiwan. Dr. Fan's advocacy in America led to a rare opportunity for the Taiwanese people to analyze on their own the KMT regime and the Formosa Eight's versions of the Formosa Incident. Consequently, this rare opportunity encouraged the Taiwanese people to demand that the island's

democratization assume a faster pace.

To place Dr. Fan's advocacy in context, it is worth noting that for a critical subset of TBEs, the decision to return to Taipei hinged on Taiwan's transformation into a legitimate democracy that respects human rights. Thanks to middle-class intellectuals, including academics, attorneys, and scientists who patiently paved the path toward democracy and human rights on Taiwan (Chu 1994), the opposition Democratic Progressive Party (DPP) entered the Presidential Office in 2000. Consequently, for the first time since the early 1970's, TBEs were allowed to return to Taiwan for personal and professional visits because the DPP nullified many TBEs' longstanding memberships on the KMT's blacklist. Concurrently, many TBEs began contemplating how best to contribute to society as they enter the final chapter of their careers. Thus, beginning in 2000, many TBEs became returnees to Taiwan because they found resonance with the Taiwanese scientific elite's commitment to developing bioscience in concert with democracy and human rights.

#### **IV. DEVELOPING TAIWAN'S BIOSCIENCE CAPABILITY**

##### **A. SCIENTISTS ENGAGED IN THE PUBLIC SPHERE**

An important segment of TBEs engaged in pro-democracy and human rights advocacy for Taiwan, beginning with their American graduate school days. Given these TBEs' longstanding engagements in science and politics, they were not easily impressed by the high government titles of the Taiwanese scientific elite. Just as altruism and social justice have served as the moral compass of the TBEs who engaged in pro-democracy

and human rights advocacy, they looked for demonstrations of similar values in the professional and personal lives of Taiwan's scientific elite. Having devoted their own personal lives to transforming Taiwan from an island under martial law to the first democratic state in Chinese history with a freedom of speech that was unimaginable while Chiang Kai-shek was in power, it is critical for these TBEs that Taiwan's scientific elite demonstrate the same ardent commitment to developing democracy and human rights in concert with bioscience.

TBEs trace the genesis of their social advocacy to the mentorship of their dissertation and post-doctoral advisers and distinguished researchers in industry. Having graduated from college in Taiwan before leaving for the U.S. to earn their doctorates, TBEs witnessed their American mentors's support of the Civil Rights Movement and protest against the Vietnam War, which, in turn, influenced their own decisions in 1970 to lend public support to China and Taiwan's claim to sovereignty of the seven square mile Senkaku or Diaoyu Islands. The Diaoyu Islands are located 116 miles northeast of Taiwan. In response to a 1969 report of the United Nations Economic Commission for Asia and the Far East which suggested the possibility of a large oil reserve below the Islands (GlobalSecurity.org 2010), a three-way sovereignty dispute between China, Japan, and Taiwan ensued. Despite the 1972 decision by Washington to hand over Diaoyu to Japan as part of the dawn of the American Military Government occupation of Japan, the sovereignty dispute continues to this day.

As *liuxuesheng* or study abroad students, TBEs organized the first conference to examine the Diaoyu sovereignty issue, which took place at Princeton University in December 1970. Diaoyu spawned many more such *liuxuesheng*-organized

conferences at the University of Michigan at Ann Arbor, University of California at Berkeley, Harvard University, Massachusetts Institute of Technology, the University of Chicago, Yale University, and other American campuses (Tong 2009a). This international controversy between China, Japan, Taiwan, and the U.S. over the sovereignty of a little known archipelago became the source of social cohesion which affirmed TBEs' identity as transnational political activists who are equally devoted to science. The Diaoyu Islands gave the *liuxuesheng* an early but timely opportunity to put into practice what they learned firsthand from their American mentors – scientists are responsible citizens who are actively engaged in the public sphere – so much so that the most forceful protests against and claims for Diaoyu's sovereignty came from the Taiwanese *liuxuesheng* in the U.S., not their counterparts anywhere else in the world.

Dr. Stewart Wong, a world renowned bioscientist and entrepreneur, recalled how his own mentor in graduate school along with other world-class life scientists on campus modeled the behavior of scientists who are actively engaged in the public sphere:

If you stayed in the U.S. for a long time, you'll see that many American scientists are not only aware of their own science, but also have deep concerns for society. When we were at First Prestigious National University (a pseudonym), there was a geneticist who later won the Nobel Prize for his work on corn. It was just amazing how much time he spent monitoring the persecution of Russian scientists . . .

A famous First Prestigious National University scholar who conducted research on evolution was very outspoken in his protest against the Vietnam War. He knew of events in Taiwanese politics that I had never heard of while growing up on Taiwan. These scientists partnered with Amnesty International to advocate on behalf of political prisoners in Taiwan in the 1970s by putting up advertisements in the *New York Times* . . .

As graduate students, Dr. Goldberg's (a pseudonym) ability to recite passages from Martin Luther King's books made a deep impression on us

*liuxuesheng* who were unfamiliar with American society. I tell my own students now that if all they learn is the technical aspects of science, eighty percent of that knowledge will become obsolete in a short period of time. Then what have you learned?

For Dr. Wong, his mentor and other distinguished life scientists on campus impressed upon him that graduate training is about more than just absorbing technical knowledge. Dr. Wong learned this lesson well. Having witnessed firsthand how bioscientists of great distinction cared deeply for the public weal, to this day, Dr. Wong continues to ask his students what they have learned beyond the technical aspects of science in their everyday lives as graduate students. It is clear that the political advocacy made by great American life scientists on behalf of Russian scientists, political prisoners on Taiwan, and the Civil Rights of African Americans inspired Dr. Wong and his cohort to continue their mentors' political and scientific legacy. Similarly, Dr. Wong tries hard to instill in his own students that science and scientists abhor a vacuum. When placed in its proper socio-historical context, the 1970 Princeton conference on the Diaoyu sovereignty issue organized by Dr. Wong and his cohorts can trace its lineage to the world-class life scientists who simultaneously served as research advisers and scientists who are actively engaged in the public sphere.

The large scale social protest over the Diaoyu sovereignty issue grew into such a powerful collective experience for this cohort of *liuxuesheng* that many of them became lifelong friends. In fact, in May 2009, the National Tsing Hua University (commonly recognized as Taiwan's Massachusetts Institute of Technology in terms of its prominence in science and engineering) hosted a symposium highlighting its collection of archival materials and published works about the Diaoyu sovereignty protests. As part of the celebration, NTHU invited many protest organizers from forty years ago to

discuss the legacy of their social cohesion. During these discussions, those who advocated for China's claim of sovereignty over that of Taiwan or Japan confessed that the Vietnam War and ethnocentrism influenced their overly optimistic view of China under Mao (Tong 2009b), an opinion that was popular on American campuses in the 1960s and 1970s.

TBEs are as committed to bioscience entrepreneurship as they are to human rights advocacy because the intrinsic idealism that impelled them toward bioscience also motivated them toward human rights advocacy. Given their disposition toward idealism, they were drawn to spheres in which their concern for the common weal can be easily manifested. Witnessing their mentors's personal involvement in the Civil Rights Movement and protests against the Vietnam War reassured TBEs that their concern for the common weal is consistent with the professional identity of a life scientist. Although their concern for the common weal was always a part of their identity, the watershed moment did not come until TBEs saw the spirited political activism of their American graduate school mentors. Remaining true to their mentors' vision of scientists who are responsible citizens actively engaged in the public sphere, TBEs were only willing to consider returning to Taiwan after the island nation had achieved certain milestones in its transition to democracy.

When I asked Dr. Wong why he thought he and his cohort could help develop Taiwan's nascent bioscience industry, he explained:

Taiwanese society opened up recently. As a result, it became aware of its needs for expert opinions. At the same time, our opinions are much more dedicated to Taiwanese society than the opinions of Nobel Prize winners because we grew up here and are familiar with this society. We have experience here and know Taiwan's challenges. This is a big difference.

Let's take Singapore, for example. Singapore invited many distinguished individuals to visit and to give expert advice. But because they did not understand Singapore, they simply gave raw advice that is not customized to Singapore's unique experience.

Johns Hopkins University tried to start a medical school in Singapore and failed because Johns Hopkins thought that it could succeed with an American model. Sometimes things of this sort are not transplantable from country to country.

Of course, it takes me over a month or even two months to do something that generally takes a week in the U.S. There are things that are unique to Taiwan that are difficult for an outsider to understand. But because I grew up here, I know and understand what they are.

I think this is an opportunity. We have many experiences in the U.S. that are applicable to today's Taiwan. We have many connections in the U.S. that can directly benefit Taiwan. Relatively speaking, we can probably make a greater contribution to Taiwanese society.

Dr. Matilda Duan found the opportunity to advocate her vision of a bioscience industry in front of Taiwanese policymakers. Dr. Duan spent considerable energy devising a strategic plan for Taiwan's bioscience industry. The purpose of a high-level strategic plan is to identify competitive strengths and eliminate duplication of resources and functions along Taiwan's bioscience value chain. She did so with full knowledge that to be a true scientist, she must also be actively engaged in the public sphere. And to be actively engaged in the public sphere, she must spend time outside her laboratory and advise policymakers on how to transform Taiwan into a bioscience powerhouse.

Dr. Duan explained:

I think there is hope to Taiwan's bioscience industry.

Yes, there remains many gaps along the Taiwanese bioscience value chain. Now that we are back, we see that our job is to fill in these gaps. It is really hard work and very time consuming. It requires the government's full support because the work needs to be done from a high level. It is useless if we just stayed in our laboratories and write books and papers.

Shortly after we returned, Dr. Lee [Yuan T.] introduced us to many government officials involved in bioscience. Through these meetings, we have been able to make specific recommendations based on realities here on Taiwan.

It still takes a long time. There is a learning curve. Since my return, I have gained a better understanding of Taiwan's governmental bureaucracy. Yes, bioscience really is key [to Taiwan's economic future].

Drawing lessons from the recent failed attempt at a partnership between Johns Hopkins University and the Government of Singapore to start a medical education and research program (Dechter 2006; Fuyuno 2006), Dr. Duan understood that she must not take a scattered approach to fill in the gaps. Rather, she and other TBEs must be strategic in planning and resource allocation. In addition to the subsequent creation of a billion-dollar government-industry venture fund to jump start the nascent industry, Dr. Duan recognized the critical need for a high-level strategic plan.

Likewise, Dr. Duan recognized the importance of meeting local experts when Dr. Yuan T. Lee, winner of the 1986 Nobel Prize in Chemistry and former president of Academia Sinica, Taiwan, went out of his way to introduce Dr. Duan to almost all of the government officials working on bioscience. Through these introductions and subsequent meetings, Dr. Duan learned how local customs may have influenced bioscience planning and practice. In response, she formulated policy recommendations that were sensitive to Taiwan's unique situation. Although Dr. Duan embodied a deep knowledge of Taiwanese society and American scientific practices, she demonstrated a rare combination of cultural sensitivity and humility that allowed her to learn from local policymakers.

Another early lesson for Dr. Duan was the immediate need to revamp Taiwan's bioscience regulations:

Very few people know this but Minister K. T. Li, the father of Taiwan's semiconductor industry, started Taiwan's Development Center for Biotechnology. After we returned, we discovered that Taiwan has one set of regulations that

covers both ICT and bioscience, including the law governing exemptions on corporate tax.

The tax law assumed that bioscience startups can become profitable within two years, just like ICT. Yet, these are totally different industries, including the significantly longer time horizon for bioscience R&D.

These laws and regulations are a major reason why Taiwan's bioscience industry has been choked to death. These laws were updated over the years, so the more successful semiconductors became, the more it suffocated bioscience.

On 14 March 1984, Minister without Portfolio K. T. Li, the principal architect of Taiwan's economic miracle, opened the Development Center for Biotechnology (DCB) "to attract foreign investment and expertise [including] many overseas Chinese biologists" (Taiwan Review 2011). Wanting to repeat Taiwan's early success in information communications technology (ICT), Minister Li replicated ICT's regulatory environment for bioscience. What remained unknown to this Cambridge-trained physicist and his fellow policymakers was that unlike ICT, bioscience required an R&D time horizon of 15 to 20 years. Despite Minister Li's good intentions, what was an appropriate two-year corporate tax exemption for ICT startups that was likely based on Gordon Moore's 1965 prediction that the number of transistors on a chip will double about every two years, drained bioscience ventures of basic operating funds. Dr. Duan worked with policymakers to update this incommensurate corporate tax exemption to give Taiwan's bioscience industry a chance to survive.

After a distinguished career in American academe and industry, Dr. Audrey Jiang (a pseudonym) returned to Taiwan in the late-1990s to lead a division of Taiwan's National Health Research Institutes and subsequently teach local bioscience firms process and technique. Dr. Jiang stated:

I always feel that Taiwanese people work very, very hard and are willing to take risks. In ICT, Morris Chang took the lead and brought back a team of returnees.

At minimum, as a democracy, Taiwanese society will not suppress the people's entrepreneurial spirit. The entrepreneurial spirit and the ability to work hard are embedded in the Taiwanese culture.

Look at Taiwan's delicate political position. After all these years, Taiwan is like the Weebles toy that always bounces back no matter how often you try to push it down. Taiwanese people are extremely resilient.

For there to be a bioscience industry in Taiwan, the key issue is that there must be the right environment to attract all those scientists to become returnees. Given enough time, Taiwan can breed her own cohort of domestically trained scientists. But we need someone to lead this effort and is willing to take on this all consuming task. This can be done but it will take time.

As Dr. Jiang saw it, the Taiwanese people embody the entrepreneurial spirit of hard work, risk taking, and resilience. Faced with isolation from the international community, following American President Jimmy Carter's decision in 1979 to transfer diplomatic relations from Taiwan to China, this island-nation has achieved advanced economy status. Although Taiwan remains a "renegade province" in Beijing's eyes, this island-nation is currently the fourth largest ICT manufacturer in the world, and holds the world's fourth largest foreign reserves, at \$390.30 billion, trailing China, Japan, and Russia (The Central News Agency 2012).

Since 1990, China has attracted over \$100 billion in Taiwanese foreign direct investment (FDI). This FDI is responsible for much of China's economic growth, job creation, and technological expertise. As of 2002, information communications technology consisted of 31 percent of total FDI and 47 percent of all Taiwanese products manufactured in China (Tung 2005; *Taipei Times* 2009). Just as Taiwan has proven to be instrumental in ICT development in China, some observers expect Taiwan's expertise in R&D and management to be pivotal in China's bioscience advancement in the next ten years.

For nearly the past decade, Dr. Wesley Mao (a pseudonym), a U.S.-based repeat entrepreneur, traveled frequently to his country of origin to improve the island bioscience industry. Dr. Mao explained why he shares Dr. Audrey Jiang's sentiment toward training domestic scientists:

In my view, Taiwan's scientists are well-educated and well-trained, however, they need leaders to foster their development. In all of science, pharmaceuticals have the greatest demand for top scientists across many disciplines, chemistry, biology, information technology, statistics, etc. But given the current state of Taiwan's economy, the highest demand for chemists is still in semiconductors industry.

What Dr. Mao is referring to is that given the world's 17th largest economy has the world's fourth largest semiconductor and information communications technology industries (Taipei Economic and Trade Office in Indonesia 2009), local science, technology, engineering, and mathematics (STEM) degree holders and their respective universities have been conditioned to narrow their curriculum to be industry-specific. This is a boom for the semiconductor industry but a detriment for developing a nascent industry such as bioscience. In Taiwan, where the bioscience industry has been stagnant for many years, it is difficult to find qualified faculty to train STEM-students for a nascent industry that is in search of a game-changing firm to create a inflection point much like what Taiwan Semiconductor Manufacturing Company did for semiconductors.

TBEs meet academe and industry's immediate demand for qualified scientists and entrepreneurs. A chemist with more than 20 years of experience in industry and academe, Dr. Lawrence Yu oversees quality control in a major biopharmaceutical firm on Taiwan. Dr. Yu explains his role in training domestic scientists:

There are no schools in Taiwan that teaches the skills that we need, making it exceedingly difficult for us to find qualified people. As a result, on-the-job-training has become a necessity. We minimize the gap between academe and industry

by hiring people that have good minds and are fast learners and offering courses to many local universities on our industry.

Faced with the dearth of properly trained STEM-graduates on Taiwan, Dr. Yu's firm took upon themselves to offer industry-specific courses on local campuses as a way to train local talent. As a second solution, Dr. Yu's firm also offers on-the-job training to highly intelligent recent graduates who are quick learners. Close collaboration between fields such as chemistry, biology, medicine, information technology, and statistics is responsible for much of the recent advancements in bioscience. This progress, in turn, is demanding increasing convergence between life, information, mathematical, and physical sciences.

Dr. Vance Yen (a pseudonym), a highly successful bioscientist and entrepreneur, described his involvement in China:

Currently, I'm also a visiting professor at Chinese Public University Number 2 [a pseudonym] in Beijing. At first, I spend three months per year in CPUN2 for three years. This was before I retired. American State University [a pseudonym] and CPUN2 have formal partnership agreements. My initial contact with China was in 1982. CPUN2 invited me to visit.

Dr. Yen's visits to China began in 1982 at the behest of Chinese Public University Number 2 (a pseudonym) in Beijing. Dr. Yen's visit to CPUN2 led to the creation of formal academic partnership agreements between Dr. Yen's home institution in America and one of China's leading universities. Dr. Yen has contributed significantly to improvements in the quality of CPUN2's teaching and research through cross cultural collaborations. In retirement, Dr. Yen spends three months per year each in China and Taiwan serving as a visiting professor and overseeing research projects.

TBEs do not share the same view on the relationship between democracy and entrepreneurship. While some believe the relationship to be tight knit, others see no

relationship. Predictably, those who shared membership on KMT's blacklist for their pro-democracy and human rights advocacy along with their supporters not only saw democracy to be *sine quo non* to entrepreneurship, but continue to monitor closely Taiwan's democratic reform. These TBEs, along with their children, travel to Kaohsiung on Human Rights Day annually to remember the Formosa Incident. Likewise, TBEs who were more motivated by their nostalgia for their country of origin and/or opportunities for self actualization and financial gain saw little if any relationship between democracy and entrepreneurship. Yet, there is a third group whose reticence or professed disinterest on this topic likely stemmed from the trauma they experienced from KMT's authoritarian rule. Further research is needed to understand why some TBEs initially became activists and remain committed, if any of their activism has waned over time and why, and why others prefer to focus their energy on bioscience research and entrepreneurship. Further research is also needed to illuminate the process through which TBEs learned that there is a symbiosis between liberal democracy and free market capitalism.

## **B. UPGRADING TAIWAN'S BIOSCIENCE INFRASTRUCTURE**

Dr. Tse Wen Chang returned to Taiwan in 1996 after a highly successful career in industry and academe, including the development of Xolair, which in 2006, became the first bioscience therapeutic to receive American Food and Drug Administration approval for treating asthma related allergies. Dr. Chang also co-founded Tanox, which was acquired by Genentech in 2007 for \$919 million for its franchise in anti-immunoglobulin E (IgE) antibodies for prophylactic and therapeutic applications in allergic diseases.

Perhaps Dr. Chang's most significant contribution to bioscience is his discovery of the structural features of IgE and membrane-bound IgE (mIgE) (Chang 2000; Chang 2007).

Dr. Chang commented on the changes that he put into place to make Taiwan competitive in the global bioscience space:

When I served as a dean of the College of Life Sciences at National Tsing Hua University, I implemented interdisciplinary collaboration with other universities on a transnational basis.

Later at Taiwan's Development Center for Biotechnology (DCB), I reformed the entire structure by reducing the ratio of administrative staff to scientists from 1:2 to 1:7. I also implemented protocol to bring DCB up to international investigational new drug development standards.

In his capacity as a senior university administrator, Dr. Chang drew from his extensive social ties in American academe to negotiate a number of transnational partnerships with universities of global renown. These transnational academic partnerships are important to the development of Taiwan's bioscience industry because they create opportunities for close collaboration. Crucial tacit business and scientific knowledge the precise condition in which crucial tacit business and scientific knowledge is shared and includes skills critical to firm success such as producing and commercializing scientific knowledge through basic research and identifying alliance partners (Murray 2004, Oliver 2009).

Despite his desire to return to the laboratory, Dr. Chang could not refuse the Taiwanese government's repeated entreaties that he lead the Development Center for Biotechnology (DCB). Once he joined DCB in 2000, Dr. Chang cut through the bureaucratic morass as he implemented international investigational new drug development standards within this preclinical R&D and business development center for

biopharmaceuticals. Dr. Chang put into place a world-class methodological infrastructure to ensure that all of DCB's experimental findings are scientifically valid.

Dr. Duan also lent her expertise to seek funding for Taiwan's Development Center for Biotechnology, the same agency where Dr. Tse Wen Chang significantly decreased the ratio of administrators to scientists as he implemented international investigational new drug development standards. Dr. Duan explained:

I also invested a lot of energy on the clinical research infrastructure. In addition to infrastructure, we need funds allocated for the specific use of Development Center for Biotechnology's (DCB) role in preclinical drug metabolism pharmacokinetic (DMPK) studies to highlight its role in Taiwan's bioscience value chain. DCB cannot be just another research unit. Otherwise, how is it any different from academe?

When we first returned, DCB was trying to do everything, including developing its own drug and licensing drugs from other sources. DCB was working on toxicology, however, DCB had never been certified by the U.S. Food and Drug Administration (FDA). Without the appropriate certification, the results are useless. So we pushed DCB to undergo a rigorous certification process. DCB is currently undergoing the (DMPK) phase of its certification.

Dr. Duan grasped Development Center for Biotechnology's need to have its own budget if it was to succeed in assuming responsibilities for preclinical drug metabolism pharmacokinetic (DMPK) studies.

For many years, DCB had tried to play multiple roles along the bioscience value chain without much success. Cognizant of the need for specialization, Dr. Duan persuaded lawmakers to appropriate funds for DCB to so that it may focus on developing its expertise in preclinical DMPK studies. A therapeutic will only gain regulatory approval if data from preclinical to Phase III studies met the American Food and Drug Administration's (FDA) threshold. No DMPK data generated by research at a non-FDA certified facility can be saved by elegantly designed Phase III clinical studies conducted at an FDA certified prestigious medical center. The FDA is the final arbiter of

the regulatory approval process, therefore, strict compliance with all FDA regulations along every step of the bioscience value chain is imperative. For this reason, Dr. Duan has invested considerable energy into preparing DCB to meet FDA's exacting certification process and onsite inspection.

Dr. Duan also worked tirelessly to improve Taiwan's clinical R&D infrastructure. General clinical research centers (GCRC), of which there are currently 65 in America and funded by the U.S. National Institutes of Health, consist of academic medical centers that "provide settings for medical investigators to conduct safe, controlled, state-of-the-art, in-patient and out-patient studies of both children and adults" (U.S. Department of Health and Human Services 2012). During one of her earlier visits to Taiwan Dr. Duan drew from her firsthand knowledge of the benefits of working as an investigator in a GCRC in America and advised the Taiwanese government to build a GCRC. Dr. Duan gave this advice because she believed Taiwan would benefit immensely from having its own GCRC where clinical investigators could study and treat diseases with innovative approaches. The GCRC model, furthermore, permits the pharmaceutical industry to license the technologies resulting from these government-funded studies. Dr. Duan explained:

About ten years ago, I had recommended that Taiwan build a regulatory agency and a general clinical research center (GCRC). When I returned at the end of 2003, I was so surprised to learn that there were 15 GCRCs on this small island.

So I had to go take a look for myself to see just what these GCRCs were doing. Well, I learned that the government spread the funding too thin, making these GCRCs unable to carry out any clinical research that could lead to valuable intellectual properties and patents.

In 2003, when Dr. Duan finally decided to return permanently to Taiwan, she was astonished to learn that the Taiwanese government heeded her advice so well that they

built a total of 15 GCRCs. Steeped in the intricacies of GCRC funding, Dr. Duan was suspicious as to how Taiwan, with a population of 23 million people could support 15 GCRCs when the American State of Texas, with a population of approximately 26 million, has only four GCRCs, each located at a different health science campus of the University of Texas System. Based on the facts she gathered, Dr. Duan determined that although Taipei designated 15 medical centers as GCRCs, policymakers failed to fund each GCRC sufficiently, rendering them unable to carry out studies of significant market value.

Is the case of 15 underfunded GCRCs an example of overzealous policymakers who, upon learning about the GCRC, who placed quantity over quality, or is this a phenomenon that points to a deeper undercurrent within Taiwanese society? Dr. Bridget Fu, a highly successful repeat entrepreneur who was instrumental in helping the American Food and Drug Administration (FDA) write the policy for approving generic inhalation products, described how Prestigious Taiwanese University Number 6 (a pseudonym) responded to her multi-million-dollar gift in the mid-2000s:

Within Prestigious Taiwanese University Number 6 (a pseudonym), other academic departments asked me, why are you only donating to the pharmacy school, why can't our department use your gift, too? This was one reason why I was unable to find land for the new construction. All the departments wanted an equal share of my gift. But if you spread the gift too thin, what can you do when everyone has only one dollar?

Similar to Dr. Duan's experience building the GCRCs, Dr. Bridget Fu was surprised to hear about the preference for sharing a major gift across multiple academic units within Prestigious Taiwanese University Number 6 (PTU6). That is, various PTU6 academic units and senior administrators alike articulated the preference, making it exceedingly challenging for Dr. Fu to secure local assistance to help her find an appropriate plot of

land to build two campuses for PTU6 new pharmacy school. Dr. Fu invested significant time to conceive of her multi-million-dollar gift to transform PTU6 pharmacy school into a 200,000 square feet model of university-industry partnership to help Taiwan reach global prominence in bioscience. Viewed in the context of the can-do attitude, entrepreneurial streak, and scientific brilliance that made her a successful business woman, Dr. Fu had little patience for PTU6's preference for mediocracy.

One explanation for PTU6 and the policymakers' preference for spreading the wealth among many units may be the Taiwanese preference for collectivism. Just as in China and Japan where a high population density is the norm, Taiwanese children learn at an early age how to work and play within groups. Consequently, recognition for team work is valued over individual achievement. Put simply, in an agrarian society, it made sense to feed as many mouths as possible instead of letting a single individual hoard all the food. In Dr. Fu's case, however, sharing her gift among multiple academic units would contravene her vision to build a two-campus state-of-the-art pharmacy school. Likewise, the existence of 15 GCRCs would dilute the funding as much as it is unlikely for any underfunded GCRC to carry out studies of significant market value.

According to Dr. Wen-Hsiung Li, James D. Watson Chair Professor at The University of Chicago and director of the Biodiversity Research Center, Academia Sinica, Taiwan:

The success of Taiwan's biotech industry requires a team of excellent scientists each responsible for a key step of research. Taiwan's culture needs to change because there is not much experience with teamwork.

At first blush, Dr. Wen-Hsiung Li's advice might seem contradictory to the collective culture pervasive on Taiwan. Dr. Li is referring, however, to a team of experts consisting of individuals with decades of experience to contribute to building their respective points

along the Taiwanese bioscience value chain. Generally speaking, these points include technology licensing and transfer, clinical infrastructure, regulatory environment, private industry employee training, U.S. Food and Drug Administration plant certification, etc. More specifically, academe will focus on churning out laboratory discoveries for which DCB's preclinical DMPK studies, which are crucial in determining a potential therapeutic's safety and efficacy data and if clinical studies in human are to begin, are required for regulatory approval.

After a distinguished career in American academe and industry, Dr. Glen Zheng (a pseudonym) returned to Taiwan in the early 2000s and drew on his own expertise in translational medicine to strengthen Taiwan's bioscience research and development capability. Dr. Zheng elaborated:

I have been emphasizing translational medicine since I returned to Taiwan, which you can do only after you have a strong research infrastructure. First, you need to be able to partner with a medical center. Second, clinical physicians in Taiwan are extremely busy and lack the time and understanding to design the appropriate research protocol.

So we have trained over 20 nurses to function as project managers to bridge this gap. It is the nurses' responsibility to meet and discuss with clinical physicians to understand their research parameters, design the research protocol, locate the right experts, and write case reports. Each nurse spent six months receiving training at Prestigious American University Number 5 (a pseudonym).

The entire process took three years. In America, pharmaceutical companies take care of all this. On Taiwan, the practice had been such that a Principal Investigator (PI) would ask his physician friends for help. Then, the physicians would find a few patients for possible tests. It was completely unscientific and the wrong way to go about things.

Observing well-intentioned but ill-trained Taiwanese PIs doing research with haphazard design, Dr. Glen Zheng leveraged his transnational social networks to train a core group of Taiwanese nurses to bridge the gap between local clinical physicians and research scientists. In so doing, Dr. Glen Zheng built the requisite infrastructure to enable direct

communication between professionals working in the front lines of clinical medicine and basic research. By building this critical methodological infrastructure that are an essential part of the American pharmaceutical industrial complex but completely absent on Taiwan, Dr. Zheng increased opportunities for laboratory discoveries to inform the diagnosis and treatment of patients on Taiwan. This methodological infrastructure has enabled clinical physicians to rely on well-trained nurses to design the appropriate research protocol and identify the best domestic researchers to conduct experiments that will inform and improve the diagnosis and treatment of Taiwanese patients. By training Taiwanese personnel in world-class scientific research protocol, Dr. Zheng's methodological infrastructure aimed to replace desultory local experimental findings with scientifically valid results.

### **C. DEVELOPING CHINA AND TAIWAN'S BIOSCIENCE INDUSTRIES**

When Dr. Audrey Jiang first returned to Taiwan in the late-1990s, there was no domestic bioscience firm that was capable of bringing a new drug candidate from laboratory to marketplace. To solve this problem, Dr. Jiang proposed a two-prong approach: (1) Develop drugs already being studied in her division within Taiwan's National Health Research Institutes (NHRI). (2) develop drugs that have already shown excellent promise in American laboratories. Through this approach, Dr. Jiang believed, principal investigators within NHRI and in America would be able to transfer tacit and technical knowledge to domestic bioscience firms's scientific staff. Dr. Jiang clarified:

When I returned to Taiwan, I advised the Executive Yuan's Department of Health that in addition to the drugs that are under investigation in my National Health Research Institutes division, we can take drug candidates that have already been

studied in the U.S. and immediately develop them here.

The idea was that because Taiwan has never developed a new drug, we can partner with domestic biotech companies so that they can learn along the way. Most importantly, to build up our infrastructure so that private bioscience firms can learn from the experience.

Dr. Jiang's proposal was a university-industry-government partnership that had the potential to accelerate Taiwan's bioscience learning curve. Like Dr. Gao's incubation center, Dr. Jiang's partnership proposal would decrease the failure rate of drug developments due to the unfortunate mixture of insufficient technical knowledge and fear of asking for help and losing face. Afflicted by the turf war common in many bureaucracies, Dr. Jiang's proposal did not come to fruition.

After leaving Taiwan's NHRI, Dr. Jiang started her own firm with American, Japanese, and Taiwanese venture capital. She had no trouble raising seed capital. In fact, she had to turn away many potential investors. In her start-up, Dr. Jiang devised a modified version of her earlier partnership proposal. Dr. Jiang elucidated:

The reason General Genetics [a pseudonym] has been successful so far is because 20% of our top management are experienced returnees who are take seriously their responsibility to teach domestic scientists. Through this returnee-led training process, the quality of work of our Taiwanese scientists has risen to be on par with the best American scientists that I've worked with in my career.

We have scientists who worked in America, England, Belgium, and Canada. The social networks that our top management can leverage in North American and European industries and academe are crucial to our ability to talk directly with top management and scientists at leading international pharmaceutical firms and universities.

Powell (1990) found that social networks are paramount to advancing the bioscience sector. Granovetter and Uzzi's discovered, respectively, that firms leverage their networks to accelerate time to market (1985) and environmental adaptation (1997). In this context, General Genetics (a pseudonym) has two important lessons for Taiwan,

China, and other economies developing a bioscience industry: (1) If you want to upgrade the quality of work of local scientists in your firm, recruit dedicated returnees with practical bioscience experience who have a passion for training scientists to become the best in the field; (2) If you want to maximize your global social networks, recruit bioscientists from North America and Europe. Do not limit yourself to only Taiwanese-Americans. Dr. Jiang's willingness to tap a bigger talent pool afforded General Genetics the ability to call on influential pharmaceutical executives, intellectual property attorneys, and university professors throughout the world, thereby decreasing the firm's transaction cost for overcoming business and technical challenges.

Due in large part to Dr. Jiang's global reputation, General Genetics saw overwhelming demand from venture capitalist during the firm's early days. Dr. Jiang explained:

To this day, Prosper Venture Partners [a pseudonym] remains our largest shareholder. Because of this, Taiwanese investors were fighting their way to become our shareholders. The first round also included foreign pharmaceutical companies. Later, Japan's Komachi [a pseudonym] also became a minor shareholder and a research collaborator. Later, Big American Brand [a pseudonym] signed a licensing agreement with us.

When Dr. Jiang decided to start her own firm, her reputation as a stellar research scientist and business leader in America drew the attention of leading venture capital and pharmaceutical concerns from around the world. Investing in a bioscience startup founded by a scientist of Dr. Jiang's stature lowers the perceived risk of potential investors. Dr. Jiang's reputation and that of her firm's major shareholder, Prosper Venture Partners (a pseudonym), signaled to Taiwanese, Japanese, and American investors alike the "productivity, reliability, quality and new market opportunities" (Enderwick *et al.* 2011) in existence on Taiwan. General Genetics'

success in raising the capital it needed for R&D and business operations helped it to achieve major milestones such as the completion of FDA Phase II trials for one drug, near completion of FDA Phase II for a second drug, the filing of Investigational New Drug (IND) applications with the FDA for a third drug.<sup>2</sup>

Under Dr. Jiang's leadership, General Genetics is also conducting parallel INDs in the People's Republic of China (PRC) under first class new drug designations.

According to Dr. Jiang, General Genetics is the first international company to take a drug from Phase I to completion in the PRC, and it has two drugs that are currently in Phase II in the PRC.<sup>3</sup> Dr. Jiang explained her rationale for investing in the PRC:

In the past several years, the PRC market has been growing around 25 to 30% per year and is projected to become the second largest pharmaceutical market in the world in 2012. Historically, international pharmaceutical companies have applied to register their newly-U.S. FDA approved drug with the PRC market only after receiving U.S. FDA's approval. The PRC registration process takes about two to three years. Right now, the emerging markets are exploding. History tells us that once a country reaches a certain economic developmental milestone, its population will begin to demand high quality healthcare.

The growth of the PRC market is amazing. There are 5,000 companies making low quality generics. We need to upgrade this industry because the demand is there. We need to satisfy the basic medical needs of this population of 1.3 billion by offering inexpensive antibiotics. Today, the number of the Chinese coastal population equals that of the total American population. For these individuals, they are willing to spend their own money to buy expensive medicine from overseas. This PRC market is growing 25 to 30% on an annual basis. This is why the PRC government wants Big Pharma to manufacture their IP protected drugs in China in order to improve the quality of the Chinese pharmaceutical industry.

As Dr. Jiang's explanation underscores, her motivation to invest in the PRC is entrepreneurial. That is, to discover, evaluate, and exploit the opportunity (Shane and Venkataraman 2000) to save time by filing concurrent IND applications in America and the PRC. Dr. Jiang's hope is that by implementing this strategy, General Genetics will

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<sup>2</sup> Drug development status accurate as of interview date with Dr. Audrey Jiang in March 2010.

<sup>3</sup> Drug development status accurate as of interview date with Dr. Audrey Jiang in March 2010.

be two to three years ahead of its competition in the burgeoning Chinese healthcare market. As an entrepreneur, Dr. Jiang recognized, and therefore, devised a strategy to exploit China's faster and less expensive IND procedure. Her strategy is mindful of the concurrent growth between China's healthcare and general economies. The rationale behind Dr. Jiang's China strategy is to target not only the 300 million inhabitants of China's east coast who have the disposal income to buy high quality medicine, but also the remaining 1 billion people who need affordable high quality therapeutics. With a projected annual growth rate between 25 to 30%, General Genetics opted to file concurrent IND applications in America and China for two main reasons: (1) to exploit the fact that China's IND protocol is cheaper and faster than its American counterpart; (2) to help China upgrade its pharmaceutical capability.

Dr. Jiang is simultaneously contributing to the advancement of bioscience on both sides of the Taiwan Strait. To wit, Dr. Jiang's "simultaneity of connection" goes beyond what Levitt and Glick Schiller found exists between migrants' sending and receiving countries (2004). That is, had Dr. Jiang focused her pharmaceutical developments only on Taiwan, then her actions would confirm Levitt and Glick Schiller's findings. In this instance, however, Dr. Jiang's transnational work includes China, a country that shares culture and language with, but has a distinctly separate political entity vis-à-vis Dr. Jiang's country of origin. Therefore, Dr. Jiang's transnational work extends our understanding of transnational "simultaneity of connection" to include sending, receiving, and a third country that shares the sending country's culture and language.

Before co-founding his own firm on Taiwan in the late-1990s, Dr. George Pan (a pseudonym) enjoyed a highly successful career as a research scientist and an executive in the American pharmaceutical industry. Dr. Pan explained his company's initiatives in China:

Our firm started in 1997. In 2001, we recognized that to achieve a large product portfolio in the shortest amount of time, we had to move to China. To establish legitimacy, we partnered with Chinese organic chemists that I have collaborated with since the 1990s, and built an R&D center in Kunshan, Jiangsu province, with 40 to 50 research scientists. This R&D center works on synthetic processes and early intermediates to pass on to our Taiwan plant for final manufacturing. This way we can work on far more products than with our Taiwan plant alone.

We gain the following leverage: with the salary of one American scientist, we can hire a combination of five Chinese and Taiwanese scientists. Corrected for productivity, assuming there is a difference, we still have three times the advantage over anyone in the West.

So we forced ourselves to produce seven to ten new products a year during a five-year span. Our product development was faster because we conducted concurrent research in China and Taiwan. We built a highly attractive portfolio and customers noticed us. Because of our large portfolio, customers were using five, six, ten of our products. Customer loyalty and over-dependence developed and they began sharing with us their future strategic needs.

Our Kunshan plant is in a relatively remote location. Last year we began building a new location near our current plant that is the same size as our Taiwan plant. Once complete, it will house all of our future R&D and some manufacturing.

The other opportunity that is presenting itself is that international companies are setting up their R&D in China, but most of these companies don't have their in-house manufacturing in China yet. We hope to offer services to our major customers in contract R&D in medicinal chemistry in China, because that's what we are already doing here on Taiwan. In essence, we will offer better services to our existing customers who plan to conduct clinical trials in China. What we'd like to do is to improve logistics and by duplicating our Taiwan manufacturing plant in China, we become a local company from beginning to end. This way, we no longer need to worry about China's barriers against imported drugs.

In 2001, Dr. Pan and executives of his Taiwan-based company realized that building an R&D center in China would yield three times the cost advantage over his Western

competitors.<sup>4</sup> Relying on Chinese scientists he had collaborated with in the 1990s, he hired 40 to 50 research scientists in China to develop synthetic processes and early intermediates to relay to Taiwan for final manufacturing. To entice customers, Dr. Pan decided to build a portfolio consisting of difficult to make products that would attract the industry's attention. The cost advantage of the Chinese R&D center allowed his firm to conduct concurrent R&D in China and Taiwan to meet the self-imposed goal of creating seven to ten new products annually during a five-year span. Not only did major international pharmaceutical companies take notice, they began to depend on multiple products from Dr. Pan's China-Taiwan collaboration. More importantly, the same customers began sharing their strategic road maps to ensure a continuous supply of current and future products from Dr. Pan's American FDA-approved plant. Dr. Pan's own corporate strategy worked so well that he is building a larger facility to house R&D and manufacturing and improve logistics to better serve the contract R&D needs of major international pharmaceutical companies in China. By building a full service company in China, Dr. Pan can also evade the various barriers the Chinese government erected to protect domestic industry.

Dr. Paul Leung (a pseudonym), a highly successful repeat entrepreneur who sold his first company for \$160 million and scaled his second company from \$40 million to its eventual selling price of \$800 million, described his involvement with China:

I've been working on initiatives in China for a long time. Beginning in 1981, major global pharmaceutical company number 1 [MGPC1], my employer at the time, tasked me to host more than 60 distinguished Chinese scientists and

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<sup>4</sup> Dr. Pan explained his cost advantage in China this way: For the cost of hiring one American scientist, we can hire three Taiwanese scientists. For the cost of hiring one Taiwanese scientist we can hire three Chinese scientists. This means that for the cost of hiring one American scientist, we can hire nine Chinese scientists.

university presidents who were visiting our firm in America to rejuvenate their technical knowledge following the end of the Cultural Revolution.

This was on top of my primary job in new drug R&D. Later, MGPC1 asked me to set up manufacturing in China. Currently, I have philanthropic activities in China. I also teach Christian and business ethics to Chinese entrepreneurs because most of them don't have high moral standards. Chinese entrepreneurs tend to be very materialistic.

Dr. Leung's association with China began in 1981 when as a research scientist in new drug R&D, major global pharmaceutical company number 1 (MGPC1), his then-employer, assigned him to host distinguished scientists and university presidents who were visiting MGPC1's American headquarters. These Chinese visitors stayed in New Jersey's pharmaceutical corridor for up to two years to learn about the scientific advances that took place during the tumultuous Cultural Revolution (1966-1976). Dr. Leung's relationship with these distinguished guests proved to be pivotal when MGPC1 later assigned him to set up a manufacturing plant in China. Currently, Dr. Leung visits China and Taiwan frequently to teach Christian and business ethics to entrepreneurs.

Dr. Leung founded a firm on Taiwan to find a cure for a cancer that strikes Asian women. If successful, his will be the first cancer drug from Taiwan. Dr. Leung explained:

Taiwan's breast cancer has a different profile relative to the Western population. The majority of cases are HER-2-negative. For this reason, many newer anti-breast cancer drugs are neither effective nor appropriate for the larger Asian population.

We just don't know for sure at this point due to insufficient data. So we need people who are more willing to focus on such Asian-specific diseases. Americans are not interested in such approaches. Why would they be? For many investors, this is a good enough reason and they walk away happy.

Dr. Leung is also impelled by the realities of cancer research. He is motivated to invest in a serious effort to find a cure to HER-2-negative breast cancer, a

disease that is prevalent among Asians, not Europeans. In this type of cancer, a gene that controls cell growth, division, and repairs—the human epidermal growth factor receptor 2 (HER-2)—is not the cause of cancer. Hence the term HER-2 negative. In terms of HER-2 negative breast cancer, it makes scientific sense for Dr. Leung to invest in Taiwan. Asians make up only five percent of the American population, so there is little economic incentive for American pharmaceutical companies to invest in a 15- to 20-year commitment to find a cure to a HER-2-negative breast cancer that does not strike the general American population.

After a successful career bringing two start-ups from scratch to acquisitions by major American pharmaceutical giants Eli Lilly and Company and Genzyme, Dr. Chris Fan decided to return to Taiwan in the early 2000s to upgrade the bioscience industry's attitude toward quality control. Dr. Fan stated:

Taiwan's biggest challenge is to recruit a critical mass of individuals with bioscience industry experience, especially those with knowledge and experience founding a successful biotech venture and developing and commercializing a new drug.

Only individuals with the right quality control mindset can help Taiwan grow the bioscience industry from the ground up. We are not talking about bicycles here.

This is why I decided to return to Taiwan, to contribute something to Taiwan. Our contract manufacturer are fully aware of our firm's high quality standards. It has reached a point where we and our contract manufacturers no longer accept raw materials with Chinese characters on the labels.

Currently, Taiwan's quality control mindset remains superior to mainland China. I would say Taiwan has about a ten-year window of opportunity. If Taiwan really wants to compete in the global marketplace in medicine, we have to reach the same level of quality control as Japan.

Dr. Fan decided to return to Taiwan because he wanted to contribute something. For him, that meant bringing to Taiwan a tough mindset for quality control, beginning with

the sourcing of raw materials of high purity and the willingness to destroy any final product that failed to meet specifications. As Dr. Fan emphasized while referencing Taiwan's earlier focus on mass producing bicycles as part of its export orientation industrialization, the manufacture of human medicine requires stringent quality control to prevent fatal consequences.

Dr. Fan stressed that although Taipei has been successful in recruiting world-class bioscientists as returnees, equally crucial are returnees who have successfully shepherded therapeutics through the lengthy new drug development process. Dr. Fan absolutely refused to use substandard raw materials. A case in point is his refusal to use any raw materials from China and Taiwan because he does not trust these suppliers' ability to achieve and maintain high quality. Are Dr. Fan's standards overly rigorous? Not if we recall that biopharmaceuticals are medicine for treating human beings. On multiple occasions, he has destroyed faulty finished products to ensure that they do not make their way to consumers. Through his actions, Dr. Fan taught those along the Taiwanese bioscience value chain that the manufacture of superb biopharmaceutical outputs requires high quality inputs. In his view, if Taiwan is to compete with China in the bioscience space, Taiwan has only a short ten-year window to reach the same level of quality as Japan. Dr. Fan's adherence to rigorous quality control throughout his supply chain signals to the world that TBEs have implemented "productivity, reliability, quality and new market opportunities" (Enderwick *et al.* 2011) on Taiwan.

After an accomplished career in the American pharmaceutical industry and the U.S. FDA, Dr. Edward Gao (a pseudonym) returned to Taiwan in the late-1990s. As a special

recruit of the Taiwanese government, Dr. Gao's job is to oversee all bioscience technology transfer. Dr. Gao, who forfeited opportunities to pursue a lucrative career straddling the line between regulator and the industry it regulates, explained how an incubation center filled the knowledge gap within startups:

In the past, when Taiwanese startups ran into obstacles, instead of asking for help, they just said everything is fine. Normally, a startup should reach certain milestones three years after a technology has been transferred. But because these startups ran into obstacles without asking for help, they froze and achieved nothing.

The challenge here on Taiwan is that there is no scientific staff at the Ph.D. level within local biotech startups. All they have is money. So these startups had no idea what to do with the technology they have licensed from universities.

This reality taught me that we need an incubation center where startups can grow in its early stages and where senior scientists can help them when they run in to technical challenges. This is why we built an incubation center.

Dr. Gao's work in the American pharmaceutical industry and the FDA. allowed him to benchmark the progress of local bioscience startups. Following his own suspicion, Dr. Gao learned that unlike their American counterparts, Taiwanese startups would not ask for help whenever they ran into major challenges. Based on his firsthand understanding of Taiwanese society, Dr. Gao recognized that local startups would helplessly watch their own business fail before seeking help because of the cultural need to maintain a façade of technical competence and to save face. Similar to how Dr. Matilda Duan tailored her policy advice to match local practices, Dr. Gao realized that the creation of an incubation center would afford a select number of bioscience startups effortless access to in-house senior scientists, thereby saving them the embarrassment of lacking sufficient technical knowledge. Having created an incubation center to ensure honest intellectual exchange between academe and industry and to maximize their survival

rate, Dr. Gao and his staff now literally walk down the hall on a regular basis to monitor the startups' progress.

Dr. Elliot Lee (a pseudonym), is a recent returnee with many years of biomedical industry experience. He clarified why his Taiwanese employees are reluctant to ask for help:

People here are afraid to make mistakes. It is just from their educational background. So they do whatever they can not to make a mistake, including not doing anything. [From their perspective], if you do something, you get criticized, so you do nothing.

You have got to allow for failure, to educate people that when you are trying, failure is acceptable. Now I tell them, when you need help, you need to let me know. This is the next step. Sometimes when they make a mistake, it is because they should have asked for help but they did not.

Dr. Lee runs a bioscience startup where all of his employees are Taiwanese. He is the only returnee in the firm. From his vantage point, he has seen how local workers are afraid to make mistakes because they have been taught to expect punishment when they make a mistake. To minimize making mistakes and to avoid punishment, local workers often choose to do nothing. In a culture where avoiding punishment is paramount to doing work, Dr. Lee had to convince his employees that mistakes are acceptable if you are genuinely making an effort. Alternatively, local employees need to know that asking for help is a sign of strength, not weakness, and that there is no risk of losing face when they ask for help. If Dr. Lee cannot persuade local workers it is safe to fail fast, fail early, and fail often, then not only will there be paralysis in his startup, but innovation will be stymied for fear new ideas will lead to mistakes and punishment.

Before co-founding his own firm on Taiwan in the late-1990s, Dr. George Pan (a pseudonym) enjoyed a highly successful career as a research scientist and an

executive in the American pharmaceutical industry. To bring his local workforce to world-class standards, Dr. Pan implemented an intra-firm program to teach English and to build confidence. Dr. Pan explained:

I can tell you 90% of the workers on this island have no global perspective. They cannot see beyond this island. In the beginning, I told everyone that we want to use English as one of the official languages in the company. People really got upset at me, reminding me that Taiwan is not some colony like Hong Kong.

Drawing from his own long career in the global pharmaceutical industry, Dr. Pan knew the crucial lessons that he must pass on to local employees in his firm. But he was also aware that the first step would be painful for many. Shortly after co-founding his firm, he informed his entire workforce that all of his email messages will be written in English. At first, workers reminded Dr. Pan that Taiwan is not a British colony, and by extension, it would be inappropriate to make English usage a workplace requirement. Dr. Pan's logic was simple: If you want to win contracts from English-speaking customers, then you must be able to communicate persuasively in English.

Dr. Olivia Bai (a pseudonym), a repeat entrepreneur with professional experiences in America, UK, and France, reaffirmed the need to broaden local workers' perspective:

In the past, our employees only focused on Taiwan and did not have opportunities to work on R&D, licensing, and with other countries. Now Taiwan is only one aspect of their work. These new experiences have opened their eyes. Now our staff has to think about how to approach the EU market.

Like Dr. Pan, Dr. Bai trained her local workforce to look beyond Taiwan and to develop business opportunities in other parts of the world. In so doing, Dr. Bai witnessed the concurrent growth of her firm and her employees' capabilities to a point where the EU is nearly as common place as the local market.

Dr. Pan stated:

And I told them, you know, if you want to take money from people who do not speak Chinese, you better learn the language that can help you do that, and these customers just happen to speak English. There is no racial pride here.

Furthermore, Dr. Pan stated that communicating in English means having the ability to explain to potential customers why you are more competent and easier to do business with than your competitors. It is about gaining a competitive advantage to differentiate the firm from other Asian competitors. In time, through repeated and positive interactions with Western customers, employees began to gain a global perspective on Dr. Pan's pragmatism. Since co-founding his current firm on Taiwan in 1997, Dr. Pan continued to travel between America, China, and Taiwan with a focus on transnational business development and scientific collaboration.

Relatedly, Dr. Pan explained:

China, really a disaster when it comes to communication, more so than just having English as a barrier. Sincerity, and so forth. On Taiwan, you have very good ethics, but the Taiwanese always undersell themselves. As a result, customers do not know how good you are. First of all, you have to have the tool to tell people how good you are. Then, I will help you adjust your self confidence.

On Taiwan, workers really identify with groups. In that sense, it is better than China. China is all about money. In America, at least there is a certain norm, ethical concept, the rule of law. You cannot deviate too much for the norm. In China, it is the wild, wild West. You can do whatever you can get away with. But in China, they worker even harder than the Taiwanese, if there is a gain in the end. To move ahead of everyone else, to survive, they are willing to walk over their own mother.

Since co-founding his current firm on Taiwan in the late-1990s, Dr. Pan continued to travel between America, China, and Taiwan with a focus on transnational business development and scientific collaboration. Dr. Pan's observation on the slow pace with which Chinese businesspeople in the People's Republic of China are improving their ability to communicate is based on the historical data he has collected since 1990.

Most poignant of Dr. Pan's observations is that China's barrier is not as simple as

Taiwan's. That is, it is beyond the straightforward task of learning English. If underselling oneself and one's firm is a direct result of the Taiwanese cultural emphasis on modesty and the collective self, then for the sake of survival, if not personal gain, China's high population density engenders a tendency to behave unethically and a lack of personal authenticity. In other words, if Taiwanese workers are driven by collective and ethical pathways to winning, then their Chinese counterparts are motivated by the late paramount Chinese Communist leader Deng Xiaoping's famous exhortation, "To get rich is glorious." And as Dr. Pan has observed during his frequent visits to China since 1990, with any means necessary.

Dr. Pan described the personal rewards of readying his local workforce for global competition:

This feeling, knowing that I have introduced a group of young people with zero understanding of this industry and zero global perspective, to America and to global customers, and let them know that they can compete on equal ground with anyone else, and even win. The kind of pride and self confidence they now have . . . This sense of human reward is much more satisfying than any financial gain and difficult to reproduce unless you are one of the founders of a domestic company. This to me is the most satisfying experience.

Dr. Pan believed that learning English is the first step to remedying Taiwanese workers' tendency to undersell. Once workers learned how to communicate with potential customers in English, Dr. Pan knew that he can teach them to overcome the premium that Taiwanese culture places on modesty. To wit, Dr. Pan can draw on his understanding of Taiwanese and American cultures to explain how a local virtue can be interpreted as a failing in the eyes and ears of Western customers. Dr. Pan knew that by repeatedly winning contracts from and becoming a premier supplier of global pharmaceutical giants like Pfizer, Abbott, and GlaxoSmithKline go far in building

confidence in his local employees. Winning contracts from global pharmaceutical giants, after all, is the goal of signaling to relevant actors that TBEs have implemented “productivity, reliability, quality and new market opportunities” (Enderwick *et al.* 2011) on Taiwan. For Dr. Pan, he has taught his employees that success spawns confidence. In turn, Dr. Pan’s employees have taught him that the human reward of training them how to contribute to the firm’s accelerated growth in becoming a formidable global competitor in the active pharmaceutical ingredient space is more satisfying than any financial gain can generate.

## **V. CONCLUSION**

Although there are previous studies on transnational migrants (Glick Schiller *et al.* 1995; Portes 2003; Saxenian 2006), no studies have been done on TBEs from either China or Taiwan. The arc of TBE’s transnational migration extends from Taiwan to America before circling back toward China. As graduate students and postdoctoral fellows, many of them studied under the guidance of world-renowned scientists who taught them that a major responsibility of a scientist is to be actively engaged in the public sphere. Through their work in global pharmaceutical concerns and leading research universities, TBEs had opportunities to sharpen their global sensibility by working up close with world-class business leaders and scientists. Through the crucible of immigration and the desire to succeed, TBEs developed their own global sensibility, which empowers them to discover, evaluate, and exploit opportunities beyond political borders. Their global sensibility defines what is transnational about TBEs.

The small number of TBEs among the thousands of Taiwanese-American

bioscientists is consistent with the findings of scholars in sociology (Portes 2003; Waldinger 2009). Portes found a proportionally small number of transnationals among Columbian, Dominican, and Salvadoran immigrants in America who were “solid, family men — educated, well-connected and firmly established in the host country” (Portes 2003; Waldinger 2009). In my research, I found a proportionally small number of solid family men and women. In contrast to the absence of women in Portes’ data, however, women make up 26% of my dataset. Enderwick *et al.* ( 2011) called for reliable evidence to show how the presence of transnational migrants can signal “productivity, reliability, quality and new market opportunities” to relevant actors. TBEs’ scientific and economic contributions are significant by any measure.

TBEs’ global sensibility equipped them to view the world beyond political borders. This paper confirms that transnational migrants are individuals “whose daily lives depend on multiple and constant interconnections across international borders and whose public identities are configured in relationship to more than one nation-state” (Glick Schiller *et al.* 1992; Basch *et al.* 1994). Instances of their transnational work include: (1) calling on the assistance of the world’s foremost experts in their own social networks to accelerate Taiwan’s bioscience capability; (2) conducting concurrent R&D in China and Taiwan; (3) pursuing simultaneous Investigational New Drug (IND) applications in American and China; (4) engaging in philanthropic activities in China and Taiwan; (5) building scientific collaborations between America, China, and Taiwan; and (6) when Taiwan was under an authoritarian regime, advocating for democracy and human rights on Taiwan.

Shortly after returning to their country of origin, TBEs discovered certain problems

hampering the growth of the island's bioscience capability, including haphazard research, inadequate quality controls, insular attitudes, and outdated regulations. Employing their global sensibility, TBEs taught local scientists and workers how to (1) think independently, (2) ask for help, (3) design laboratory and clinical research, (4) apply and receive U.S. Food and Drug Administration certification, (5) build self confidence, (6) gain a global perspective, (7) license and transfer technology, and (8) revamp tax laws that assumed semiconductors and bioscience shared the same R&D time horizon. TBEs signal "productivity, reliability, quality and new market opportunities" through the myriad initiatives they have implemented to upgrade Taiwan's bioscience capabilities.

TBEs are developing China and Taiwan's bioscience capabilities in parallel. General Genetics' decision to file concurrent IND applications in America and China is an instance of how its founder, Dr. Jiang, is simultaneously contributing to the advancement of bioscience on both sides of the Taiwan Strait. Dr. Jiang's entrepreneurial ability also exemplifies opportunity discovery, evaluation, and exploitation (Shane and Venkataraman 2000). Similarly, Dr. Pan's discovery, evaluation, and exploitation of China's cost advantage allowed his firm to conduct concurrent R&D in China and Taiwan and to meet the self-imposed goal of creating seven to ten new products annually during a five-year span. Not only did major international pharmaceutical companies take notice, they also began to depend on multiple products manufactured from Dr. Pan's joint China-Taiwan strategy. Dr. Yen has contributed significantly to improvements in the quality of China and Taiwan's teaching and research in bioscience from his base in America. In retirement, Dr. Yen continues

to serve as a visiting professor and to oversee research projects by spending three months per year each in China and Taiwan. Dr. Leung founded a firm on Taiwan to find a cure for a cancer that strikes Asian women. He also visits China and Taiwan frequently to teach Christian and business ethics to entrepreneurs.

Taken together, Drs. Jiang, Pan, Yen, and Leung's "simultaneity of connection" goes beyond what Levitt and Glick Schiller found to exist between migrants' sending and receiving countries (2004). That is, had Drs. Jiang, Pan, Yen, and Leung focused their attention on Taiwan alone, then their actions would confirm Levitt and Glick Schiller's findings. In this instance, however, Drs. Jiang, Pan, Yen, and Leung's transnational work includes China, a country that shares culture and language with, but enjoys its own sovereignty vis-à-vis these four TBEs' country of origin. Therefore, TBEs' transnational work extends our understanding of transnational "simultaneity of connection" to include a third country that shares the sending country's culture and language but is its own political entity. Equally important, this evidence about TBEs' concurrent work in China and Taiwan begins to answer Waldinger's question about whether Glick Schiller's lessons can be extrapolated to the migration of other people under different circumstances, including China (2009).

One avenue for further research on the TBEs is to study a similarly situated cohort of individuals from China so that we can compare and contrast answers to the following three key questions: Do TBEs from China exhibit something akin to the global sensibility of TBEs from Taiwan? If so, how did they develop their global sensibility? If not, how do TBEs from China observe, analyze, and solve local problems? Such a study would throw light on how different economic, political, and social institutions in China and

Taiwan combined with longterm residency and work in America impact TBEs' entrepreneurial skills. Analyzing the migration experiences and motivations of TBEs from China vis-à-vis Taiwan would advance our understanding of the precursors to global sensibility. To be sure, culture and language expertise is a prerequisite to developing the "contextual sensitivity and perceptual acuity" (Doz 2011) necessary to conduct research on this topic. Serious investment in time is required to gather robust data sufficient for theory development. Once gathered, the theory developed is important to our understanding of how organizations can maximize the potential contributions and leverage the global sensibility of high-skilled migrants such as TBEs. This is especially true when management's global turn has shifted the focus from supply chain to high-skilled migration (Ibid).

## Notes

1. Taiwanese: Depending on context, I use this term to denote either culture, language, nationality and/or ethnicity.
2. Chinese: Depending on context, I use this term to denote either culture, language, nationality and/or ethnicity.
3. *Liuxuesheng*: This term is used by individuals from China and Taiwan to describe those who leave their country of origin to study abroad.
4. To maintain confidentiality, with the exception of three individuals (Drs. Tse Wen Chang, Chris Fan, and Wen-Hsiung Li) who emailed me their waivers, I have used pseudonyms for all individuals mentioned in this paper. I have also used generic names such as "Third Prestigious National University" and "Large American City" for the same reason.

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# **Learning from the Unfamiliar: How Global Sensibility Helped Transnational Bioscience Entrepreneurs Succeed**

## **I. INTRODUCTION**

Recognized to be among the world's most productive bioscience researchers and entrepreneurs, transnational bioscience entrepreneurs (TBEs) are choosing to leave America's world-class bioscience infrastructure for a global information and communications technology powerhouse with a bureaucracy derived from imperial China's civil service examination system. While building Taiwan's bioscience capability to meet world-class standards, TBEs are improving Taiwan's competitiveness in the global pharmaceutical value chain. TBEs are an example of how the traditional phenomenon of brain drain has given way, in recent years, to the new practice of brain circulation. That is, a sizable number of immigrants who left their countries of origin to pursue advanced degrees and careers in the humanities and natural and social sciences in America have returned to their native lands. Understanding the motivators of high-skilled immigration is important because individuals like the transnational bioscience entrepreneurs, the protagonist of this paper, accelerate not just the economic, but the cultural, political, and social developments of their host and sending countries.

The pattern that emerges from my data is that TBEs achieved greatness as entrepreneurs and bioscientists precisely because they were willing to learn from the unfamiliar. TBEs' lesson for all of us is that to become global, we must gain cultural,

linguistic, and social flexibility by being totally immersed in the unfamiliar for an extended period until an inflection point has been reached. That is, when the unfamiliar becomes the familiar, we will gain a global sensibility that includes cultural, linguistic, and social flexibility. This global sensibility allows us to observe, analyze, and solve local problems by looking at them through a global lens and leveraging our global expertise and social networks. With the entanglements of entrepreneurship, identity, and mobility as backdrop, this paper seeks to understand why high-skilled immigrants would repeatedly learn from the unfamiliar. Why would they leave their homeland for a foreign land? Why would they return to their homeland in the autumn of their careers? How have they changed in the process?

In opposition to their significant contributions to entrepreneurship, science, and society, the nature of American racism places a permanent badge of foreignness on TBEs. The perceived incongruence between TBEs' social standing and their phenotypical features disrupts established racial norms that has become commonplace in American society. In the autumn of their careers and free from family obligations, TBEs elect to return to their country of origin. It is with the entanglements of entrepreneurship, identity, and mobility as backdrop that I collected and analyzed interview data from TBEs.

Despite the sometimes inhospitable racial climate that exists in America, nearly all of the thousands of Taiwanese American bioscientist remain in their adopted homeland to pursue a career and to raise a family. As much as TBEs wanted to live on Taiwan or pursue a different path to career success, they had obligations to their children and parents. Consequently, even if they found their own careers stymied by institutional

obstacles in America, TBEs continued in their work until their children completed college or graduate school before returning to their country of origin. TBEs decided to return to Taiwan because they realized that the island's environment held an opportunity for them to accomplish the goals they had set out for themselves.

TBEs' embodiment of mainstream American discourse on mobility refutes the notion that their transnational migration is a contemporary version of the sojourner of old. Some of the data in this paper confirm while others extend findings from previous studies on transnational migrants (Glick Schiller *et al.* 1995; Portes 2003). Their identity and work as transnationals have conferred on TBEs the need to be rooted in locations and cultures where they have academic affiliations, scientific and social networks, business investments, and permanent residence. Regardless of where they are living, TBEs maintain simultaneous intellectual commitments to American, Chinese, and/or Taiwanese societies. TBEs are motivated by nostalgia for their country of origin, obligation to family members, and opportunities for self actualization.

This paper begins by discussing literature from Asian American studies on foreignness and flexible citizenship. This literature, together with the subsequent methodology section, provide the reader with a context for understanding excerpts of the original transcripts, including the myriad factors involved in collecting this data set. The next section of the paper, entitled TBEs, is organized according to the categories of the glass ceiling, language, family, nostalgia, food, and new experiences. I generated these categories by following the tenets of grounded theory, the data contained therein provide the reader with direct evidence from the interview data. After discussing what motivates TBEs to leave their homeland and only much later, circle back toward China,

the next section builds a theory of global sensibility. In conclusion, their global sensibility explains how TBEs recognized an opportunity where self actualization and economic and scientific development converged. As a coda to their already highly distinguished careers, TBEs seized the opportunity to learn what their true capabilities are absent the institutional barriers that are present in America and to leverage their expertise in upgrading Taiwan's global bioscience competitiveness.

## **II. BACKGROUND**

### **A. FOREIGNNESS**

Professor Neil Gotanda's analysis of foreignness furthers our understanding of the transnational migration of Taiwanese American bioscience entrepreneurs. Gotanda's analysis of foreignness has four elements: (1) the fallacy that racism against Asian Americans does not exist; (2) Asian Americans' position in the middle of the racial hierarchy; (3) the myth of the model minority; and (4) United States Supreme Court's "other non-whites" dualism" (Gotanda 1992). A major finding of Gotanda's analysis is that in America, a "deeply-embedded sense of foreignness" can easily be activated by any vestige of foreign, alien, or non-American culture. The source of this "deeply-embedded sense of foreignness" is the dissenting opinion in the United States Supreme Court's 1898 decision in *U.S. v. Wong Kim Ark*.<sup>5</sup>

For a cohort such as the TBEs, these vestiges may include, among other things, dress, food, language, and mannerisms. For this cohort who did not immigrant to

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<sup>5</sup> 169 U.S. 649.

American until after college graduation, the unfamiliar in a host country may induce a longing for the familiar. Unfortunately, what may be the familiar to the TBEs can easily be perceived as vestiges of foreignness by Americans. To minimize the detriments of being perceived as foreign, TBEs may decide to enjoy the familiar in their private realm, however, food, language (including accents), and mannerisms are not elements of their identity that can be easily suppressed.

In his essay *Asian American Rights and the "Miss Saigon Syndrome,"* Gotanda distills the historical, legal, and social predicament of Asian Americans into a cogent explanation that affords the reader a grand vision with which to see the changing role of the American nation first through case law, and later through the construction of a stratified society that reinforced concepts such as the unfamiliar, alien, and foreign into existing American racial legal ideology. Gotanda bookends his essay with the "Miss Saigon Syndrome," his shorthand for the fallacy that racism against Asian Americans does not exist. He sees the conflation of Asians in Asia with Asian Americans to reinforce the model minority myth. Seen in this light, the success of Toyota Motor, for instance, reinforced the economic success of Asian Americans in general, and not just of Japanese Americans. For Gotanda, the function of the image of Asian Americans as the model minority serves three functions: to deny Asian Americans government benefits, to preserve the status quo, and to blame inner-city Blacks for their own ills.

Next, Gotanda turns his attention to racial stratification. He asserts that the ideological function of racial stratification is to pit Asian Americans against African Americans to underscore that race and social and economic structure are not the causes of the latter's economic failure. By naturalizing racial stratification, with Blacks

on the bottom, whites on top, and Asian Americans and Latino/as in the middle, Gotanda posits that conservatives wished to show that the mere fact that racial minorities like Asian Americans and Latino/as are in the middle of the hierarchy demonstrates that race and social structure are not the cause, that obstacles can be overcome if one just works hard enough, and finally, that economic disparity is a natural phenomenon, not a social problem worthy of the government's attention. By accepting this racial stratification model, logic dictates that one also accept that racism does not exist against Asian Americans and Latino/as, for if it did, then they would not be positioned where they are in the hierarchy.

Gotanda shows that the model minority image is indeed a myth by using three historical examples. First, Gotanda cites Charles McClain's (1996) work on the Chinese American historical struggle for civil rights to illustrate how Chinese laborers fought with much success against unjust laws by hiring highly skilled attorneys to litigate and to lobby on their behalf. Second, Gotanda cites Yamashita and Park's work on the 1922 naturalization case *Ozawa v. United States*<sup>6</sup> to encourage scholars to work on the important linkage between U.S. involvement in Asia and contemporary images of Asian Americans. Third, Gotanda showed that negative attitudes in the 1990s against Japanese investment in American commercial real estate have their origins in the alien land laws of the 1920s, which prohibited "aliens ineligible for citizenship" from owning land and forced many Asian Americans to list their American-born children as the legal landowners.

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<sup>6</sup> 260 U.S. 178.

Gotanda's final section explicates a powerful concept that dissects the root cause of many predicaments facing Asian Americans. In what Gotanda called the Supreme Court's "other non-whites" dualism," he showed that the legal relationship

Alien : Citizen

has an analog in the social relationship

Foreign : American

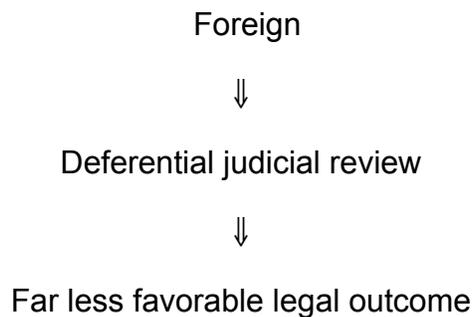
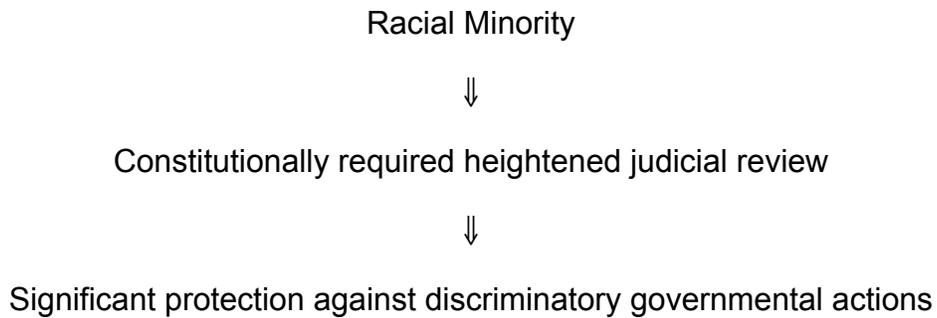
and these two relationships can be joined as follows

Alien : Citizen :: Foreign : American

so that Alien is to Foreign what Citizen is to American. This relationship shows that what is Alien belonged exclusively to the realm that is Foreign in the same way that what is part of Citizen belonged exclusively to the realm that is American. One sees, furthermore, that Alien and Foreign are incompatible with Citizen and American.

Racially, Gotanda posited that "other non-whites" (Asian Americans, Arab Americans, and Latino/as) are presumed to be Alien and Foreign while only whites and African Americans are presumed to be Citizen and American. The consequence of this racial presumption is that even when "other non-whites" are discovered to be Americans, they are nonetheless presumed to carry a badge of foreignness. In this vein, Asian Americans continued to be perceived as unfamiliar, different, abnormal, and hence alien and foreign.

Unfortunately, these relationships are not merely theoretical. Rather, Gotanda derived these relationships from his analysis of the Supreme Court's jurisprudence on race and foreignness. The Court's jurisprudence can best be understood using the two flow charts below:



As the above two flow charts show, a defendant is far better off to be labeled as a racial minority than as a foreigner. A racial minority enjoys strict scrutiny, the highest level of judicial review and is offered significant protection from discrimination committed by government agencies. In contrast, discriminatory action against a foreigner falls under the century-old jurisprudence of immigration law, which belongs to the rubric of the law of foreign relations and national security and has its roots in the concept of national sovereignty. Therefore, the Court grants the government significant latitude and deference in its treatment of foreigners or aliens, leading to outcomes that are highly favorable to the government and devastating to those classified as foreign.

Next, Gotanda traces the origins of this “other non-whites” dualism to the dissenting opinion in the Supreme Court’s 1898 decision in *U.S. v. Wong Kim Ark* upholding *jus soli* citizenship of American-born children of Chinese nationals. Gotanda read the

dissent to mean that despite the fact that the Court granted U.S. citizenship to American-born children of Chinese nationals, the lingering effect of the dissent is to attach a “deeply-embedded sense of foreignness” that can easily be activated by any vestige of foreign, alien, or non-American culture. Historian Henry Yu’s (1992) description of sociologist Robert E. Park’s understanding of clothing as the benchmark of Chinese and Japanese Americans’ assimilation into American society is a case in point of how the Court’s decisions have a way of spilling over into American society.

Gotanda then analyzes the language within Justice Hugo Black’s majority opinion in *U.S. v. Korematsu*,<sup>7</sup> the 1944 Supreme Court case that upheld the constitutionality of Japanese American internment. As Justice Black explained, because the U.S. was at war with Japan, therefore all American citizens of Japanese ancestry are suspect. In Justice Black’s syllogism, it was constitutional to order Japanese Americans to leave their homes and relocate themselves to internment camps at tremendous economic loss. The non-internment of Japanese Americans in Hawaii notwithstanding, Justice Black’s language was plain: the fact that Japanese Americans were U.S. citizens did not lessen the racial foreignness of their identity within American society. Hence the Court’s presumption of disloyalty in those who are racially foreign is naturalized by case law. In essence, the U.S. nation-state has racialized Asian Americans to be in a lose-lose situation. On the one hand, when presumed to be racially foreign, Asian Americans are viewed as the Korean American grocer whose entrepreneurial work ethic is conflated with the global success of Hyundai Motor and LG electronics. On the other hand, when presumed to be American, Asian Americans are trapped in the middle of the racial

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<sup>7</sup> 323 U.S. 214.

hierarchy, to be manipulated by whites as the model minority that disciplines Blacks' underachievement and welfare dependence.

## **B. FLEXIBLE CITIZENSHIP**

According to University of California at Berkeley professor of anthropology Aihwa Ong's book *Flexible Citizenship: The Cultural Logics of Transnationality*, flexible citizenship means the acquisition of multiple passports by wealthy individuals as a form of insurance policy to guard against future political and economic instability in their homelands. As Ong explains, holding more than one passport does not mean that those individuals, who are in a position to explore various citizenship options as a strategy to "enhance their economic mobility and yet sidestep the disciplining of particular nation-states," are any less patriotic to their homeland (Ong 1991: 135). Rather, they have the means to optimize their economic futures beyond current and possible future disciplining of particular nation-states and therefore, have chosen to exercise those means.

As Ong demonstrates, similar to Gotanda's explanation on the same topic, the American perception of who is American and who is foreign has relegated transnational Asians who enjoyed high social standing in their homelands to the ranks of racial minorities in the U.S. For Ong, because of a perceived incongruence between linguistic ability and phenotypical features, the cultural practice of well-heeled newly arrived Asian immigrants speaking fluent English in order to signal their high social standing in their home country backfires in places like the U.S.

In her interviews with wealthy immigrants from Hong Kong, Ong learned that Americans welcome Hong Kong investors much less than they welcome their capital. Ong saw this unfriendly response of elite Americans as their way of working through the incongruence between wealthy Hong Kong immigrants' race and social position. This unfriendly response also signaled a strong discomfort on the part of white elite Americans with wealthy Asian immigrants' ability to assume a high social position that is normally reserved for themselves. White elite Americans believed immigrants from Hong Kong disrupted the long-accepted racial hierarchy of American society. Thus, Ong viewed English-only ordinances and re-zoning efforts in California as representations of white Americans' response to the influx of Asian aesthetics, bodies, and capital, which challenged the conventional definition of who is and is not an American and what is and is not American (Ibid, 101).

### **C. METHODOLOGY**

For the purpose of this study, I used an inductive method of grounded theory building. Grounded theory building is a constant bi-directional process involving data collection, coding, memoing, and theory generation that is solidly based in reality. The primary goal of grounded theory is to generate theory rather than to verify theory. This process aims to formulate a theory that captures the social reality as people in the situation understand it (Glaser and Strauss 1967; Strauss 1987; Yin 2003). I used multiple sources of evidence, including (1) archival records; (2) organizational documents; and (3) open-ended, face-to-face in-depth interviews to yield conclusions that are convincing and accurate. To increase reliability, I maintained a chain of evidence (Yin 2003). The

use of multiple sources of evidence to study TBEs who have commercial interests in Taiwan but shuttle between America, China, and Taiwan required me to be in Taiwan to collect this data.

Between May 2008 and May 2010, I collected archival records in Taipei, Taiwan, about TBEs from sources such as individual CVs, Web of Science publication database, Google and Yahoo! searches, and organizational documents. Archival records on Taiwan's bioscience industry come from Ministry of Economic Affairs's *Biotech Industry in Taiwan* and major Chinese-language periodicals, including *Business Weekly*, *China Times*, *Commercial Times*, *CommonWealth*, *Economic Daily News*, *Global Views Monthly*, *Liberty Times*, and *United Daily News*. Organizational documents of the firms founded by TBEs include annual reports, company brochures and web sites, financial, new drug discovery, and clinical trial milestones data from Google, *New York Times*, *Wall Street Journal*, and Yahoo searches.

Although my subjects have lived in America for approximately 30 years, TBEs are more forthcoming about the vicissitudes of their odyssey when conversing in Chinese primarily for two reasons: (1) They were born and raised in Taiwan and did not leave the island until they finished college; (2) The sensitive nature of my interview questions triggers memories of events that are personal and thought of by my research subjects in Chinese. Conducting interviews in Chinese affords TBEs the ability to articulate their recollection and reflection of the social reality as they themselves best understood it. Had I conducted these face-to-face interviews in English, my subjects would not have had any difficulty understanding my questions, however, the richness of their responses would have been limited by their English speaking abilities. With the exception of three

respondents, who preferred to switch to English, interviews with 28 respondents were conducted entirely in Chinese.

My decision to conduct interviews face-to-face is grounded in the necessity to establish legitimacy and to cultivate trust with my respondents. Interviewing face-to-face is also important because it creates an opportunity to decode the complex American, Chinese, and Taiwanese cultural-specific nonverbal cues (e.g. facial expressions, gaze, gesture, bodily movements, position, and stance) given by TBEs. These nonverbal cues can carry between four and eight times more information than verbal language (Elman and Kennedy-Moore 2003; Henley 1975). Unless my respondents felt that I was legitimate and trustworthy, it was unlikely that they would have shared their personal and professional experiences with me. I had the usual items of legitimacy: institutional review board approval and confidentiality form, Cornell University email address, invitation letter from my dissertation committee, junior visiting scholar affiliation at Academia Sinica, Taiwan, business card, and suit. Within the tight social network of which TBEs are a part, I suspect being referred by three highly successful and credible TBEs near the beginning of my interviews gave me the legitimacy that was important to members of this tight community.

In August and October 2009, I conducted two pilot face-to-face interviews to test the efficacy of my questions and modes of establishing rapport. To complete my interviews I continued to be based in Taipei, Taiwan, until May 2010. My archival research suggests that to date, Taipei can count approximately 50 TBEs who have worked in American academia and industry for some 30 years before deciding to return to Taiwan. I identified my research subjects (n=31) through archival research and snowball

sampling. Based on my own estimate, I interviewed 62 percent or 31 individuals from a cohort of 50.

Table 1. Profile of Research Subjects

	<b>Education</b>	<b>Men</b>	<b>Women</b>	<b>Returnees</b>
PhD	24	19	6	17
MD/PhD	3	2	1	3
MS	1	0	1	0
PharmB	2	2	0	0
DVM	1	1	0	1

Eighty-seven percent (twenty-five) of my subjects earned doctorates in the life or physical sciences from leading American research universities (See Table 1). Nearly ten percent (three) earned both an M.D. and a Ph.D. Three percent (one) earned a master’s degree. Three percent (one) earned a doctor of veterinary medicine degree. Six percent (two) hold a bachelor’s of pharmacy degree. Sixty-eight percent (twenty-one) of my interviewees are returnees, defined here as individuals who have decided to spent at least six months per year in Taiwan or individuals who have sold their homes in the U.S. and returned to Taiwan permanently. Twenty-six percent (eight) are women and eighty-one percent (twenty-five) are men.

I contacted every TBE initially by email and followed-up with a telephone call either directly to the TBE or to his / her executive assistant to explain the nature of my email and answer any questions. Many TBEs accepted my email invitations personally within 24 hours. Every interview was digitally recorded. I conducted in-depth interviews with all 31 TBEs. With the exception of two interviews that took place in coffee shops, all the

TBEs were interviewed in their respective offices. Initial interviews ranged between 90 to 210 minutes, with an average of 120 minutes. Follow-up interviews ranged from 30 to 90 minutes, with an average of 60 minutes. All subjects were guaranteed confidentiality and anonymity. As a result, with one exception, pseudonyms are used throughout this paper to protect the identity of my research subjects. I transcribed and translated (from Mandarin Chinese to English) relevant sections of each interview for coding and analysis. I have shared this report with participants to ensure accuracy, generate additional evidence, and increase construct validity (Yin 2003). I also conducted follow-up interviews to discuss new insights in depth until conceptual saturation. Follow-up interviews were spaced out by several weeks in order to allow for data analysis and relationship building. My fluency in Mandarin Chinese and cultural competency greatly facilitated my effort to cultivate the trust of my research subjects.

This sample is biased toward bioscience entrepreneurs who either decided to invest in Taiwan or travel to Taiwan on a frequent basis. This means that TBEs who either do not have commercial interests in or do not visit Taiwan on a regular basis were excluded from this study. Because TBEs are individuals who fit a specific, well-defined profile, snowball sampling is an efficient method to identify and to reach them. At the same time, the data generated through snowball sampling is by no means random; it is also not generalizable to a larger group of individuals. Yet, my findings may throw light on our understanding of similarly situated individuals who have undergone similar social processes (Blair-Loy 2003). Naturally, individuals who do not fit the profile of TBEs and are not familiar to other TBEs were not included in this study (Atkinson and Flint 2001).

Gathering the same robust data set would have been exceedingly difficult had I used quantitative methods to answer my research questions: (1) Why TBEs left the familiarity of their homeland for the unfamiliarity of a foreign land? (2) Why they returned to their homeland precisely when they could have enjoyed the fruits of their labor? and (3) How they have changed in the process? I employed a labor-intensive on-the-ground methodology that allowed me to experience firsthand the island, for which TBEs have so much nostalgia. Given the personal nature of my questions, I could not send a survey or questionnaire by email to world-class bioscientists who live extremely busy lives halfway around the world. Doing so would virtually guarantee an extremely low response rate at its best and an insipid data set at its worst. Devoting two years of my life to understanding Taiwanese society firsthand allowed me to earn the credibility and trust that were critical to collecting a rich data set.

TBEs were willing to take time out of their busy lives and sit through two to five hours of interviews with me because I demonstrated to them my own longterm dedication to my research project. Had I responded to their ubiquitous question about the length of my stay in Taiwan with “a few days,” “a few weeks,” or even a “few months, they would not have taken my data collection seriously for two reasons. First, TBEs work in new drug development requires a time horizon between 15 to 20 years. Consequently, they have high expectations for scholars to devote the amount of time that is commensurate with high quality results. Second, TBEs’ experience learning from the unfamiliar in America taught them that a true understanding of Chinese and Taiwanese culture, language, and society can only be had with longterm devotion. Devoting the first of my two years in Taiwan to intensive language training gave me the native fluency in

Mandarin Chinese that allowed me to interview TBEs in their native language. Using Mandarin Chinese put TBEs at ease during interviews. It allowed TBEs to be most articulate as they described the vicissitudes of their transnational migration, which led to the successful collection of a highly robust data set.

For those who prefer quantitative benchmarks, the caliber of TBEs' achievements approximate that of Dr. Tse Wen Chang and Dr. Bridget Fu (a pseudonym). Dr. Chang, invented Xolair and cofounded Tanox, which Genetech acquired for \$919 million in 2006. Dr. Bridget Fu, helped the American Food and Drug Administration (FDA) write the policy for approving generic inhalation products. Beginning in the late-1980s, Dr. Fu cofounded and headed technical affairs at one of the world's largest generic drug manufacturers before it was acquired for \$7.6 billion in the mid-2000s. Dr. Fu's multi-million-dollar gift to her alma mater's pharmacy school in the late-2000s will prove to have a significant impact on current and future generations of students and on Taiwan's bioscience competitiveness. The TBEs in this paper discovered and commercialized groundbreaking medicine that improved the lives of hundreds of millions of individuals around the world.<sup>8</sup>

### **III. TRANSNATIONAL BIOSCIENCE ENTREPRENEURS**

In this section, I discuss my respondents' answers under the categories of the glass ceiling, language, family, nostalgia, food, and new experiences. I generated these categories by following the tenets of grounded theory. The first three categories are

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<sup>8</sup> Because I must adhere to my institutional research board confidentiality agreement, I cannot disclose the names of the TBEs and the therapeutics they brought to market.

discussed simultaneously, because interview data from my respondents intersect these categories continuously. Discussing these six categories independently would disrupt the flow of text from each transcript so much as to appear intrusive and incomplete.

### **A. GLASS CEILING, LANGUAGE, AND FAMILY**

After an accomplished career in the American pharmaceutical industry and the U.S. Food and Drug Administration (FDA), Dr. Edward Gao (a pseudonym) returned to Taiwan in the late 1990s to oversee bioscience technology transfer. Dr. Gao clarified why he decided to return to his country of origin:

When I was working at the U.S. FDA, I had already reached the top of the salary scale, so I could've easily stayed and lived a comfortable life. Yet, I always felt like there was some sort of a glass ceiling because I was stuck on the technical ladder.

But I didn't think that was my destiny. I believe my destiny is to make a greater contribution to society or nation. If I just stayed at the FDA for my monthly paycheck and continued to review new drug applications, there's not much fun in that.

Coming back, I found that Taiwan is more interested in my opinions and suggestions because it's still trying to catch up to the U.S. As a result, I can have a greater impact on this society and nation.

Responsible for reviewing new drug applications in the FDA, Dr. Gao had already reached the top of the General Schedule pay table for United States federal employees. Unless Dr. Gao switched onto the managerial track, he had reached the highest rung possible on the technical ladder. Unfortunately, Dr. Gao's situation is not unique. The stereotype that Asian American scientists and engineers lack managerial skills has made it extremely difficult for hundreds of thousands of engineers and scientists in the

public and private sectors to advance their careers on the managerial ladder (Steele, 1997; Woo 2000).

Dr. Gao's intuition was correct. The glass ceiling phenomenon is not limited to advancement within a single career track; it also involves the inability to switch between technical and managerial tracks. Although Dr. Gao already enjoyed considerable responsibility within the new drug development value chain, he felt that he was capable of making even greater contributions to society. Like his TBE cohort, Dr. Gao's personality was not one that allowed him to enjoy his life with the stability of a monthly paycheck. Instead, he felt the need to push himself beyond the status quo until he arrived at a place where he could make an even greater contribution to society. Dr. Gao equated routine with stasis and wanted to replace it with dynamism. Consistent with the experience of other TBEs, Dr. Gao found that the disparity between American and Taiwanese bioscience capabilities opened a window of opportunity for him to assume significantly greater responsibility. For Dr. Gao, returning to his country of origin gave him the national platform that he felt he was destined to reach.

For Dr. Tse Wen Chang (not a pseudonym), the inventor of Xolair and cofounder of Tanox, which Genetech acquired for \$919 million in 2006, his self-awareness as a foreigner in American society at least in part influenced his career choice:

I thought that because I was a foreigner, I would have a higher likelihood of success if I entered industry to work on applied problems and to be in a more meritocratic environment. That is to say, my career can be judged on the basis of my work.

I've been working on applied problems for the past 30 years, but these problems are also of interest to academia. Because you have to be the first in order to receive your patent, that by definition has a high value to academia.

In 1977, as Dr. Chang approached the end of his graduate school training, his understanding of American society and academe persuaded him that the private sector offered a relatively more meritocratic workplace than academe. Consequently, he completed a three-year post-doctoral fellowship at the Massachusetts Institute of Technology before doing a short stint as a senior scientist at pharmaceutical behemoth Johnson & Johnson's Ortho division. Dr. Chang joined bioscience startup Centocor as director of immunology. Four years later, on the basis of his highly regarded papers on the human immunodeficiency virus, Dr. Chang joined Baylor College of Medicine as professor of molecular virology after Houston recruited he and his wife to jumpstart the bioscience industry at America's fourth largest city. Within a few months after relocating to the Bayou City, Dr. Chang cofounded Tanox to commercialize his technology for antibody microarrays. Dr. Chang may have chosen a career in American industry because of his belief that it is friendlier to foreigners in America. The pace and enormity of his achievements, however, ensured that his novel solutions to applied biomedical problems garnered tremendous attention from all economic sectors.

One may assume that Dr. Chang is an extreme case among my sample of TBEs. On the contrary, Dr. Chang is only above average relative to his TBE cohort. Constrained by the limitations of my institutional review board confidentiality agreements, I am unable to reveal the identity of my research subjects except for those who waived their confidentiality. This confidentiality agreement includes the groundbreaking therapeutics and scientific discoveries, which if disclosed, would make it easy to ascertain the identities of my research subjects as my research subjects as closely associated with their work.

Dr. George Pan, the highly successful research scientist and American pharmaceutical executive who co-founded his own firm on Taiwan in the late 1990s, saw different versions of the glass ceiling phenomenon:

In America, in terms of the glass ceiling, some of them are real, some of them are not real. Why should people give you the opportunity if you don't learn the language. Often, glass ceiling is not your language, it's your thought process.

On the one hand, Dr. Pan acknowledged the glass ceiling phenomenon that stereotypes Asian Americans as technical experts with little if any managerial skills. On the other hand, in cases where individuals did not try their best to master the English language, its various nuances, and concomitant thought process, Dr. Pan did not believe stereotyping is to blame.

Dr. Kevin Du is a highly experienced entrepreneur. He built a division within a major American bioscience company from scratch to a billion-dollar business before leaving as that division's vice president in the early 2000s to found his own startup on Taiwan.

Dr. Du stated:

No matter what, I have communication problems in the U.S. By this I don't mean routine communication. I can write and win federal grants using English, my second language. I can understand and respond to American jokes and excel in repartee.

Nonetheless, I use less than 30% of my capability. I have a language issue in the U.S. Working in American jobs involved technology, managerial skills, leadership, face, and skin. I did well, but I didn't feel like I reached my full potential. I performed well at a certain level, but I knew that I could've performed at an even higher level.

At the beginning, as a first level supervisor, folks didn't appreciate me that much, although they saw me as a Chinese who worked hard and helped them a lot. In each of the next two levels, they thought that I was okay. Even when I reached the level of a corporate vice president, I still felt that it wasn't enough because I wasn't asked for my input for corporate-level decisions.

And there were things between the lines that I just didn't understand. Politics, I didn't have that. I only had technology. Maybe management. But in the end I

was still lacking something. My final highest title was scientific director but it was at the vice president level because we were all demoted one level due to a major acquisition.

For Dr. Du, returning to his country of origin gave him the opportunity to reach his full potential, to maximize his contribution to society by leveraging the sum of his training and experience. Through a combination of bureaucracy, language barrier, office politics, and stereotyping, Dr. Du felt he was never given the opportunity to tap more than 30% of his capability. As he climbed the corporate ladder from first level supervisor to corporate vice president, he always sensed that he was unable to understand every nuance of corporate life. In addition, he saw that he was never given an opportunity to prove that he can manage responsibilities beyond his own business division. From Dr. Du's perspective, he reached the glass ceiling early in his career; he was unable to become a senior or executive vice president, or even a chief executive officer. To be sure, TBEs are extreme cases relative to the general population. Drs. Gao and Du's experiences throw into sharp relief that the phenomenon of the glass ceiling is not simply about the advancement of women and racial and ethnic minorities into management positions.

For nearly the past decade, Dr. Wesley Mao (a pseudonym), a U.S.-based repeat entrepreneur, spent six months of every year in his country of origin to improve the island's bioscience industry. Dr. Mao placed his language barrier in context:

If your children watch you work hard, it's likely to rub off on them. I arrived in the U.S. when I was 27. I can communicate without any trouble, however, there is still a communication gap, it's still not that smooth.

But for my children's generation, they have our values, and if they can maintain our intelligence, they will be better off than we are.

Dr. Mao surmised that if his children's generation has the work ethic and intelligence that allowed TBEs to succeed, and with the added bonus of their native fluency in English, their mother tongue, holds tremendous promise to reach a level of achievement beyond the first generation. The realization of this promise is a major motivator to immigrate to America. Hence once here, as first generation immigrants, no TBE would want to return to their country of origin until after their children have completed college or graduate school and are well on their way to achieving their own professional success. Put differently, no first generation immigrant will place their own nostalgia for their country of origin ahead of their own children's future.

Dr. Tse Wen Chang returned to Taiwan in 1996 after a highly successful career in industry and academe, including the development of Xolair, which in 2006, became the first bioscience therapeutic to receive American Food and Drug Administration approval for treating asthma related allergies. Dr. Chang also cofounded Tanox, which was acquired by Genentech in 2007 for \$919 million for its franchise in anti-immunoglobulin E (IgE) antibodies for prophylactic and therapeutic applications in allergic diseases. Perhaps Dr. Chang's most significant contribution to bioscience is his discovery of the structural features of IgE and membrane-bound IgE (mIgE) (Chang 2000; Chang 2007).

Dr. Chang explained why decided to return to Taiwan on a permanent basis:

Between 1993 and 1996, two National Tsing Hua University presidents visited me in Houston to invite me to return to Taiwan to serve as the dean of the college of life sciences . . .

Personally, I did not want to leave Houston because my two daughters were still very young. At first, in terms of personal life, I thought my daughters would think that it's odd for mommy and daddy to work together but to live separately. After a while, I thought that maybe I don't have to stay in Houston.

According to Dr. Chang, if he decided to return to his country of origin, he would do so because of the emotional pull that his alma mater, National Tsing Hua University (NTHU), has on his being. It was at NTHU that Dr. Chang began his journey as an intellectual and scientist. His academic excellence at NTHU opened up the door for him to pursue his doctorate at Harvard University, which paved the way for his tremendous success as a research bioscientist and entrepreneur.

When two NTHU presidents visited Dr. Chang's home in Houston to demonstrate the sincerity of their wish for him to serve as dean of the college of life sciences, Dr. Chang, did not want to leave his two young daughters and return to Taiwan by himself. In June 1996, after a three-year litigation between Tanox, the firm Dr. Chang cofounded with his wife, and bioscience giant Genetech, the two parties reached an official out-of-court settlement. In August 1996, shortly after Dr. Chang saw Tanox out of its legal crisis, he decided to go on a fact finding trip to Taiwan. As a result of this visit, Dr. Chang realized that perhaps his daughters could learn to cope with his absence just as they had with his 1991 divorce. Subsequently, Dr. Chang decided to step down from his role as Tanox's vice president of research and development and return to his country of origin to assume the duties of the dean of the college of life sciences at his alma mater.

Dr. Kevin Du offers an array of questions that every prospective returnee must consider seriously before taking on this life changing decision.

Let's talk about my personal philosophy now. First, do you have the money to become a returnee entrepreneur and support your family at the same time?

Two, everyone is happy in America. Why do you want to change your situation? Your wife will ask you, are you sure?

Taiwan's business environment is a jungle, do you know that? Taiwan has its own culture, tradition, and business practice.

Dr. Du's questions inject a heavy dose of pragmatism into the calculus of returning to one's country of origin. These questions also dispel the notion that returning to one's country of origin is simply motivated by nostalgia. First, as Dr. Du noted, individuals in their 50s and 60s cannot simply pick up their things and relocate to Taiwan to start a bioscience business without the ability to raise venture capital. In addition, having sufficient funds to support their families is a primary concern. Consequently, family obligation is a major reason why TBEs wait until their children are college graduates before returning to their country of origin. Second, America offers the open space, low population density, and high quality of life that few countries can match. Under what circumstances would TBEs want to forgo their material comforts and in the process, convince their spouses of their rationale?

Third, Dr. Du described Taiwan's business environment as a jungle in the sense that relative to America, it has its own set of business practices that are steeped in Taiwanese/Chinese culture and tradition. As much as TBEs assume that they are familiar with Taiwan's culture and traditions, because they grew up on Taiwan, flexibility, patience, and an open mind are key to adjusting to the differences between the American and Taiwanese business environments. Of course, the need to adjust to these differences does not preclude the unique insights, knowledge, and social networks that TBEs bring to Taiwan's bioscience project. Rather, Dr. Du's questions serve as a business and cultural advisory for TBEs planning to make the trek.

Dr. Du went on to explain why he decided to return to his country of origin:

But why Taiwan and not the U.S. or China? Because no one knows how to do what I'm trying to do here. This is virgin territory. I'm doing this for myself and for Taiwan because there is opportunity here.

In the U.S. I'd be one of many. The opportunity available here in Taiwan allows me to succeed. I also want to do something for Taiwan. This is where I grew up. My homeland is here.

What are you going to tell your children that made you proud during your lifetime? What have you done? Saved someone's life? Made a ton of money? This is why I'm doing this. At least I feel like I accomplished something.

According to Dr. Du, his motivation to return to his country of origin is a blend of pragmatism and nostalgia. He wants to do prove to himself that he can achieve more than division vice president of a major American bioscience concern. It is important for Dr. Du to have an opportunity to bring his entrepreneurial plans to reality because after a lifetime of doing things for his parents, classmates, wife, and children, he wanted to be able to do something for himself. Now that his children are college graduates and independent adults, he finally has a moment to gratify himself, to learn what he can accomplish without the constraints of his American life.

If he succeeded, Dr. Du wanted Taiwan to benefit from his firm's accomplishments. That is, bringing a drug from laboratory to marketplace, a milestone that has eluded several TBE-founded Taiwan-based startups. Dr. Du's honesty allowed him to disclose his preference to be a big fish in a small pond, an opportunity that America could not offer him. As one of the very few TBEs capable of bringing a drug from laboratory to marketplace, Dr. Du saw his rarity as a major advantage, not a liability. Dr. Du's ability to discover, evaluate, and exploit opportunity in order to maximize his ability to succeed embodies the classic definition of entrepreneurship (Shane and Venkataraman 2000). Dr. Du's honesty extended to his emotions as he revealed his desire to leverage his knowledge and skills to bring glory to the land of his birth.

Today's Taiwan is a far cry from when Dr. Matilda Duan completed her Ph.D. In

place of the rudimentary academic environment and an absence of reagents, today many of Taiwan's laboratories are led by world-class scientists and well stocked with the latest instruments. Consequently, TBEs who belong to a younger generation like Dr. Penelope Wei (a pseudonym), are in the coveted position of choosing between staying in America or returning to Taiwan. According to Dr. Wei, an award-winning scientist and entrepreneur who returned to Taiwan in the mid-2000s :

Around year four or five of my post-doc, I saw how students a few years ahead of me worked extremely hard but failed to receive tenure. At the same time, Taiwan's economy in general and laboratory instruments hardware in particular were not inferior to the U.S.

For Dr. Wei, the arduous and uncertain journey to earning tenure in American research universities seemed less palatable when compared with Taiwan's high living standard and well-equipped laboratories. Despite earning the highest accolades available to a graduate student and post-doctorate research fellow, Dr. Wei opted for Taiwan's relatively less intense scientific community.

Dr. Bernard Zhu (a pseudonym), an award-winning scientist and entrepreneur explained who returned to Taiwan in the late-2000s, explained:

I think now is the right time for young assistant professors to return to Taiwan, given how competitive it has become to receive a research grant in the U.S. The quality Taiwanese grant applications is so poor. Yet, the funding rate of Taiwan's National Science Council is as high as 50%.

Compare this to the eight to ten percent funding rate at the U.S. National Science Foundation or National Institutes of Health. As a result, it's very easy for me to receive research grants in Taiwan. In a way, Taiwan's environment affords me the freedom to pursue my own research interests.

Amidst the massive budget deficits in America, cutting support to higher education has become a popular shortsighted solution at federal and state capitals. One direct result of this budget shortfall is an increase in the competition for research grants. For life

scientists who rely on expensive laboratory equipment to conduct innovative experiments, life has become that much more difficult. On the other hand, for seasoned grant writers such as Dr. Zhu, Taipei's continued supply of research and development dollars coupled with the large number of low quality grant applications have made competing for research grants on Taiwan a non-issue. In this way, returning to Taiwan has given Dr. Zhu the unexpected freedom to pursue his own research interests unencumbered by the keen competition for bioscience research funding within the American government-university structure.

Dr. Stewart Wong (a pseudonym), is a world renowned bioscientist and entrepreneur who gave up his tenured laboratory directorship at a leading American research institute to return to Taiwan in the early-2000s. Dr. Wong explained why he decided to return to his country of origin:

This is why we decided to return to Taiwan. We were tenured professors in the U.S., however, once Taiwan opened up, we were able to make a greater impact in this society.

I believe this is related to the glass ceiling phenomenon. Taiwanese government and society treat our opinions with respect. In the U.S., our opinion is viewed as coming from one of thousands of university professors.

I think this is an opportunity. We have many experiences in the U.S. that are applicable to today's Taiwan. We have many connections in the U.S. that can directly benefit Taiwan. Relatively speaking, we can probably make a greater contribution to Taiwanese society.

Dr. Wong cited the glass ceiling phenomenon, which makes it especially challenging for racial minorities and women to be recognized by the dominant society in America as the reason why, despite his significant scientific contributions, his policy advice was not taken seriously in America. Dr. Wong believed that Taiwan values his advice for three main reasons. One, Taiwan successfully transitioned from an authoritarian to a

democratic society where being Taiwanese is no longer a reason for indiscriminate persecution. Two, Dr. Wong is one of a handful of individuals on Taiwan who have the technical expertise and social networks within the international bioscience community. Because there is a dearth of domestic bioscience experts who can customize world-class solutions to fit local situations, Dr. Wong's advice is taken seriously. Three, unlike in America where he is a racial minority, Dr. Wong is a member of the dominant ethnic and cultural group on Taiwan.

Dr. Tse Wen Chang, the inventor of Xolair and cofounder of Tanox, which was acquired by Genentech in 2007 for \$919 million for its franchise in anti-immunoglobulin E (IgE) antibodies for prophylactic and therapeutic applications in allergic diseases, clarified what he can contribute to developing Taiwan's first new drug:

Academia Sinica holds the intellectual property to this second generation technology. This highly novel second generation drug is a immunogen or vaccine capable of producing its own antibody once it's inside the patient.

Taiwan has never developed its own novel drug. Everyone knows about the second generation anti-IgE drug, however, no one knows that I have another novel idea that is currently under development.

Dr. Chang embodies the spirit of creativity and innovation in his ability to generate, develop, and commercialize new ideas. In this sense, he is highly qualified to teach students in his country of origin how to innovate, evaluate the market value of new ideas, and bring insights into reality. Given the enormity of Dr. Chang's contributions to immunology in general and Tanox's financial success in particular, he could have chosen early retirement. Rather, he continued to push the frontier of medicine with his second generation vaccine technology to treat severe allergies. For someone like Dr. Chang who has the special ability to generate novel ideas, his major challenge is

prioritizing his many ideas because he can only develop so many projects at once. Motivated by his nostalgia for the land of his birth, Dr. Chang's decision to bring his knowledge and experience in bioscience drug development to help his country of origin was a major shot in the arm for the island's drug development efforts.

## **B. NOSTALGIA**

After an accomplished career in the American pharmaceutical industry and the U.S. FDA, Dr. Edward Gao (a pseudonym) returned to Taiwan in the late-1990s. As a special recruit of the Taiwanese government, Dr. Gao's job is to oversee all bioscience technology transfer. Dr. Gao explained:

Before I left Taiwan, I had a notion that I wanted to return to Taiwan one day. I think you are less likely to return if you didn't have a desire to return in the first place. It's a matter of whether you want to continue thinking of Taiwan as your homeland. I'm very satisfied with my decision to return to Taiwan.

For Dr. Gao, returning to Taiwan is the realization of a longstanding yearning to return to his country of origin. Based on Dr. Gao's understanding of the psychology of the Taiwanese diaspora, those who became returnees are those who left Taiwan with a distinct desire to go home because they continued to envision Taiwan as their homeland.

After a highly distinguished career in American academe and industry, Dr. Glen Zheng (a pseudonym) returned to Taiwan in the early 2000s. Dr. Zheng clarified:

*Luoyeh guigen* (falling leaves returning to their roots) is actually genetic. Look at salmon. It returns to its place of origin to spawn when it matures. This is genetically determined. People return because they want to return to a place of familiarity.

Consistent with his identity as a scientist, Dr. Zheng viewed his decision to return to his country of origin as biological in nature. Like the odyssey of the Atlantic salmon that are genetically preprogrammed to travel to distant places but somehow find their way back to the place of their youth to spawn (Klekowski 1997) , Dr. Zheng cited the Chinese phrase *yelui guigen* (falling leaves returning to their roots) to emphasize the basic desire of living things to return to a place of familiarity.

After a distinguished career in American academe and industry, Dr. Audrey Jiang (a pseudonym) returned to Taiwan in the late 1990s Dr. Jiang stated: “I was born here on Taiwan. If I could bring my experience back to Taiwan and accomplish something, then I will give it a try.” Clearly, Dr. Jiang is willing to leverage her explicit and tacit knowledge of business and bioscience acquired over her distinguished career to enhance her country of origin’s competitiveness in the global pharmaceutical marketplace. As stated, Dr. Jiang’s primary motivation is to help the land of her birth.

Dr. Mao, the U.S.-based repeat entrepreneur explained his motivations in the same restrained language as Dr. Jiang:

I’m 60 this year. I’d like to retire and rest a bit, however, seeing Dr. Wong Chi-Huey’s dedication to Taiwan really inspired me to contribute my part. I have no idea if we can succeed, but it’s worth trying.

All we can do is offer our suggestions. We have no idea whether Taiwanese government officials will heed our opinions. This is why we decided to return to Taiwan.

Sure, I won’t reject the financial rewards that will come if we succeed. However, we’re driven by many factors, not just the financial rewards.

After a decade of travel, the sixty-year-old peripatetic Dr. Mao is ready to stay put, however, the dedication to growing Taiwan’s bioscience capability displayed by Dr. Wong Chi-Huey, president of Academia Sinica and world-renowned chemist, inspired

Dr. Mao to delay his own retirement. Given Dr. Mao's track record as a repeat entrepreneur in America, his current work on developing a therapeutic for HER-2-negative breast cancer may well be successful. Taking what Dr. Mao said literally, however, will lead one to think that not only is he unsure of the outcome of his own work, but his policy recommendations also carry little weight with Taipei. But these are vintage Taiwanese understatements. What can be taken at face value is Dr. Mao's honesty when he confessed how he is propelled by myriad factors, including nostalgic and pecuniary.

Dr. Vance Yen (a pseudonym), a highly successful scientist and entrepreneur, continued to spend considerable time in America, China, and Taiwan. Dr. Yen recounted:

After my two-year post-doc, I considered returning to my alma mater on Taiwan because they had kept my earlier teaching spot open for me and wanted me to serve as department chair.

I thought about this opportunity seriously because I had taught at my alma mater for three years before going to America for my PhD. After all, my roots are on China and Taiwan.

This time, I decided to return to Taiwan because it's natural for migrating birds to return home. I also wanted to help Chinese people to do something.

Like Dr. Glen Zheng, Dr. Yen cited migrating birds to illustrate the genetic nature of humans to want to return to their homes. Upon completion of his post-doctorate fellowship, Dr. Yen had seriously considered returning to his alma mater to serve as department chair. Instead, Dr. Yen spent his entire professional career as a professor and entrepreneur in America. To strike a balance between his American identity and his Chinese and Taiwanese roots, Dr. Yen traveled between America, China, and Taiwan to foster academic collaboration for a good part of his career. In retirement, he has

continued to serve as a visiting professor on both sides of the Taiwan Strait. A major motivator of Dr. Yen's transnational academic collaborations and entrepreneurial investments can be found in how he continued to see himself having Chinese and Taiwanese roots. Similar to Dr. Audrey Jiang, Dr. Yen expressed his desire to help the Chinese/Taiwanese people accomplish something important because he saw China and Taiwan as his countries of origin.

For a segment of the TBE population whose parents are/were still alive, the desire to be close to family is a reason to return to their country of origin. Here are three TBEs that spoke to that emotion:

Dr. Penelope Wei:

In terms of family, I thought it would be nice to be closer to my family given that I've been abroad for more than ten years. This was my own feeling. There was no pressure from my parents. I felt this way because I saw my parents gradually getting older and older each time they went to visit me in the U.S.

Dr. Elliot Lee (a pseudonym):

The third thing is more personal for both my wife and me. My wife's dad recently passed away last year and her mom is sick. She's in rehab. My mom's getting old, too. One of the thoughts that we had was that maybe it's about time that we are close to our families. My wife's family is in Hong Kong. The other thing is that my children's memories of their grandparents on my wife's side is that they're always sick because they're a little older. Wouldn't it be nice if my children's memories of their grandparents is while they're still lively and taking vacations with them?

Dr. Olivia Bai (a pseudonym):

My in-laws were getting old, and I have no other relatives on Taiwan. It's good that we came back because we were able to spend the last few years with them. Both of them have since passed away.

The desire to be nearby one's parents is a basic human trait that cut across cultures. Confucianism does not have a stranglehold on this fundamental human emotion. In America, we often find individual from all walks of life who either stay within close

proximity of their parents throughout their lives or try hard to return to their home town, and if that proves hard to achieve, at least their home state. For the three TBEs above, their decisions to return to their country of origin to be with their parents is not something that can be characterized as primarily Chinese/Taiwanese. Rather, it is at heart human.

Dr. Paul Leung (a pseudonym), a highly successful repeat entrepreneur who sold his first company for \$160 million and scaled his second company from \$40 million to its eventual selling price of \$800 million, founded a firm on Taiwan to find a cure for a cancer that strikes Asian women. If successful, his will be the first cancer drug from Taiwan. Dr. Leung explained:

It doesn't make any business sense but I want to develop the drug here. I just want to make sure that the breast cancer drug we want to put forward will be from Taiwan. That's the only reason . . . Many people are puzzled. They say this shouldn't be the reason. They want to hear me say, well, I'll take your investment back to the U.S. and develop the drug there. They want to hear a business reason.

As Dr. Leung explained, he wanted to ensure that the HER-2-negative breast cancer drug his firm is currently developing will be majority funded by Taiwanese venture capital. Even when he was talking to potential investors in Taiwan about the reasons behind his investment, they are surprised by how such a savvy serial entrepreneur can be so driven by nostalgia. Like Dr. Leung's other investors, a Taiwanese ICT magnate questioned how Dr. Leung's nostalgia for Taiwan did not signal faith in his firm's HER-2-negative breast cancer drug. Rather, Dr. Leung's unequivocal disclosure of his nostalgia underscored that his decision to invest in and to develop the cancer drug on Taiwan was out of choice, not necessity. Dr. Leung's investment, furthermore, showed that his monthly visits to Taiwan from his home in America is for work, not retirement. In

this context, Dr. Leung's bioscience entrepreneurship on Taiwan is in sharp contrast to the the sojourner mentality's emphasis on the tendency of overseas Chinese to want to return to China to retire.

### **C. FOOD**

Dr. Edward Gao, clarified the importance of food in his existence:

One important factor is that I reached the point where there is no where for me to eat. I've eaten at every Chinese restaurant along the Beltway and in Boston. In the end, restaurants in Taiwan have the tastiest food. I've lived in San Francisco, too.

My wife and I went out to eat a lot when we first returned, but eventually we got sick. Now, we go out to eat at most twice a week. At least there is greater variety here. In the end, I'm still very happy that I've returned, so long as there's tasty food to eat.

At first blush, Dr. Gao's comments seem facetious. Upon further reflection, there is more seriousness than teasing. I first met Dr. Gao and his wife was at a reception following a lecture delivered by an American Nobel laureate. At the reception, I was struck by how much Dr. Gao and his wife enjoyed tasting various hors d'oeuvres. How Dr. Gao literally ran out of Chinese and Taiwanese restaurants in Boston, San Francisco, and Washington, D.C. to sample is a metaphor of how he was unable to find the "origin markers and affirmations of identity" (Anderson and Anderson 1977) as a voluntary exile in America. Dr. Gao's continuing search for Chinese and Taiwanese food that satisfied his discriminating palate is also a metaphor for his desire to decrease the physical distance between him and Taiwan. Quoting literary critic James W. Brown, Professor Sau-ling Cynthia Wong of the University of California at Berkeley explained that "appetite attests to, and even comes to symbolize, the space existing between

subject and object, between ‘me‘ and the ‘world’” (Wong 1993). What seemed facetious at first blush turned out to be Dr. Gao’s metaphorical explanation of his wish to return to his country of origin and his increasingly difficult search for his “origin markers and affirmations of identity” in the relative unfamiliarity of America.

Dr. Iris Chao (a pseudonym), a highly successful entrepreneur with extensive experience in the American pharmaceutical industry, returned to Taiwan in the late 1990s. Dr. Chao highlighted the power of food to carry her back to her childhood.

I’ve lived in the U.S. for almost forty years. Once I returned to Taiwan, I slowly realized that I had forgotten all the things that I used to enjoy. The other day, someone asked me what was the biggest reward for returning to Taiwan. I told her that I found the real me that I had forgotten after all these years. When I eat a simple bowl of noodles here, it brings back all those emotions from long ago.

Dr. Chao’s forty-year stay in America allowed her to forget who she was as a youngster on Taiwan. Once she decided to return to Taiwan to start her bioscience venture, however, Dr. Chao found her childhood in an unlikely place. By savoring the taste and smell of a simple bowl of soup noodles in a hole-in-the-wall eatery, Dr. Chao rediscovered the long forgotten familiarity embedded in her childhood in Taiwan. Like Dr. Gao, Dr. Chao found her “origin markers and affirmations of identity” in the most mundane dish in Chinese cuisine. Eaten in her country of origin, the lowly but tasty soup noodles reminded Dr. Chao that she is home, the spot where the distance between the “real me” and the “world” is zero. Chao recounted:

I spend my weekends reliving my childhood in Taiwan. I found my elementary school classmates. In terms of social networks, because my roots are here, there are immense resources for me to tap. This is why I returned to Taiwan, because my roots are here.

On weekends, I stroll Wen Zhou Street and memories of how I used to play there flood back. If I were given the choice purely based on my own preferences, and to only think about myself, I would definitely live in Taiwan.

I'm already other people's mother, grandmother, daughter (my mother is in the Bay Area), and my roles have already been expanded . . . Until we decided to invest in Taiwan, I never thought about living in Taiwan.

Surprisingly for Dr. Chao, slurping a simple bowl of soup noodles while living in the San Francisco Bay Area where high quality Chinese food is as ubiquitous as Chinese newspapers and cable television did not serve as a vehicle to travel back in time. In this sense, the thread connecting the experiences of Drs. Chao, Gao, and Hu is the discovery of the familiarity of childhood comfort food in their country of origin. For Dr. Chao, because she returned to Taiwan on her own, leaving her adult children, husband, and mother in the Bay Area, weekends are a time for self discovery, for reconnecting with her childhood friends, for reliving her childhood memories.

In Dr. Chao is a rare instance where she seemed to have done the impossible: she went home again. As a savvy investor, she considered the value of her social networks on Taiwan relative to other Asian countries. Like her fellow TBEs, Dr. Chao never imagined the personal benefits of returning to Taiwan. It was only after her permanent relocation to her country of origin that Dr. Chao found the weekly opportunities to enjoy the comfort foods with her childhood friends in their old neighborhood. Dr. Chao's experience indicates that one primary reason there are so few TBEs is that in their calculus, they cannot only think about themselves. That is, as much as they probably want to live on Taiwan or pursue a different path to career success, they are already other people's mother, grandmother, or daughter. In other words, TBEs are aware of their obligations to their children and parents.

Consequently, even if they found their own careers stymied by institutional obstacles in America, TBEs continued their work until their children completed college or graduate

school before returning to their country of origin. This context is not an invitation for organizations to underutilize their workers. Rather, it underscores the critical need for organizations to give employees opportunities to demonstrate their true capabilities to employers and to themselves. When workers are given these opportunities, they are more likely to reach their full potential, thereby increasing the return on investment in human capital for organizations and individual employees alike. In this light, TBEs decided to return to Taiwan because they realized that the island's environment allows them to accomplish the goals they had set out for themselves. Put differently, free from artificial barriers, the familiarity found in their country of origin enables them to succeed while being themselves.

#### **D. NEW EXPERIENCES**

Dr. Frank Chan (a pseudonym), a successful scientist and entrepreneur who returned to Taiwan in the mid-2000s, stated:

But for me, I often tell myself that I've never worked a single day in Taiwan so coming back now is a new experience for me . . . But Taiwan is my home.

I know the language and culture. Naturally, nostalgia is a factor, too. If I decided to return, then I need to be serious and productive. I'm not going to spruce up my decision and say that I returned to contribute to society.

For Dr. Chan, returning to Taiwan meant returning home, a place that promises linguistic and cultural familiarity. But returning home does not mean all play. For TBEs like Dr. Chan who have succeeded because of their strong work ethic, returning to their country of origin necessitates a continuation of their hectic work schedule. Partly due to a combination of humility and honesty, Dr. Chan did not want his decision to return to

Taiwan to be understood as sacrificing the self for the good of society. His longing for home, the familiar, and the new experience of working on Taiwan are Dr. Chan's prime motivators.

Upon returning to their country of origin, Dr. David Hu (a pseudonym), a distinguished scientist and entrepreneur who returned to Taiwan in the late-2000s, and his wife realized how their thirty-year journey in America helped them grow accustomed to the tranquility common in American cities. Once they returned to Taiwan, they found the experience somewhat jarring. Dr. Hu clarified:

I've always wanted to return to Taiwan. When my wife first returned to Taiwan, she didn't like how noisy it was here. And all the mosquitoes.

But as time went on, she realized how much she enjoyed living here, mainly because of how much she can identify with Taiwan.

There are more things to do in terms of cultural events and spending time with family. Now, she prefers that we spend more time in Taiwan than in the U.S.

At first, the Hus found the noise of Taipei's high population density unbearable. Over time, however, they learned how much they enjoyed attending Taiwanese cultural events and spending time with family. Their familiarity with local culture, including the celebration of holidays and the performance and musical arts, returned in short order mainly because they found their enjoyment of local cultural events is linked to their ethnic and racial identity.

Dr. Matilda Duan (a pseudonym), a highly distinguished scientist and entrepreneur who returned to her country of origin in the early-2000s, explained the difference between teaching Taiwanese and American students:

Those who become returnees do so because they want to make a contribution, to help out. For 20 to 30 years, they've been teaching blue-eye students. Isn't it a good feeling to be teaching our own students? It's just not the same. I've only

had one Taiwanese PhD student and two post-docs in my entire career. So to be able to return here to teach our own people is a good feeling.

For those who are academics and have had little opportunity to teach Chinese and Taiwanese students, the emotions attached to the familiar asserted themselves and made TBEs wonder if it would be that much more satisfying teaching Chinese and Taiwanese versus American students. For Dr. Duan, the answer was yes, it is a good feeling to have the opportunity to teach Taiwanese students in her country of origin. Dr. Duan's experience demonstrated how as a voluntary exile in the relative unfamiliarity of America, she evinced the human tendency to find further affirmations of the familiar in the ancestral background of her students.

When Dr. Tim Fong (a pseudonym), an award-winning protein scientist and entrepreneur, compared his experience in America to that of his country of origin, he concluded that before he decided to pursue a Ph.D at a private elite research university on the American eastern seaboard, he was quite satisfied with the quality of life on Taiwan. Throughout his stay in America, he was often offended by the ease with which fast food restaurant employees found ways to make fun of his non-native English. According to Dr. Fong, "My personal experience is that I lived a perfectly good life in Taiwan. Why should I stay in the U.S. and be mistreated by those who pick on me for my non-native English?" Upon completion of his doctorate, he began to ask why he should stay in America and suffer insults about his non-native English when he could enjoy all the amenities of an upper-middle class existence while basking in the comfort of familiarity that only his country of origin could offer.

Dr. Bridget Fu (a pseudonym) is a highly successful repeat entrepreneur who was instrumental in helping the American Food and Drug Administration (FDA) write the

policy for approving generic inhalation products. Beginning in the late 1980s, Dr. Fu cofounded and headed technical affairs at one of the world's largest generic drug manufacturers before it was acquired for \$7.6 billion in the mid-2000s. She described how Prestigious Taiwanese University Number 6 (a pseudonym) responded to her multi-million-dollar gift to its pharmacy school in the late-2000s:

When I was planning my gift to PTU6, I wanted the Taiwan government to create a dollar-for-dollar matching fund. In this case, I had to beg the government to accept my gift.

The government said to me, why don't you just donate your money. Why do you need to donate your money and care how we plan to use your gift? This is a totally different concept.

If the same thing happened in the U.S., I would've just walked away. But I still have an emotional attachment to this place, so I'm willing to try to overcome these challenges.

It was difficult for Dr. Fu to understand why she had to beg Taipei to create a dollar-for-dollar matching fund to PTU6. Under normal circumstances, Dr. Fu expected Taipei to be pleasantly surprised by her major gift to PTU6. As part of her vision for the PTU6 pharmacy school, Dr. Fu wanted the school to operate as a contract research organization to generate its own income for self sustenance. Dr. Fu wanted to mobilize the large number of PTU6 pharmacy alumni who are senior executives in American pharmaceutical companies to serve as guest lecturers, thereby sharing explicit and tacit industry knowledge. For her part, Dr. Fu bypassed PTU6 and the Taiwanese government and leveraged her own social networks on Taiwan to identify a trustworthy contractor and architect to bring her vision to reality. Dr. Fu waited until after the 200,000 square feet pharmacy school was completed before transferring her funds. According to Dr. Fu, if she had encountered the same level of inflexibility with an American university, she would not have pursued the case any further. Dr. Fu's

emotional attachment to her country of origin motivated her to tap her own entrepreneurial skills to circumvent local bureaucratic obstacles.

Dr. Fu's philanthropy to her alma mater is a case in point of Professor Aihwa Ong's belief that multi-million dollar donations would earn greater returns on university campuses in China. That is to say, given the relative quality differential between American, Chinese, and Taiwanese research universities, Dr. Fu's philanthropy made a great and lasting impact on her alma mater and Taiwan's bioscience capabilities. To be sure, Ong is correct in her reminder that Asian philanthropy in America is a significant departure from the traditional second-class roles Asian Americans have assumed in American history (Ong 1991:106-109). Put differently, Ong saw Asian philanthropy to the San Francisco Opera, the San Francisco Ballet, Princeton University, and the University of California at Berkeley as a form of cultural citizenship that purchased symbolic capital "as a way to facilitate racial and cultural acceptance" in American society. In the context of Ong's notion of the incongruence between phenotype and social standing, attempts at purchased symbolic capital to facilitate racial and cultural acceptance may do more to reaffirm incongruence than to facilitate acceptance by American society.

When I asked Ms. Liu, a highly successful serial bioscience entrepreneur, if she really planned to retire this time around or if she had plans for other entrepreneurial ventures, she responded:

It's for real this time. I stay busy in retirement. I continue to be very involved with the Taiwanese-American Foundation in Large American City. We donated a large sum to this Foundation so we stay active.

My husband and I along with several other friends also donated some funds to help establish an endowed professorship at Second National Public University [a

pseudonym].

There wasn't any endowed professorship in Taiwan studies so this brought some attention to the field. So now Third National Public University [a pseudonym] also has one [an endowed chair in Taiwan studies]. We are very involved in these activities.

Beginning in the mid-1990s, the need to project a positive image of Taiwanese Americans to mainstream American society motivated TBEs to use their own funds to build a community center that promotes Taiwanese American culture. Given that the center was established entirely with private funds, the idea for the center was not realized until TBEs commercialized their laboratories discoveries, found marketplace success with their startups, and became the primary beneficiaries of corporate acquisitions by leading pharmaceutical concerns. Dr. Stewart Wong, the world renowned bioscientist and entrepreneur who gave up his tenured laboratory directorship at a leading American research institute to return to Taiwan, explained why he and other Taiwanese American bioscientists devoted considerable resources to founding a Taiwanese American community center:

Although the U.S. is an open society, the glass ceiling is nonetheless a very tangible phenomenon for Asian-Americans. We need to share with American society role models like concert violinist Cho-liang Lin.

We need to project a positive image to mainstream American society. American society remains a very prejudiced place. I recently looked up the historical records of my home in the U.S. I saw that several blocks were marked with notations indicating where Jews can't live.

Jewish Americans have outstanding accomplishments in academia. They know how to project a positive image of their community. Jewish holidays are observed on campus. For us Asian-Americans, the media only talks about us when an Asian American commits a horrendous crime. This is why we decided to build a Taiwanese American community center.

We can't try to survive in the U.S. with a Chinatown mentality of simply ostracizing ourselves. We need to sponsor events that are open to everyone. This is why we are so pleased to see people of all backgrounds volunteering each time we organize a bone marrow drive.

Ms. Christine Liu and Dr. Stewart Wong's respective work on endowing a professorship in Taiwanese studies and building the Taiwanese-American community center aimed to create and maintain a positive image Taiwanese-Americans in mainstream American society. Ms. Liu's philanthropy to establish an endowed professorship in Taiwanese studies added much needed strength to an academic field that is as marginalized as Chinese studies is popular. Ms. Liu and Dr. Wong's community work not only instilled in their children the importance of understanding Chinese and Taiwanese culture, history, and language, but also encouraged other Taiwanese Americans who are in similar financial situations to work toward the public weal.

#### **IV. GLOBAL SENSIBILITY**

##### **A. SOJOURNERS, MOBILITY, AND CHINESE COSMOPOLITANISM**

A superficial reading of the interview data in this paper might suggest that my research subjects' behavior confirms the persistent portrayal of the Chinese diaspora in America as "sojourners." The notion of "sojourners" as it applied to the Chinese was born in the context of impoverished Chinese workers arriving in mid-1800s America to escape famine and war only to be greeted by racism and ostracism. In an effort to seek relief from the harsh realities in America, Chinese workers developed the sojourner mentality to remind themselves that they would return to their home village once they earned enough money to retire (Wang 1991). If the sojourner phenomenon were prevalent among Taiwanese Americans today, then the actual number of returnees would be

significantly larger. Instead, among the thousands of Taiwanese American bioscientists currently employed in America, only about 31 have become returnees. The small number of transnational migrants is consistent with a survey of Columbian, Dominican, and Salvadoran immigrants in America (Portes 2003; Waldinger 2009). Even if we were to assume that the 31 TBEs under study returned to their country of origin to retire, my data prove otherwise. Although nearly all TBEs are approaching retirement age, they have returned to Taiwan to work.

TBEs do not fit into the typical discourse on mobility as described by Professor Sauling Cynthia Wong of the University of California at Berkeley:

One striking difference presents itself upon even the most cursory comparison between mainstream and Asian American discourse on mobility. In the former, horizontal movement across the North American continent regularly connotes independence, freedom, and opportunity for individual actualization and/or societal renewal—in short, Extravagance. In the latter, however, it is usually associated with subjugation, coercion, impossibility of fulfillment for self or community—in short, Necessity. (Wong 1993:121)

Consistent with Wong's findings, TBEs' transnational migration began out of the subjugation and coercion of Chiang Kai-shek's authoritarian regime and the impossibility of fulfilling their desire for world-class training in the sciences had they stayed in Taiwan. In sharp contrast to the sojourners of old, however, TBEs' transnational migration ends with the independence and freedom associated with parallel opportunities for self actualization and renewal of Taiwan's economy, in general, and bioscience competitiveness, in particular.

Although TBEs rank quite a bit above average relative to the American bioscientist population, they were not immune to the institutional obstacles facing average scientists and immigrants earlier in their careers. As members of an ethnic and racial minority in

America, their status as world-class bioscientists and highly successful entrepreneurs is ineffective at isolating them from the sense of alienation and dislocation as (in)voluntary exiles. Alienation and dislocation are common among Chinese American and Taiwanese American graduate students who either chose not to return or were prevented from returning to their country of origin as a result of economics and/or politics. TBEs experienced alienation and dislocation from American culture and the Chinese Nationalist or Kuomintang (KMT) regime. Throughout the Chiang Kai-shek and Chiang Ching-kuo era, four to six of my 31 research subjects were blacklisted by the KMT regime for their pro-democracy and pro-human rights advocacy and denied entry visas.<sup>9</sup>

The TBEs' immigration story mirrors that of Leo Ou-fan Lee, renowned cultural critic and emeritus professor of Chinese studies at Harvard University and currently the Sin Wai Kin Professor of Chinese Culture at The Chinese University of Hong Kong. Looking through his own experience, Lee described the "psychological stance" of the Chinese Americans and Taiwanese Americans who share his voluntary exilic arc as

Chinese cosmopolitanism—a loose epithet, but one that embraces both a fundamental intellectual commitment to Chinese culture and a multicultural receptivity, which effectively cuts across all conventional national boundaries . . . . On the peripheries of both [America and China], I feel compelled to engage actively in a dialogue with both cultures. Perhaps it was this perceived need for intellectual engagement that saved me from feeling totally "lost" between two continents<sup>10</sup>. . . . (Lee 1991: 215).

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<sup>9</sup> Given the sensitive and traumatic nature of being blacklisted for their pro-democracy and human rights activities in America, not every TBEs who was on the KMT's blacklist shared that information with me. Four TBEs told me about their blacklist membership. I suspect at least two other TBEs were also on the blacklist, although the exact number may prove to be even higher.

<sup>10</sup> For the purpose of this paper, I would include Taiwanese culture in Lee's description. The inclusion of Taiwanese culture and Taiwanese Americans in Lee's description of psychological stance is consistent with his extensive discussion of Taiwanese literature to illuminate the concept of Chinese cosmopolitanism within his 1991 *Daedalus* essay.

Lee's self perception is certainly applicable to TBEs' nostalgia for their country of origin and desire to be scientists who are engaged in the public sphere of their adopted and native homelands. Lee's bicultural intellectual engagement is motivated by a need to remedy a sense of feeling marginalized by the Asian and North American continents. Through their scientific, entrepreneurial, and community work, TBEs enact intellectual engagements in America, China, and Taiwan. Lee illustrated the transnational or beyond political borders nature of his generation's desire for rootedness when he wrote that he felt "lost" between two *continents* (emphasis mine). TBEs have roots in America, China, and Taiwan, because their academic affiliations, scientific and social networks, business investments, and longterm residence are located in these societies. Portes found that the small number of transnationals among Columbian, Dominican, and Salvadoran immigrants in America were "solid, family men [who are] educated, well-connected and firmly established in the host country" (Portes 2003; Waldinger 2009). In contrast to the absence of women in Portes' study, 26% of the TBEs in my study are women. In their own words, TBEs repeatedly say that nostalgia for their country of origin, obligation to family members, and opportunities for self actualization are reasons why they returned to Taiwan.

TBEs' nostalgia for their country of origin and their desire for rootedness is fundamentally human. As Lee so aptly described his "sense of being Chinese . . . is so deeply rooted that it practically rules out the possibility of total Westernization" (Lee 1991:215). Against the backdrop of incessant state-sponsored violence on both sides of the Taiwan Strait, TBEs' nostalgia is for the Chinese or Taiwanese nation, not the state or government in power (Ibid: 221). For both Lee and the TBEs, their nostalgia for

their country of origin does not stop them from becoming a hybrid of what is Chinese, Taiwanese, and American. Through their immigration experience, TBEs have proven their ability to adapt to changing cultural, linguistic, and social environments. Their cultural, linguistic, and social flexibility and their identity, which transcend political borders, contributes to their ability to leverage global scientific and business knowledge to solve local problems.

## **B. LEARNING FROM THE UNFAMILIAR**

The pattern that emerges from my data is that TBEs achieved greatness as entrepreneurs and bioscientists precisely because they were willing to learn from the unfamiliar. From 1965 to the mid-1970s, TBEs migrated to America out of necessity. Their immigration to America was necessary to earn a top-notch doctorate in the sciences and to realize their dream of developing a science-based career. Through graduate study, followed by permanent residence, TBEs learned from the unfamiliarity of America. TBEs' proclivity for entrepreneurship motivated them to learn from the unfamiliar because they saw the opportunities inherent in living and working in America. Out of necessity, they learned from the unfamiliar so that one day it would become the familiar. In the process, through their unwavering intellectual commitment to the familiarity of Chinese and Taiwanese cultures, they acquired the cultural, linguistic, and social flexibility crucial to survival as a (in)voluntary exile. This flexibility is crucial to survival for two reasons: (1) if they refused to learn from the unfamiliar, they would be unable to achieve their academic and professional goals; (2) if they had rejected the

familiar, they would be unable to find sustenance from their native culture in moments when the unfamiliar became overwhelming.

From the late 1990s to the late 2000s, TBEs returned to Taiwan out of choice. Because TBEs' scientific contributions and entrepreneurial accomplishments have earned them a worldwide reputation, they can choose to invest their resources almost anywhere in the world. Entrepreneurship, or the ability to discover, evaluate, and exploit opportunity (Shane and Venkataraman 2000), is the primary motivation for their horizontal travels between America, China, and Taiwan. As the definition of entrepreneurship suggests, TBEs' motivation for entrepreneurship goes beyond pecuniary. TBEs' academic, business, philanthropic, and scientific endeavors embody a Chinese cosmopolitanism (Lee 1991) that transcends national borders and is intellectually committed to American, Chinese, Taiwanese, and global cultures. Consistent with Professor Lee's analysis, TBEs are intellectually engaged in selective geographic sites around the globe because they feel a sense of rootedness with these locations. This sense of rootedness may be a result of longterm residence, academic affiliation, business investments, or emotional attachment. Invariably, they chose to spend the autumn of their career in their country of origin because they were pulled by their nostalgia for Taiwan. Besides America and Taiwan, TBEs also travel to China to invest in biopharmaceutical manufacturing and research and development facilities and to initiate in academic exchange programs. Whether TBEs are in America, China, or Taiwan, their enactment of intellectual engagement can be understood as their search for the familiar in the unfamiliar.

TBEs' lesson for all of us is that to become global, we must gain cultural, linguistic, and social flexibility that welcomes total immersion in the unfamiliar for an extended period until an inflection point has been reached. That is, when the unfamiliar becomes the familiar, we will gain a global sensibility that includes cultural, linguistic, and social flexibility. This global sensibility will then allow one to observe and analyze local problems by looking at them through a global lens before one attempts to solve them by leveraging one's global expertise and social networks.

TBEs' global sensibility enables them to shuttle between American, Chinese, and Taiwanese cultures. Their global sensibility is a habit of mind that became deeply ingrained in their identity through the process of learning to survive in the unfamiliar. As such, TBEs are able to employ this global sensibility intuitively to observe and analyze local problems by looking at them through a global lens and to solve the same problems by leveraging their expertise and social networks. Because TBEs learned to understand the unfamiliarity of America while maintaining their intellectual commitment to Chinese and Taiwanese culture, language and society, when the unfamiliar eventually became the familiar, their identity became a hybrid of what is American, Chinese, and Taiwanese. Their global sensibility is informed by TBE's deep cultural, linguistic, and social understanding of America, China, and Taiwan.

## **V. CONCLUSION**

This research reveals how a group of individuals who are defined as extreme cases based on the surface metrics of professional achievement and personal net worth are, in fact, driven by motivations common to all people. TBEs are motivated by nostalgia

for their country of origin, obligation to family members, and opportunities for self actualization. Although my analysis drew heavily from works in Chinese studies and Asian American studies, TBEs' motivations are human and not unique to a particular race or ethnicity. As human beings, TBEs want to return to their home, support their family, and reach their full potential both inside and outside the workplace.

TBEs are unlike the average person on the street in their willingness to immerse themselves in the unfamiliar for the sake of entrepreneurship. That is, TBEs exhibit uncommon abilities for opportunity discovery, evaluation, and exploitation (Shane and Venkataraman 2000). When TBEs change geographic locations, their constant is science and entrepreneurship. The commonality between science and entrepreneurship is the reliance on hypothesis testing through data collection and experimentation. TBEs are familiar with applying the scientific method to stress testing a business plan (Mullins and Komisar 2009) until it has evolved to be market ready.

Their proclivity for entrepreneurship together with their nostalgia for their country of origin explains why, instead of choosing early retirement amid the material comforts of America, they opted to return to Taiwan and continue working throughout the autumn of their careers. TBEs recognized an opportunity where self actualization and economic and scientific development converged. As a coda to their already highly distinguished careers, TBEs seized the opportunity to learn what their true capabilities are absent the institutional barriers that are present in America and to leverage their expertise in upgrading Taiwan's global bioscience competitiveness.

A major finding of Gotanda's analysis is that in America, a "deeply-embedded sense of foreignness" can easily be activated by any vestige of foreign, alien, or non-American

culture. The source of this “deeply-embedded sense of foreignness” is the dissenting opinion in the United States Supreme Court’s 1898 decision in *U.S. v. Wong Kim Ark*. For TBEs and other Asian immigrants, food, language (including accents), and mannerisms are not elements of their identity that can be easily altered to suit local preferences. Consequently, these elements of their identity signal a foreignness to Professor Ong’s white elite Americans as well as other Americans that trigger them to perceive Asian immigrants as non-American.

This perception of foreignness and non-Americanness may lead to stalled careers and non-acceptance. Among TBEs, direct evidence from Drs. Du, Gao, and Wong support this finding. In sharp contrast to what the American workplace perceived Drs. Kevin Du and Edward Gao’s managerial potential to be, and undaunted by the constraints imposed on them by American culture and language, their depth of self-knowledge impelled them to seek opportunities where they could leverage their full repertoire of knowledge, skills, and abilities. Drs. Du and Gao, respectively, rejected the notion that using a mere 30% of his true capability and reaching the top of the technical ladder salary scale was sufficient for human happiness. Upon his return to Taiwan, Dr. Du no longer needed to worry about how he was limited by his English language skills and other vestiges of “foreignness.”

Despite the sometimes inhospitable racial climate that exists in America, nearly all of the thousands of Taiwanese American bioscientist remain in their adopted homeland to pursue a career and to raise a family. As much as Drs. Gao and Du and their fellow TBEs wanted to live on Taiwan or pursue a different path to career success, they had obligations to their children and parents. Consequently, even if they found their own

careers stymied by institutional obstacles in America, TBEs continued in their work until their children completed college or graduate school before returning to their country of origin. This context is not an invitation for organizations to underutilize their workers. Rather, it underscores the critical need for organizations to give employees opportunities to demonstrate their true capabilities to employers and to themselves. When workers are given opportunities to exploit their full set of knowledge, skills, and abilities, they are more likely to reach their full potential, thereby increasing the return on investment in human capital for organizations and employees alike. In addition, high potential employees are likely to remain in organizations that offer opportunities to maximize their potential, for they see little need to change employers for its own sake

TBEs decided to return to Taiwan because they realized that the island's environment held an opportunity for them to accomplish the goals they had set out for themselves. TBEs' embodiment of mainstream American discourse on mobility refutes the notion that their transnational migration is a contemporary version of the sojourner of old. It also confirms findings from previous studies on transnational migrants (Glick Schiller *et al.* 1995). Dr. Vance Yen's horizontal travels between America, China, and Taiwan to foster academic collaboration for a good part of his career is but one instance of the "independence, freedom, and opportunity for individual actualization and societal renewal" (Wong 1993) characteristic of mainstream American discourse on mobility. Dr. Paul Leung's decision to invest on Taiwan to develop a therapeutic for HER-2-negative breast cancer based on his nostalgia for his country of origin when he could have chosen almost any other location around the world is another instance of how TBE's horizontal travels are manifestations of independence and choice, not "subjugation and

coercion” (Ibid).

TBEs exhibit what Professor Lee has called “Chinese cosmopolitanism,” an attitude that strikes a balance between their intellectual commitment to Chinese and to global cultures, including cultures that are unfamiliar. Taken together, the contributions of Drs. Chang, Fu, Leung, Yen, and their fellow TBEs are instances of scientific, entrepreneurial, and community work resonate with Lee’s motivation for intellectual engagement (1991). Their identity and work as transnationals have conferred on TBEs the need to be rooted in locations and cultures where they have academic affiliations, scientific and social networks, business investments, and permanent residence. Regardless of where they are living, TBEs maintain simultaneous intellectual commitments to American, Chinese, and/or Taiwanese societies. Ms. Liu and Dr. Wong’s civic efforts are a case in point of how TBEs’ intellectual engagements are manifestations of their desire for rootedness. Through their philanthropy, they brought the familiarity of Taiwanese culture to the relative unfamiliarity of their adopted American city. Furthermore, the activities of the Taiwanese American community center planted the seeds of cultural, linguistic, and social flexibility in others. Whether they find themselves on the Asian or North American continents, TBEs enact active intellectual engagements so that they feel rooted to their local communities and to remedy Professor Lee’s sense of “feeling totally ‘lost’ between two continents.”

TBEs’ lesson for all of us is that to become global, we must gain cultural, linguistic, and social flexibility that welcomes total immersion in the unfamiliar for an extended period until an inflection point has been reached. That is, when the unfamiliar becomes the familiar, we will gain a global sensibility that includes cultural, linguistic, and social

flexibility. This global sensibility allows one to observe and analyze local problems by looking at them through a global lens before one attempts to solve them by leveraging one's global expertise and social networks. One avenue for further research on the TBEs is to study a similarly situated cohort of individuals from China so that we can compare and contrast answers to the following three key questions: Why did TBEs leave their homeland for a foreign land? Why did TBEs return to their homeland despite the material benefits of living in America? How have TBEs changed in the process? Such a study would throw light on the varying push and pull factors affecting TBEs from China and Taiwan. Analyzing the migration experiences and motivations of TBEs from China would advance our understanding of how the desire for rootedness, intellectual engagement, and Chinese cosmopolitanism are precursors to global sensibility.

## Notes

1. Taiwanese: Depending on context, I use this term to denote either culture, language, nationality and/or ethnicity.
2. Chinese: Depending on context, I use this term to denote either culture, language, nationality and/or ethnicity.
3. *Liuxuesheng*: This term is used by individuals from China and Taiwan to describe those who leave their country of origin to study abroad.
4. To maintain confidentiality, with the exception of one individual (Dr. Tse Wen Chang) who granted me permission through email messages, I have used pseudonyms for all individuals mentioned in this paper. I have also used generic names such as "Third Prestigious National University" and "Large American City" for the same reason.

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