

DISSERTATION

THE INTERSECTION OF AGRICULTURE, LATINAS/OS, AND HIGHER EDUCATION IN  
THE LAND GRANT SYSTEM: A MIXED METHODS STUDY

Submitted by

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## ABSTRACT

### THE INTERSECTION OF AGRICULTURE, LATINAS/OS, AND HIGHER EDUCATION IN THE LAND GRANT SYSTEM: A MIXED METHODS STUDY

From government reports and academic journals to popular media there is a call for more educated agriculturalists. Latinas/os have long been instrumental in United States' agriculture and yet similar numbers of Latinas/os are not studying agricultural sciences at land grant universities. The mission of land grant universities is to provide access to education, especially agricultural education. Given the changing demographics of the United States, if land grant universities are to address our nation's need for educated agriculturalists, Latinas/os must be included as part of the solution. This study provides universities, particularly land grant institutions, a portion of the data and analyses necessary to identify how to both recruit and successfully graduate people prepared to lead as professional agriculturalists. This study deconstructs the intersection of agriculture, Latinas/os, and higher education. This transformative convergent parallel mixed methods study examines the learning environment of agricultural higher education from a Critical perspective. This examination is conducted through three distinct studies and is organized in a manner similar to the chronological order an undergraduate student would encounter a College of Agricultural Sciences. That is, what do students first encounter in terms of physical artifacts, what are the lived experiences for students, and finally what are the student success outcomes in the College of Agricultural Sciences.

The first segment of this dissertation focuses on what a student first encounters upon entering a College of Agricultural Sciences. Physical artifacts present in educational settings

make visible the values of the institution. Such messages signal the institution's desire for a culturally inclusive and supportive environment. Given the land grant mission of inclusive education, the labor heritage of agriculture, and the saliency of stereotype threat in creating an inclusive learning environment, critically assessing the equity climate of departments of animal sciences in land grant universities is overdue. This study utilizes Banning *et al.*'s 2008 taxonomy based on visual ethnography methodology to interpret the equity climate of three departments of animal sciences at land grant institutions to answer the critical question: who is welcome? The systematic coding and thematic analysis reveal exclusive learning environments clearly communicated by the physical artifacts present.

The second portion of this dissertation addresses the lived experiences of students. While there has been a focus on recruiting Latinas/os and others to study agricultural sciences, there has not been an examination of the lived experience of Latinas/os currently studying agricultural sciences in college. The purpose of this narrative study was to describe the lived experience of six Latina undergraduate students studying in a College of Agricultural Sciences at a Predominantly White Land Grant Institution. The thematic analysis of the transcribed interviews yielded three distinct themes, namely, Overt Exclusion, Nepantlera, and Intersectionality through the saliency of agricultural identity. Recommendations for inclusive agricultural education environments were voiced by the participants, providing us a path forward to fully include and support Latina students in the agricultural academy.

The third segment of this dissertation study focused on undergraduate student success. Given the financial constraints of most institutions, it is important that we are strategic in our programming to support an ever more diverse undergraduate population. This study offers a rigorous and systematic approach to quantitatively assess programmatic needs in three segments:

an analysis of the demographic representation of the state, an analysis of historic opportunity gaps (1990 through 2014), and an analysis of recent undergraduate student success utilizing predictive logistic regression models. Using Colorado State University (CSU) as a case study for this systematic assessment, CSU was found to not represent the state it serves, Colorado. Further, statistically significant opportunity gaps were found for gender, Pell eligibility, first generation status, residency, and minority students. Finally, the first year retention, four year graduation rate, and six year graduation rate predictive models provided evidence for program investment to support first generation, minority, and resident students. Of note, non-minority students were found to be 1.78 times more likely to graduate in four years than were minority students. Minority students were 53 percent less likely to graduate than majority students in six years. First generation students were less likely than non-first generation students to graduate in six years and non-residents were more likely to graduate than residents of the state within the six year time frame.

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My abuela and grandma, Florence Pauline Candelaria Archibeque passed from this world in August of 2013, just after my preliminary exams. I miss her terribly. While I miss her, I also

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## DEDICATION

I dedicate this dissertation to Jonathan Archibeque Engle and Jerica Archibeque Engle.

You are my hope for the world.

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## CHAPTER 1

### OVERVIEW OF STUDY

“Individually, but also as a racial entity, we need to voice our needs. We need to say to white society: We need you to accept the fact that Chicanos are different, to acknowledge your rejection and negation of us. We need you to own the fact that you looked upon us as less than human, that you stole our lands, our personhood, our self-respect. We need you to make public restitution: to say that, to compensate for your own sense of defectiveness, you strive for power over us, you erase our history and our experience because it makes you feel guilty- you’d rather forget your brutish acts. To say you’ve split yourself from minority groups, that you disown us, that your dual consciousness splits off parts of yourself, transferring the “negative” parts onto us. (Where there is persecution of minorities, there is shadow projection. Where there is violence and war, there is repression of shadow.) To say that you are afraid of us, that to put distance between us, you wear the mask of contempt. Admit that Mexico is your double, that she exists in the shadow of this country, that we are irrevocably tied to her. Gringo, accept the doppelganger in your psyche. By taking back your collective shadow the intra-cultural split will heal. And finally, tell us what you need from us.”

Gloria Anzaldúa in Borderlands La Frontera, pp. 107-108

“The main thing about the labor supply is to muelize it... The supreme qualities of the laborer are that he shall work cheap and hard, eat little and drink nothing, belong to no union, have no ambitions and present no human problems. Particularly, he should appear from nowhere, when we need him, put up with what accommodations he finds, provide his own food, and then disappear...until the busy season comes around again. Some sort of human mule with the hibernating qualities of the bear and the fastidious gastronomic tastes of the goat, would be ideal provided he is cheap enough.”

Chester Rowell in Beasts of the Field, (introduction)

“My father has been dead for 29 years, having worked himself to death. The life span of a Mexican farm laborer is 56- he lived to be 38.”

Gloria Anzaldúa in Borderlands La Frontera, p. 112

“...research can serve as a means of social action.”

Audra Skukauskaite and Judith Green in Sites of Possibility, p. 143

## Statement of the Problem

On March 12, 2013 Hoover alerted readers of The Chronicle of Higher Education that “sharply increasing diversity will soon hit many states and institutions with freight-train force” (Hoover, 2013). Further, Hoover stated that “as these changes take hold, meeting the needs of minority students, especially those from underrepresented groups, will play a greater role in defining institutional success.” If institutions of higher education are to be prepared for this “freight-train”, it is important to assess both current educational practices and outcomes including the current lived experiences of our students, including the lived experiences of students from underrepresented groups. This study assesses the educational environment and student lived experiences in a discipline critical to the success of civilization: agriculture.

The United States Department of Agriculture and others have identified the need for educated agriculturalists (Food and Agricultural Education Information System at <http://www.faeis.ahnrit.vt.edu/> ). Not enough people are graduating with degrees in agricultural fields, especially those with any real agricultural experience (Jones & Larke, 2001). It is a foundational assumption of this research that those who have been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Latinas/os and other ethnic groups, in agricultural education and not just in the labor pool.

There are two major concerns voiced by both faculty working at land grant universities and agriculturists regarding the intersection of agriculture and higher education. First, not enough people are graduating with degrees in agricultural fields, especially those with any real agricultural experience (Jones and Larke, 2001). Since “agricultural workers are at higher risk of death or disabling injury than most other workers” experience is critical for both the safety and

effectiveness of production agriculturalists (Von Essen and McCurdy, 1998, p. 274). Second, the average age of a farm/ranch operator in the United States is 57.0 years old ([www.nass.usda.gov](http://www.nass.usda.gov)). Action must be taken to address the need for professionals educated in agriculture before the professionals currently involved retire. If the need is not addressed soon there will not be enough people trained to produce, secure, research, or inspect our food supply.

Colorado State University (CSU), a predominantly white institution (PWI), has served as a leader in agricultural sciences since its inception as a land grant university in 1870. In the early days of the university, similar to other land grant institutions, undergraduate students had a significant tie to production agriculture. However, most undergraduate students who come to land grant universities to study in any agriculture based discipline in the twenty first century no longer have a tie to production agriculture or agriculture at all. In fact, in the Department of Animal Sciences which has the largest undergraduate population of CSU's College of Agricultural Sciences (CAS), over 80% of the undergraduates have no previous agricultural experience (unpublished departmental data). The backgrounds of educated agriculturalists shifted radically while no one was paying attention. Yet, there exists an extensive talent pool of young people whose parents work in production agriculture or who work in production agriculture themselves and very few of them are pursuing college degrees in agriculture. According to the 2010 United States census, the state of Colorado is 20.7% Latina/o, historically referred to as Hispanic, ([www.quickfacts.census.gov](http://www.quickfacts.census.gov)) and 90% of farm workers in the West and Midwest are Latina/o (Von Essen et al, 1998). However, the CAS undergraduate population is only 7.4% Latina/o ([www.ir.colostate.edu](http://www.ir.colostate.edu), Fall 2013). If institutions of agricultural education are to address our nation's need for educated agriculturalists, Latinas/os must be included as part of the solution. Instead of only relying on Latina/o laborers, production agriculture should

recruit this experienced resource into the educated professional ranks. The questions, then, become: are all students welcome in the agricultural learning environment and to the discipline of agricultural sciences? What is the historical evidence of inclusivity into agricultural higher education? Is the CAS at a PWI major land grant institution prepared for the “freight train” of diversity? Essentially, in what ways is the CAS learning environment supportive, inclusive, and constraining of all agricultural students?

This dissertation will add to research on campus ecology and visual ethnography, student success in agricultural education, Latina/o and Chicana/o studies, Critical Theory application, Intersectional Theory, and Mixed Methodology.

### **Purpose of the Study**

This study seeks to deconstruct the intersection of agriculture, Latinas/os, and higher education. The purpose of this transformative convergent parallel mixed methods study IS to examine the learning environment of agricultural higher education from a Critical perspective. This examination IS conducted through three distinct studies and is organized in a manner similar to the chronological order an undergraduate student would encounter the CAS. In Study A, a qualitative phase of the study, the physical artifacts of agricultural spaces, specifically Departments of Animal Sciences, at three land grant institutions are examined to assess the equity climate of the educational environments. In Study B, a qualitative phase of the study, the Latina lived experience of six undergraduate students or recent graduates are examined through semi-structured interviews. In Study C, a quantitative phase of the study, a case study of the census data of one CAS at a PWI land grant institution analyzes student success differences

among gender and ethnic groups between 1990 and 2014. The overall conceptual framework of the study is shown in Figure 1.1.

### **Definitions and Terms**

*Hispanic* is a highly unsatisfactory term used to identify a people of mixed Spanish and Native American origins who have lived for several centuries in the southwestern United States; the use of Hispanic to refer to this group of people was socially solidified by the United States government's 1971 decision to create a new ethnic category on its census form (Marable, 2000).

*Latina/o*, a constructed ethnically descriptive term, though still not completely satisfactory, is used in this work to include women and men who are Hispanic or who are more recent emigrants from Latin American countries (Espino, Leal, & Meier, 2008). The *a/o* is indicative of Spanish roots and includes both feminine and masculine reference.

*Chicana/o* is a constructed term that identifies a people of mixed Spanish and Native American origins in the United States; Chicana/o studies intentionally include the role of socioeconomic class in oppression and do not include an international perspective (Alaniz, A. & Cornish, M., 2008; Ignacio, 1997; Moraga & Anzaldúa, 1983).

*Feminism* is a centering of women's concerns and issues and a commitment to exposing hegemonic and patriarchal patterns (Hesse-Biber, 2010, 2014; Mertens, D. M., 2011; Lincoln & Guba, 1986).

*Feminism of Color* is a centering on the intersection of the culturally constructed socializations of race, ethnicity, gender, and other identities and a focus on exposing multiple

oppressions and challenging the hegemonic status quo (Anzaldúa, 2012; Dillard, C. B., 2000; Almeida, D. A., 1997; Collins, P. H., 1986).

### **Theoretical Framework**

“Epistemology...can be...defined as a ‘system of knowing’ that is linked to worldviews based on the conditions under which people live and learn” (Delgado Bernal, 2002, p 106). A number of education scholars have established the imperative for critical raced and raced-gendered epistemologies in research (Delgado Bernal, 2012, 2002; Aragon & Brantmeier, 2009; Ladson-Billings, 2000, 1995; Dillard, 2000; Crenshaw, Gotanda, Peller, & Thomas, 1995). This study adds to this growing body of knowledge within the academy founded on Critical Race Theory (CRT), and especially Latina/o and Chicana/o Critical Theory and Feminisms of Color, that utilizes this theoretical framework to understand the systems encountered by students within higher education (Creswell, 2013; Delgado Bernal, 2012, 2002; Anzaldúa, 2012; Darder *et al.*, 2009; Crenshaw *et al.*, 1995). As such this research is concerned with privilege and oppression and is emancipatory in its inquiry aims (Guba & Lincoln, 2005; Freire, 1993).

To add another layer of complexity to the theoretical framework, this project is also informed by Intersectionality Theory. Intersectionality Theory provides a foundation to make visible the multiple and interlocking structure of identities, most saliently those of ethnicity, gender, and class (Choo & Ferree, 2010; Collins, 2000; Baca Zinn & Thornton Dill, 1996; Crenshaw, 1991). Together, these theories provide a scaffold with which to make meaning of this study as a whole. Both the work of Anzaldúa and Intersectionality Theory problematize single identity theoretical frameworks that attempt to reduce identity to one fundamental type, whether that is sex, race, or class (Anzaldúa, 2012; Choo & Ferree, 2010; Collins, 2000).

Although sex, race, and class are distinct systems of privilege and oppression, these identities intersect and are experienced simultaneously. As such, Intersectionality Theory rejects the ranking of identities. Based on this full breadth of this theoretical framework, my positionality informs the research.

### **Researcher's Perspective**

“We may cling to the belief that there is nothing we can do precisely because we subconsciously know how much power we do have and are afraid to use it because people may not like it. If we deny our power to affect people, then we don't have to worry about taking responsibility for how we use it or, more significant, how we don't” (Johnson, 2006, p. 133).

“Transformative...scholars recommend the adoption of an explicit goal for research to serve the ends of creating a more just and democratic society that permeates the entire research process, from the problem formulation to the drawing of conclusions and the use of results” (Mertens, 2003 in Creswell & Plano Clark, 2011, p. 44).

“Pragmatism...(t)he focus is on the consequences of research, on the primary importance of the question asked rather than the methods, and on the use of multiple methods of data collection to inform the problems under study. Thus, it is pluralistic and oriented toward 'what works' and practice” (Creswell & Plano Clark, 2011, p. 41).

My philosophical research stance is pragmatism inasmuch as my research is driven by the **consequences** of my research. I choose to study oppressive social structures, specifically agricultural and educational social systems, and I believe the knowledge that is produced by research can change existing oppressive structure and remove oppression (Lincoln & Guba, 1996). I do not favor quantitative over qualitative or convergent design over transformative design; whatever method of research fits the research question and will help expose or effectively argue (depending on my audience) that oppression exists in agriculture's educational system and that *we can do something about it* is the research method that I will employ. My goal is to solve –or work toward solving – a very real human problem.

As a Latina, Chicana feminist, former farmworker, land grant educated student, and educator who is embedded in agricultural higher education for over ten years, my lens provides critical insight into agricultural higher education at PWIs (Corbin Dwyer & Buckle, 2009; Innes, 2009). In essence, given who I am, I have no choice but to do CRT as Minerva Chávez argued when she wrote *The Role of Storytelling for Those Who Have No Choice but to do Critical Race Theory* (Chávez, 2012). Pragmatically, it also serves me to publish using a theoretical framework that is accepted by the academy, thus using CRT as the theoretical framework provides an avenue for publishing research.

Given that my positionality is central to my research and CRT, I will expand on my insider/outsider status, or what Gloria Anzaldúa calls my borderland experience (Anzaldúa, 2012). I have been socialized with a White woman's feminism. I was educated in the "hard" sciences for my Bachelor's and Master's degrees. In 1990 at Colorado State University there were even fewer Latinas/os on campus than there are now. During my undergraduate years, I was often the "only" person of color and one of the few women in my classes. My Master's experience meant that I was usually the only person of color **and** the only woman. The women mentors that I found talked with about women's issues and feminism were all European American. They taught me about the glass ceiling, about the wage gap, about work/home balance, reproductive rights, and *Ms. Magazine*. I remember a Society of Toxicology conference that I attended on an undergraduate scholarship where I met one Chicana Ph.D. toxicology student; but she was married with children and had little time or energy to discuss issues with me, an unmarried childless undergraduate student.

Let me be clear, at a minimum I am bi-ethnic. My mother is European American, of German and English heritage, and Native American. Her grandmother was wholly Native,

perhaps Kiowa and Cherokee, at least as far as we know. In the one picture that I have seen of said grandmother, she certainly looks Native. She stood nearly six feet tall with severely high cheekbones, a long black braid down her back, and black eyes even evident in the black and white photo. My mom managed to inherit the cheekbones but before it turned grey, my mom's hair was curly and dark blonde. Her eyes are a vivid green. I learned only one word for what mom is, and that is White. Mom is White, SPF 100 and umbrella on the beach kind of White. My father is Latino via the Basque region of Spain and then, more recently, Mexico. The ancestral Archibeques, shepherds, immigrated from the Basque region into what was then northern Mexico and is now southern Colorado. Please, let me be clear about that, too. My family did not immigrate from Mexico into the United States. They went to bed as Spanish speaking Mexican citizens and woke up as Spanish speaking American citizens (or at least residents in an occupied area) when Mexico lost the Mexican-American War (Meier, M. S. & F. Ribera, 1993). The change in government had little effect for my family. They continued to speak Spanish, work in agriculture, and marry other dark skinned Spanish speaking people. By the time my dad was born, these genetics produced tall, big boned, broad backed, and dark skinned Archibeques with black hair and black eyes. Mexican or Mexicano was the term I was taught for what dad is. And since most of my mom's family didn't want much to do with my mom after she married this Mexican, it has always been clear that I am Mexican, too. The idea that I am 'only' Mexican was enforced by the fact that when I was a child and the 1980 census report came to the mailbox, I had to choose a box and only one box. It was official. I am Hispanic, Mexican, Mexican-American, Latina, or Chicana depending on the audience.

While my mom is White, her education stopped when she graduated from high school (she was married two months before graduation and I was born four months after graduation).

We never talked about feminism or women's issues, other than abortion (my Catholic parents are surprisingly staunchly pro-choice) unless I initiated a conversation. Looking back, these conversations almost always included my father, who was entitled to be there because he graduated from college. Without him, went the unquestioned assumption, my mother would have little to add to the conversation. My aunts, all White and all married into the family, also had no post-secondary education. All of them were Moms and Wives (professional descriptions) who found hourly employment after the children went to school. My Abuela had an 8<sup>th</sup> grade education, and never did anything that my Abuelo didn't give her permission to do; including drive. She was forbidden to have her driver's license. We weren't having any conversations about the rights of women. Thus, my feminism came through professional contacts and was completely disconnected from my cultural and familial roots.

My professional commitment to fighting oppression has been focused, for the most part, on the battle of racism. There is certainly a battle to be waged there. Increasingly, though, I am reminded to remember gender, class, and other oppressions. It is likely that I have favored the battle of racism over the battle of feminism because a lot of pain and awful memories surface if I spend any time examining my own gender and class socialization. However, I have learned through my professional social justice work, that no real change is possible until you connect to the personal (Kendall, 2013; Anzaldúa, 2012; Johnson, 2006). While making this connection is important for my personal growth and health, societal change requires that I take the work further and examine the systems that allowed and allow for the damage. Within that thought, I recognize that this examination is only possible because I have the privilege of yet another degree.

For real societal change to occur, I believe that we need to include everyone in the solution. “What’s needed is a sense of ownership in relation to the problem” even for privileged groups argues Johnson (p. 75). I agree. Whites must be a part of the solution in ending racism, men must be a part of the solution in ending sexism, the wealthy must be a part of addressing class, and given my privilege and voice as an academic I must be a part of ending all of it. I am painfully aware of how difficult this will be- all I have to do is imagine a conversation with my father about how he has benefitted from oppressing women. Pragmatically, I think this fight is so monstrous we have to use every tool and every voice we have in an effort to concentrate on the consequences of our activities; to focus our research on solving real human problems. One of my tools is my life experience and lens, thus I am a Critical Race Theorist.

## **Background**

### **History of Latinas/os in Agriculture in the United States**

In order to understand the current intersection of Latinas/os, higher education, and agriculture it is critical to understand the history of the Latinas/os of the United States and the historical role of Latina/o labor in United States agriculture (Telles and Ortiz, 2008; Keating, 2008; Meier and Ribera, 1993). A significant portion of the Southwestern United States was once part of Spain and then Mexico before becoming a part of the United States. California, Nevada, Utah, Arizona, Colorado, New Mexico, Texas, and even parts of Wyoming, Nebraska, and Oklahoma were all once part of Mexico. Beginning with the Campesinos in the 1700s, forced Indigenous and Mestiza labor provided support for the agricultural efforts in New Spain (Street, 2004). While the Treaty of Guadalupe Hidalgo signed on February 2, 1848 extended the borders of the United States to include 100,000 Mexican citizens, it did very little to change the

culture or language of those now United States citizens (Anzaldua, 1999). Immigration and travel also continued across the “border” much as it had, with those working in agriculture following seasons, animals, and employment back and forth between the United States and Mexico (Meier and Ribera, 1993).

In the mid-1880s agricultural growth included a large increase in cotton production. In Texas, expansion of cotton acreage was encouraged by the availability of Mexicano (individuals with Mexican heritage who may or may not have been citizens of the United States) labor. Work in cotton fields led to increased migration, including entire families from Mexico. A civil war in Mexico also led to large numbers of Mexicans immigrating across the border. While most of these immigrants changed their geographic location, they retained their cultural identities and languages (Meier and Ribera, 1993; Rosales, 1997; Alaniz and Cornish, 2008).

By the early 1900s agriculture production in the United States was increasing exponentially, as was the demand for labor. While the demand for laborers for agriculture was increasing, so was unrest and organizing amongst the farmworkers, especially the Japanese and Filipino farmworkers (Street, 2004). There was a collective “quest for labor stability” by farm and ranch owners, they lobbied the United States government to enact programs to provide this stability (Street, 2004, p. 473). Much of this labor was provided from Mexican Americans and Mexicans, the population coming in waves with some members integrating into the communities where they labored. The first legislative attempt by the United States government to limit immigration from Mexico, the 1917 Immigration Act, occurred when the U. S. entered World War I. This legislation had a huge impact on the availability of workers for both the railroad and agriculture industries. The railroad and agriculture industries successfully pressured the

government to permit continued legal recruitment of workers from Mexico for three years (Meier and Ribera, 1993; Rosales, 1997; Alaniz and Cornish, 2008).

By 1926, the labor markets in the United States again lacked the necessary workers so agricultural groups lobbied for changes in immigration legislation that would allow for legal Mexican immigration. However, the Great Depression and a shortage of work brought about the reversal of migration, with large numbers of Mexicans repatriating to Mexico and large numbers of Mexican Americans immigrating to Mexico.

Even more than World War I, World War II brought about huge development of agriculture in the United States and Mexican Americans were a large part of that wartime effort. More workers were needed. This demand for labor brought many Americans from rural areas and into urban areas to work in factories. This left another labor shortage in agricultural production. Several Mexican-U.S. agreements sought to address these U.S. labor needs, collectively these governmental agreements are unofficially called the Bracero Programs (Cohen, 2011). The various agreements extended from 1942 through 1964, these programs “brought Mexican men to the United States for temporary work in agricultural fields and then sent them home again” (Cohen, 2011, p. 1). Well over five million Mexicans were recruited as workers through these programs. Even after World War II ended, agriculture employers argued the continued need for Bracero workers because the need for agricultural workers remained high and they needed time to adjust away from reliance on Mexican labor. While the Bracero Program officially ended, the use of Mexican labor did not waiver. Agriculture never adjusted away from reliance on Mexican labor. The end of the governmental agreements simply meant that the Mexican labor now crossed the border without governmental blessing and we entered the era of “illegal” immigration and “undocumented” workers (Meier and Ribera, 1993; Rosales, 1997;

Alaniz and Cornish, 2008). Therefore, it is a foundational assumption of this dissertation that given the agricultural heritage of Latinas/os, there is room for Latinas/os in the educated professional ranks and not just in the labor pool.

### **Land Grant Mission**

In 1862, President Abraham Lincoln signed The Morrill Act creating the land-grant university system in the United States (Fogel, 2012). This legislation ushered in the era of access to higher education for more than society's elite. It also brought forward the notion that education should be practical as well as theoretical. The land grant universities were focused on agriculture and mechanics, a heritage that is still celebrated by these universities. Inherent in the Morrill Act is the land grant mission, i.e. providing access to higher education for a broad population of students, where ideally students with the talent and desire for higher education have access to higher education (Fogel, 2012). Land grant universities are designed by their very mission to be inclusive education centers. Colleges of Agriculture have been foundational academic disciplines within the land grant mission since the creation of these universities (Fogel, 2012). Thus it is important to study if CASs are succeeding in their land grant mission as inclusive education centers.

### **Stereotype Threat**

The achievement gap is well documented and delineates the academic underperformance of groups that carry the burden of negative stereotypes about their academic ability. The quantitated achievement gap differs depending on the year of the study and the population investigated though the pattern is consistent in that women underperform relative to men in the physical sciences and in math and African Americans and Latina/os underperform compared to European

Americans and Asian Americans in overall academic achievement (Fulwood III, 2012; Slaughter, 2009; Telles & Ortiz, 2008; Aronson, Quinn, & Spencer, 1998; Valencia, 1997; Romo & Falbo, 1995).

One of the explanations for this underperformance has been identified as “stereotype threat” (Steele, Spencer, & Aronson, 2002; Aronson et al., 1998). Stereotype threat has been defined “as the discomfort targets feel when they are at risk of fulfilling a negative stereotype about their group; the apprehension that they could behave in such a way as to confirm the stereotype” (Aronson et al., 1998, p. 85). Aronson, Steele, and others contend that stereotype threat “undermines academic achievement both by interfering with performance on mental tasks, and, over time, by prompting students to protect their self-esteem by disengaging from the threatened domain” (Aronson et al., 1998, p. 85). One of the critical activating factors in triggering stereotype threat is when people think they are in an environment where they will be treated stereotypically (Steele et al., 2002, Aronson et al., 1998). It is critical then to ask, are agricultural education environments playing a role in increasing or decreasing stereotype threat?

### **Methodology**

The rationale for combining qualitative and quantitative approaches is that it will enable a more complete answer to the study’s guiding questions (Creswell & Plano Clark, 2011; Onwuegbuzie & Leech, 2006; Tashakkori & Teddle, 2003). Further, a Mixed Methods approach will allow for extensive triangulation, completeness or a more comprehensive account of agricultural higher education, different research questions, enhanced credibility, and context and illustration for the quantitative findings (Bryman, Becker, & Sempik, 2008; Bryman, 2006). The transformative design is a philosophical approach which encircles and informs all design choices

within the research to bring forth change (Creswell & Plano Clark, 2011; Mertens, 2010). This philosophical stance is entirely congruent with CRT. The inquiry aim of CRT is “critique and transformation; restitution and emancipation” (Lincoln, Lynham, & Guba, 2011, p. 99). Further, this research study is a convergent parallel design because the quantitative and two qualitative studies are conducted independent of each other. After all three studies are completed the findings will be compared and then final interpretation and recommendations will occur (Creswell & Plano Clark, 2011).

### **The Three Studies**

**Study A.** Archibeque-Engle, S. (2014). Visual Ethnography Assessment of Departments of Animal Sciences at Three Land Grant Universities: Who is Welcome. *Journal of Critical Thought and Praxis*, published.

Many of us have experienced walking into an environment and immediately feeling a sense of belonging or welcome. In contrast, many of us have also experienced walking into an environment and immediately feeling that we were unwelcome and did not belong. In our educational institutions, physical artifacts, the human created cultural objects and representations, communicate important messages about our educational climate and values (Banning, 1992, 1997; Banning & Bartels, 1997; Banning, Middleton & Deniston, 2008). Bulletin boards, signage, decorations, and other artifacts serve as communicators of cultural values (Pink, 2007; Van Leeuwen & Jewitt, 2001; Johnson, 1980). These physical artifacts, then, may be viewed as powerful nonverbal communicators of climate, especially equity climate. These value representations tell current and prospective students, as well as faculty and staff, who and what are valued. The communication of cultural expectations shapes the learning

environment; these expectations support and/or constrain learning (Nieto & Bode, 2012; Jennings, Jewett, Laman, Souto-Manning, & Wilson, eds., 2010; Jennings & Mills, 2009; Darder, Baltodano & Torres, eds., 2009). It is important, then, to assess what physical artifacts are communicating in educational settings.

The purpose of this study is to utilize Banning *et al.*'s taxonomy utilizing visual ethnography methodology to interpret the equity climate of three departments of animal sciences at land grant institutions to answer three overarching research questions:

1. In terms of equity climate, what are the messages being communicated by the physical artifacts in three departments of animal sciences?
2. What are the messages regarding difference to dominant culture in terms of gender, race, ethnicity, religion, sexual orientation, and physical ability?
3. Are these three departments of animal sciences inclusive and welcoming?

Given the land grant mission of inclusive education, the labor heritage of agriculture, and the saliency of stereotype threat in creating an inclusive learning environment, critically assessing the equity climate of departments of animal sciences in land grant universities is overdue. This study utilizes Banning *et al.*'s 2008 taxonomy based on visual ethnography methodology to interpret the equity climate of three departments of animal sciences at land grant institutions to answer the critical question: who is welcome? The systematic coding and thematic analysis reveal exclusive learning environments clearly communicated by the physical artifacts present.

**Study B.** Archibeque-Engle, S.. (2015). Latina lived experience as an agricultural student at a land grant university, *Journal of Agricultural Education*

Recent higher education research has called for counter stories, for analysis of the lived experiences of marginalized students (Matias, 2013; Espino, 2012; DeMirjyn, 2011; Delgado Bernal, 2002; Solórzano & Yosso, 2002). This literature seeks to make visible the stories of students navigating higher education especially at PWIs. Investigating the lived experiences of Latina undergraduate students in CSU's CAS or recent graduates of CSU's CAS will help to answer the overall research question: Is the CSU CAS an inclusive learning environment? This study focuses on the recorded, transcribed narratives of six Latina undergraduate students or recent graduates (less than two years) in CSU's CAS. After obtaining Institutional Review Board Human Subjects approval, semi-structured in-depth interviews are conducted with each subject. Subjects are known to the researcher. The interviews explore how Latina undergraduates state their educational narratives, the ways that Latinas express their ethnic selves in the voicing of their educational stories, and the ways that the subjects perceive stereotype threat. This investigation addresses the overarching research question: What is the lived experience of current Latina students studying agriculture at a Predominantly White Land Grant Institution?

The interviews include the following questions:

1. Thank you for meeting with me. I am interested in understanding your experience at CSU and in the CAS. There are no right or wrong answers, I only want to know your experience. Why did you choose to attend CSU?
2. Why did you choose your major?

3. What is your relationship to agriculture before coming to CSU?
4. How does agricultural background influence your experience as a CSU CAS student?
5. What does “Ag Family” mean to you?
6. In what ways do you feel a part of the “Ag Family”?
7. In what ways do you think your gender influences the ways that you engaged with your classes and professors?
8. In what ways do you think your ethnicity influences the ways that you engaged with your classes and professors?
9. What advice do you have for Latina/o CAS students?
10. What advice do you have for CAS professors?
11. Is there anything you want to tell me that I did not ask?
12. Is there anything you want to ask me?

Interviews are transcribed and constructive coding analysis implemented. Thematic analysis, guided by Braun and Clarke, is conducted to assess the interviews in a hermeneutic process that allows for themes to emerge from the data corpus while informed by individual quotes, individual codes, and coding tables.

**Study C.** Archibeque-Engle, S. & Gloeckner, G. (2014). A Comprehensive Study of Undergraduate Student Success at a Land Grant University College of Agricultural Sciences, 1990 - 2014, *NACTA Journal*

The achievement gap, also known as the opportunity gap, is well documented and delineates the academic underperformance of marginalized groups. The quantified opportunity gap, which is the numerical difference between the rate of graduation with a bachelor’s degree

for White students compared to that of non-White students, differs depending on the year of the study and the population investigated, although the pattern is consistent in that women underperform relative to men in the physical sciences and in math, and both African Americans and Latinas/os underperform compared to European Americans and Asian Americans in overall academic achievement (Aronson, Quinn, & Spencer, 1998; Fulwood III, 2012; Romo & Falbo, 1995; Slaughter, 2009; Telles & Ortiz, 2008; Valencia, 2002). Perhaps similar opportunity gaps and inequalities exist in the CAS, perhaps they are different. The purpose of this study is to thoroughly examine agricultural higher education to guide program investment. A descriptive, non-experimental, and comparative quantitative research approach is employed to investigate the intersection of agriculture, Latinas/os (and other ethnic groups), and higher education. This study seeks to quantitatively compare the demographics of those studying agriculture at a land grant university, CSU as the case study, between 1990 and 2014 and assess whether these demographics are reflective of the overall population of the state of the land grant institution, Colorado. To achieve the purpose of the study longitudinal case study is employed (Morgan, Gliner, & Leech, 2009; Morgan, Leech, Gloeckner, & Barrett, 2011). This study uses anonymized secondary data, thus it does not require Internal Review Board review. This was confirmed in a July 2012 e-mail correspondence with Evelyn Swiss of CSU's Research Integrity and Compliance Review Office.

A descriptive, non-experimental, and comparative quantitative research approach is employed for this segment of the dissertation (Morgan, Gliner, & Leech, 2009; Morgan, Leech, Gloeckner, & Barrett, 2011). This study uses anonymized secondary data provided to the researchers from the university's institutional research office. The researchers received approval via the Internal Review Board to conduct the analysis. The analysis includes three distinct

segments. First, this study compares quantitatively the demographics of those studying agriculture at a Predominantly White Land Grant university, CSU as the case study, over a 24 year period to assess whether these demographics are reflective of the overall population of the state of the institution, Colorado. Second, this study employs statistical tests of difference to assess opportunity gaps for retention to second year, first year grade point average (GPA), final or current GPA, four year graduation rate, and six year graduation rate for gender, Pell eligibility, first generation status, residency status, and ethnicity as defined by majority (White) and minority (non-White). The third segment focuses on recent trends and utilizes logistic regression analysis of the data for students who began in the fall semesters of 2003 through 2008.

### **Interpretation, Mixed Methods Analysis**

The transformative research design and the convergent parallel research design are prototypical mixed methods designs (Creswell & Plano Clark, 2011). Transformative convergent parallel mixed method design is a novel research design. “Conducting mixed methods research involves collecting, analyzing, and interpreting quantitative and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon” (Onwuegbuzie & Leech, 2006, p. 476). In the case of this research study, after all three studies have been completed, the results will be compared and related to the theoretical framework to enable overall interpretation to answer the guiding research questions: are all students welcome in the agricultural learning environment and to the discipline of agricultural sciences? What is the historical evidence of inclusivity into agricultural higher education? Is the CAS at a PWI major land grant institution prepared for the “freight train” of diversity? Essentially, is the CAS learning environment supportive of all agricultural students?

## **Delimitations**

Delimitations of this study include:

1. The visual ethnography study includes only three land grant institutions in the rocky mountain region.
2. The visual ethnography study only includes Departments of Animal Sciences. These departments are flagship departments of CASs and in this case, a focused investigation allows for analysis amongst the three land grant universities.
3. The comprehensive analysis of undergraduate student success is confined only to the CSU CAS. The uniqueness of the study within a specific context makes it difficult to replicate exactly in another context (Creswell, 2003).
4. The comprehensive analysis of undergraduate student success is confined to the anonymous secondary data available through CSU's Institutional Research Office.
5. Narratives are reflections of and confined to the personal reflections of the interviewees.
6. Narrative analysis is conducted with six subjects.

## **Limitations**

Limitations of the study include:

1. Due to the nature of qualitative research and the saliency of the researcher's perspective, the data obtained in Study A may be subject to different interpretations by different viewers.
2. The photographs used in Study A capture only one moment in time for each institution.

3. Transferability of Study A is limited to departments of animal sciences at land grant universities.
4. Due to the nature of narrative analysis of lived experience, Study B is not transferable.
5. Due to the nature of self-reporting of gender, race, and ethnicity for undergraduate students, the researcher cannot exclude the possibility of recording error.
6. Homogeneity of the sample may decrease the statistical power of the longitudinal analysis.
7. The quantitative study has limited generalizability, it is limited to CAS at land grant universities.

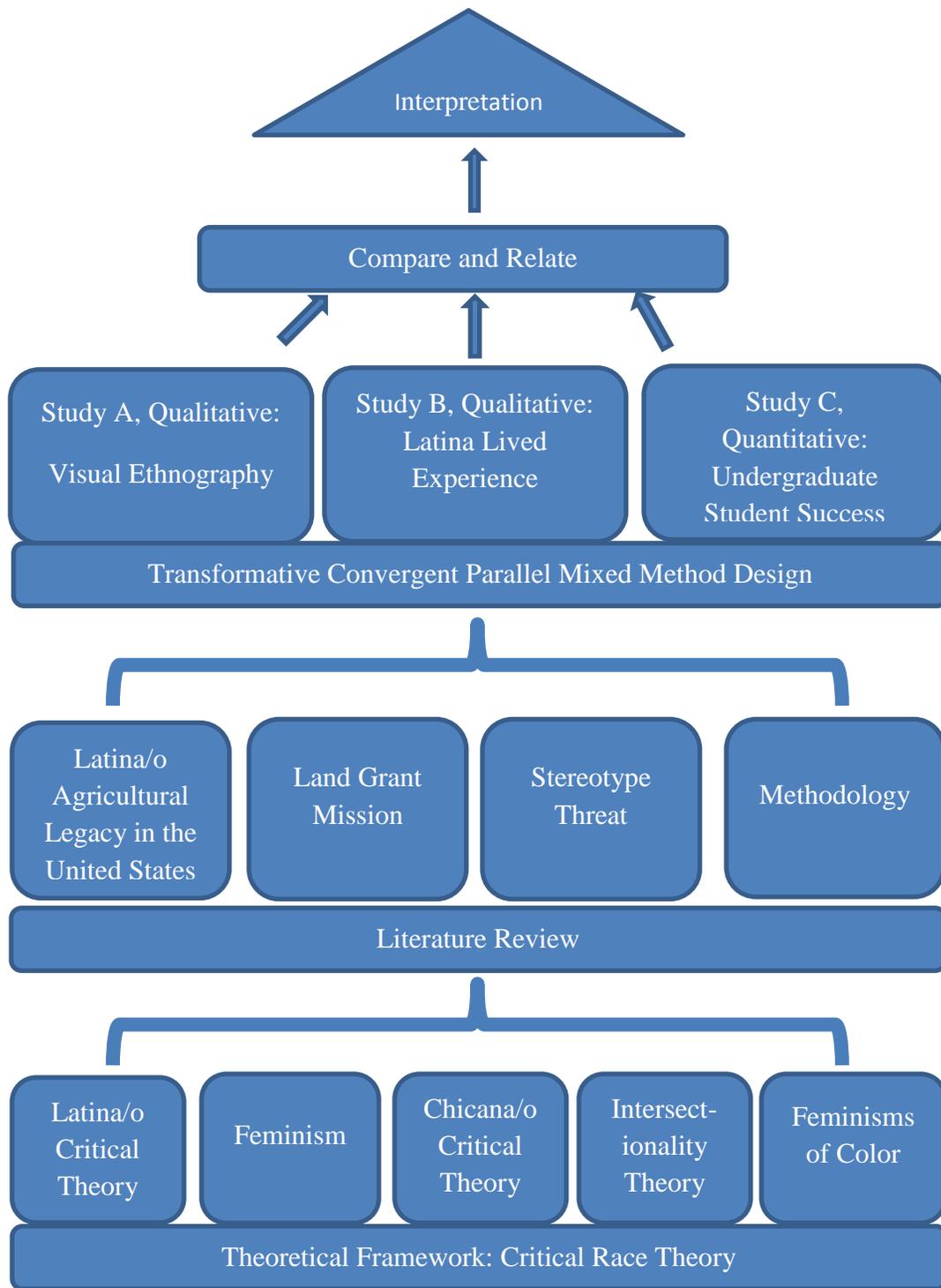


Figure 1.1. Conception Map of the Research Design

## REFERENCES

- Aronson, J., Quinn, D. M., & Spencer, S. J. (1998). Stereotype threat and the academic underperformance of minorities and women. In J. K. Swim, C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 83-103). San Diego, CA: Academic Press.
- Alaniz, A. & Cornish, M. (2008). *Viva la raza: A history of Chicano identity and resistance*. Seattle, WA: Red Letter Press.
- Almeida, D. A. (1997). The Hidden Half: A History of Native American Women's Education. *Harvard Educational Review*, 67(4), 757-71.
- Anzaldúa, G. (2012). *Borderlands/la frontera: The new mestiza 4th ed., 25th anniversary*. San Francisco, CA: Aunt Lute Books.
- Aragon, A., & Brantmeier, E. J. (2009). Diversity-Affirming Ethics and Critical Epistemology: Institutional Decision Making in Community Colleges. *New Directions for Community Colleges*, (148), 39-51.
- Baca Zinn, M., & Thornton Dill, B. (1996). Theorizing difference from multiracial feminism. *Feminist Studies* 2, 321-331.
- Banning, J. H. (1992). Visual anthropology: Viewing the campus ecology for messages of sexism. *The Campus Ecologist*, 10 (1), 1-4.
- Banning, J. H. (1995). Campus images: Homoprejudice. *The Campus Ecologist*, 12 (3), 3.
- Banning, J.H. (1997). Assessing the campus' ethical climate: A multidimensional approach. In J. Fried, (Ed). *Ethics for today's campus: New Perspectives on education, student*

- development, and institutional management.* (New Direction for Student Services #77), San Francisco, CA: Jossey-Bass Publishers.
- Banning, J. H. & Bartels, S. (1997). A taxonomy: Campus physical artifacts as communicators of campus multiculturalism. *NASPA Journal*, 35 (1), 29-37.
- Banning, J. H. & Luna, F. C. (1992). Viewing the campus ecology for messages about Hispanic/Latino culture. *The Campus Ecologist* 10 (4), 1-4.
- Banning, J. H., Middleton, V., & Deniston, T. L. (2008). Using photographs to assess equity climate: A taxonomy. *Multicultural Perspectives*, 10 (1), 41-46.
- Banning, J. H., Sexton, J., Most, D.E., & Maier, S. (2007). Gender asymmetries encountered in the search and exploration of mining engineering program websites: A portrayal of posture and roles. *Journal of Women and Minorities in Science and Engineering* 13, 165-176.
- Banks, J. (1999). *An introduction to multicultural education*, 2<sup>nd</sup> ed. Boston, MA: Allyn & Bacon.
- Betz, N. E. (1989). Implications of the null environment hypothesis for women's career development and for counseling psychology. *The Counseling Psychologist* 17 (1), 136-144.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 77-101.
- Bryman, A. (2006). Editorial. *Qualitative Research*, 6 (1), 5-7. doi:10.1177/1468794106058865

- Bryman, A., Becker, S., & Sempik, J. (2008). Quality Criteria for Quantitative, Qualitative and Mixed Methods Research: A View from Social Policy. *International Journal of Social Research Methodology*, 11(4), 261-276. doi:10.1080/13645570701401644
- Chávez, M. S. (2012). Autoethnography, a Chicana's methodological research tool: The role of storytelling for those who have no choice but to do critical race theory. *Equity & Excellence in Education*, 45(2), 334-348. doi:10.1080/10665684.2012.669196
- Choo, H. Y., & Ferree, M. M. (2010). Practicing intersectionality in sociological research: A critical analysis of inclusions, interactions, and institutions in the study of inequalities. *Sociological Theory* 28 (2), 129-149.
- Collier, J. Jr. & Collier, M. (1986). *Visual anthropology*. Albuquerque: University of New Mexico Press.
- Collins, P.H. (1986). Learning from the outsider within: The sociological significance of Black feminist thought. *Social Problems*, 33(6), S14-S32.
- Corbin Dwyer, S. & Buckle, J. L. (2009). The space between: on being an insider-outsider in qualitative research. *International Journal of Qualitative Methods* 8: 54- 63.
- Crenshaw, K. W. (1991) Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, 43 (6), 1241-1299.
- Crenshaw, K. W., Gotanda, N., Peller, G., & Thomas, K. (Eds.) (1995). *Critical race theory: the key writings that formed the movement*. New York, NY: New Press.
- Creswell, J. W. (2013). *Qualitative inquiry: Research and design, 3<sup>rd</sup> ed.* Thousand Oaks, CA: Sage.

- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches, 2<sup>nd</sup> ed.* Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. & Plano Clark, V. L. (2011). *Designing and Conducting Mixed methods Research 2<sup>nd</sup> Ed.* Los Angeles, CA: Sage.
- Darder, A., Baltodano, M. P. & Torres, R. D. (Eds.). (2009). *The critical pedagogy reader 2<sup>nd</sup> ed.* New York, NY: Routledge.
- Delgado Bernal, D. (2012). *Chicana feminist epistemology: past, present, and future. Harvard Educational Review, 82* (4), 511-512.
- Delgado Bernal, D. (2002). Critical race theory, Latino critical theory, and critical raced-gendered epistemologies: recognizing students of color as holders and creators of knowledge. *Qualitative Inquiry* 8, 105-126.
- DeMirjyn, M. (2011). The voicing of Chicana/Latina ethnicity, emotion and equity in higher education narratives. *Making Connections* 13 (1), 75-90.
- Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: examining an endarkened feminist epistemology in culturally engaged research. *International Journal of Qualitative Studies in Education, 13*, 661-681.
- Donato, R. (2003). Sugar beets, segregation, and schools: Mexican Americans in a northern Colorado community, 1920-1960. *Journal of Latinos and Education* 2 (2), 69-88.
- Espino, M. M. (2012). Seeking the “truth” in the stories we tell: the role of critical race epistemology in higher education research. *Review of Higher Education, 36* (1,Supp), 31-67.

- Espino, R., Leal, D. L., & Meier, K. J. (Eds.) (2008). *Latino politics: Identity, mobilization, and representation*. Charlottesville, VA: University of Virginia Press.
- Fogel, D. M. (2012). *Precipice or crossroads?: Where America's great public universities stand and where they are going midway through their second century*. Albany, NY: State University of New York Press.
- Freeman, J. (1979). How to discriminate against women without really trying. In J. Freeman (Ed.). *Women: A feminist perspective 2<sup>nd</sup> ed.* Palo Alto, CA: Mayfield.
- Fulwood III, S. (2012). The brick wall. *Chronicle of Higher Education, Convergence Supplement*, 14-16.
- Glesne, C. (2011). *Becoming qualitative researchers: An introduction, 4<sup>th</sup> ed.* Boston, MA: Pearson
- Hesse-Biber, S. N. (Ed). (2014). *Feminist research practice: A primer, 2<sup>nd</sup> ed.* Thousand Oaks, CA: Sage.
- Hesse-Biber, S. N. (2010). *Mixed methods research: Merging theory with practice*. New York, NY: The Guilford Press.
- Hoover, E. (2013). Minority applicants to colleges will rise significantly by 2020. *Chronicle Of Higher Education*, 59(19), A16-A17.
- Huck, S. W. (2008). *Reading statistics and research, 5<sup>th</sup> ed.* Boston, MA: Pearson.
- Innes, R. A. (2009). Wait a second. Who are you anyways? The insider/outsider debate and American Indian studies. *American Indian Quarterly* 33, 440-447.

- García, I. M. (1997). *Chicanismo: The forging of a militant ethos among Mexican Americans*. Tucson: University of Arizona Press.
- Jennings, L. B., & Da Matta, G. B. (2009). Rooted in resistance; Women teachers constructing counter-pedagogies in post-authoritarian Brazil. *Teaching Education, 20* (3), 215-228.
- Jennings, L. B., Jewett, P.C., Laman, T. T., Souto-Manning, M. V., & Wilson, J. L. (Eds). (2010). *Sites of possibility: critical dialogue across educational settings*. Cresskill, NJ: Hampton Press.
- Jennings, L. B., & Mills, H. (2009). Constructing a discourse of inquiry: Findings from a five-year ethnography at one elementary school. *Teachers College Record, 111*(7), 1583-1618.
- Johnson, A. G. (2006). *Privilege, power, and difference 2nd ed.* Boston: McGraw Hill
- Johnson, N.B. (1980). The material culture of public school classrooms: The symbolic integration of local school and national culture. *Anthropology & Education Quarterly, XI* (3), 173-190.
- Jones, W. A. & Larke, A., Jr., (2001). Factors influencing career choice of African American and Hispanic graduates of a land-grant college of agriculture. *Journal of Agricultural Education 42*, 39-49.
- Kendall, F. E. (2013). *Understanding White privilege: Creating pathways to authentic relationships across race*. 2<sup>nd</sup> ed. New York: Routledge.

- Ladson-Billings, G. (1995). Toward a theory of cultural relevant pedagogy. *American Educational Research Journal*, 32, 465-491.
- Ladson-Billings, G. (2000). Racialized discourses and ethnic epistemologies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*, 2<sup>nd</sup> ed. Thousand Oaks, CA: Sage
- Leonardo, Z. (2009). *Race, Whiteness, and Education*. Hoboken: Taylor & Francis. Retrieved from [http://www.CSU.ebib.com/EBLWeb/patron?target=patron&extendedid=P\\_425\\_542\\_0&](http://www.CSU.ebib.com/EBLWeb/patron?target=patron&extendedid=P_425_542_0&)
- Lincoln, Y. S., & Guba, E. E. (1986). Research, evaluation, and policy analysis: heuristics for disciplined inquiry. *Policy Studies Review*, 5 (3), 546-565.
- Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research*, 4<sup>th</sup> ed. Thousand Oaks, CA: Sage
- Marable, M. (2000). We need a new and critical study of race and ethnicity. *Chronicle of Higher Education* 46 (1): 25, B4.
- Matias, C. E. (2013). Who you callin' white?! A critical counter-story on colouring white identity. *Race, Ethnicity & Education*, 16 (3), 231-315.  
doi:10.1080/13613324.2012.674027
- Meier, M. S. & Ribera, F. (1993). *Mexican Americans/American Mexicans from Conquistadors to Chicanos*. New York, NY: Hill and Wang.

- Menard, S.W. (2010). *Logistic regression: From introductory to advanced concepts and applications*. Los Angeles, CA: Sage.
- Merriam, S. B. (2002). *Qualitative research in practice: examples for discussion and analysis*. San Francisco, CA: Jossey-Bass.
- Mertens, D. M. (2011). Mixed methods as tools for social change. *Journal of Mixed Methods Research*, 5 (3), 195-197.
- Mertens, D. M. (2010). Transformative mixed methods research. *Qualitative Inquiry*, 16 (6), 469 – 474. doi:10.1177/1077800410364612
- Moraga, C. & Anzaldúa, G. (Eds.). (1983). *This bridge called my back: Writings by radical women of color*. 2nd ed. New York: Kitchen Table, Women of Color Press.
- Morgan, G. A., Gliner, J. A., & Leech, N. (2009). *Research in applied settings: An integrated approach to design and analysis*. New York, NY: Routledge, Taylor and Francis.
- Morgan, G., Leech, N., Gloeckner, G.W., & Barrett, K. (2011) *IBM SPSS for introductory statistics: Use and interpretation*, 4<sup>th</sup> ed. New York, NY: Routledge, Taylor and Francis.
- Nieto, S. & Bode, P. (2012) *Affirming diversity: the sociopolitical context of multicultural education*, 6th ed. Boston, MA: Pearson.
- Onwuegbuzie, A. J. & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures. *The Qualitative Report*, 11 (3), 474-498.

- Pink, S. (2007). *Doing visual ethnography: images, media, and representation in research* 2<sup>nd</sup> ed. London: Sage Publications.
- Romo, H., & Falbo T. (1995). *Latino high school graduation: Defying the odds*. Austin, TX: University of Texas Press.
- Rose, G. (2012). *Visual methodologies: an introduction to researching with visual materials* 3<sup>rd</sup> ed. London: Sage.
- Seymour-Smith, C. (1986). *Dictionary of anthropology*. Boston, MA: G.K. Hall.
- Slaughter, J. B. (2009). It's time to get angry about underserved students. *Chronicle of Higher Education*, 55 (20), A68.
- Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: counter-storytelling as an analytical framework for education research. *Qualitative Inquiry*, 8 (1), 23.
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. In M. P. Zanna (Ed.) , *Advances in experimental social psychology*, Vol. 34 (pp. 379-440). San Diego, CA: Academic Press.
- Street, R. S. (2004). *Beasts of the field: a narrative history of California farmworkers, 1769-1913*. Stanford, CA: Stanford University Press.
- Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, CA: Sage Publications.

Telles, E. E. & Ortiz, V. (2008). *Generations of exclusion: Mexican Americans, assimilation, and race*. New York, NY: Russell Sage Foundation.

Thompson, B. (2008). *Foundations of behavioral statistics: An insight-based approach*. New York, NY: Guilford Press.

van Leeuwen, T. & Jewitt, C. (2001). *Handbook of visual analysis*. London: Sage.

Valencia, R. R. (1997). Latinos and education: An overview of sociodemographic characteristics and schooling conditions and outcomes. In M. Barrera-Yepes (Ed.), *Latino Education Issues: Conference proceedings*. Princeton, NJ: Educational Testing Service.

<http://www.faeis.ahnrit.vt.edu/>

<http://www.census.gov/2010census/data/>

## CHAPTER 2

### VISUAL ETHNOGRAPHY ASSESSMENT OF DEPARTMENTS OF ANIMAL SCIENCES

#### AT THREE LAND GRANT UNIVERSITIES: WHO IS WELCOME?

##### **Summary**

Physical artifacts present in educational settings make visible the values of the institution. These messages signal the institution's desire for a culturally inclusive and supportive environment. Given the land grant mission of inclusive education, the labor heritage of agriculture, and the saliency of stereotype threat in creating an inclusive learning environment, critically assessing the equity climate of departments of animal sciences in land grant universities is overdue. This study utilizes Banning et al.'s 2008 taxonomy based on visual ethnography methodology to interpret the equity climate of three departments of animal sciences at land grant institutions to answer the critical question: who is welcome? The systematic coding and thematic analysis reveal exclusive learning environments clearly communicated by the physical artifacts present.

##### **Introduction**

My agricultural education did not come from a land grant institution. My agricultural education came instead from the land, specifically the hay fields, fence lines, pastures, and animal pens in southwestern Colorado. As a Latina, Chicana feminist, former farmworker, land grant educated student, and educator who has been embedded in agricultural higher education for over nine years, my lens provides informative insight into the physical artifacts presented in

departments of animal sciences at Predominantly White Institutions (Corbin Dwyer & Buckle, 2009; Innes, 2009). While it is easy to find people like me working in animal agriculture, are these same people welcome to study the production of food and fiber? Do they feel invited to become educated agriculturalists? This study seeks to understand the inclusive nature of the lived learning environment of departments of animal sciences at three major land grant universities.

Many of us have experienced walking into an environment and immediately feeling a sense of belonging or welcome. In contrast, many of us have also experienced walking into an environment and immediately feeling that we were unwelcome and did not belong (Tienda, 2013; Chang, 2013). In our educational institutions, physical artifacts, the human created cultural objects and representations, communicate important messages about our educational climate and values (Banning, 1992, 1997; Banning & Bartels, 1997; Banning, Middleton & Deniston, 2008). Bulletin boards, signage, decorations, and other artifacts serve as communicators of cultural values (Pink, 2007; Van Leeuwen & Jewitt, 2001; Johnson, 1980). These physical artifacts, then, may be viewed as powerful nonverbal communicators of climate, especially equity climate. These value representations tell current and prospective students, as well as faculty and staff, who and what are valued. The communication of cultural expectations shapes the learning environment; these expectations support and/or constrain learning (Nieto & Bode, 2012; Jennings, Jewett, Laman, Souto-Manning, & Wilson, eds., 2010; Jennings & Mills, 2009; Darder, Baltodano & Torres, eds., 2009). It is important, then, to assess what physical artifacts are communicating in educational settings. This study draws upon the visual ethnography work of James H. Banning and others to answer the question: who is welcome in departments of animal sciences at three major land grant institutions? Further, recommendations

for higher education related to physical artifacts, such as art, signs, graffiti, or architecture, will be presented.

### **Latinas/os, United States Agriculture, and Higher Education**

From the United States Department of Agriculture to National Geographic magazine there are calls for more educated agriculturalists. The need for people trained to produce, secure, research, or inspect our food supply is real. Latinas/os have long been instrumental in animal agriculture in the United States. If institutions of agricultural education are to address our nation's need for educated animal scientists, Latinas/os must be included as part of the solution. Unfortunately, Latinas/os are overrepresented in the agricultural labor force and underrepresented in agricultural higher education (Jones & Larke, 2001). Instead of only relying on Latinas/os as laborers, production agriculture should recruit this experienced resource into the educated professional ranks. Once these students are recruited and arrive on campus, the question becomes, do they feel welcome to study animal sciences?

This research project connects three academic concepts: the land grant mission, which guides many institutions of agricultural higher education, agricultural heritage and ethnicity in the United States, and the institutionalization of "stereotype threat". These three concepts provide a basis to utilize visual ethnography as a method to assess the lived learning environment of departments of animal sciences at three land grant universities. These underpinning concepts are briefly explained here.

**Latinas/os.** Hispanic is a term used to identify a people of mixed Spanish and Native American, mestizo origins who have lived for several centuries in the southwestern United States; the use of the term Hispanic to refer to this group of people was socially solidified by the

United States government's 1971 decision to create a new ethnic category on its census form (Marable, 2000). Due to the political biases associated with the label Hispanic, Latina/o, a constructed ethnically descriptive term, is used in this work to include women and men who are Hispanic or who are more recent emigrants from Latin American countries (Espino, Leal, & Meier, 2008). This work touches on the complexity of Latina/o identity by referencing Mexicanas/os and Chicanas/os within Latinas/os. Mexicana/o includes Mexican Americans, individuals of Mexican heritage who live primarily in the United States, and American Mexicans, individuals from the United States who live primarily in Mexico (Anzaldúa, 2012; Alaniz & Cornish, 2008; Meier & Ribera, 1993). Chicana/o refers to people of mestizo origin who grew up in the United States, often the Southwestern United States. Chicana/o is an identity related to the Chicana/o Movement during the Civil Rights Era and as such has political connotations and a stronger tie to working class intersectionality (Anzaldúa, 2012; Noriega & Sandoval, 2011; Alaniz & Cornish, 2008). In this work, Latina/o will be used as the umbrella term to capture the complexity of this ethnic identity.

### **Agricultural Heritage.**

“The main thing about the labor supply is to muelize (sic) it...The supreme qualities of the laborer are that he shall work cheap and hard, eat little and drink nothing, belong to no union, have no ambitions and present no human problems. Particularly, he should appear from nowhere, when we need him, put up with what accommodations he finds, provide his own food, and then disappear...until the busy season comes around again. Some sort of human mule with the hibernating qualities of the bear and the fastidious gastronomic tastes of the goat, would be ideal provided he is cheap enough.” (Rowell in Street, 2004, p.iii)

In order to understand the current learning environment in agricultural higher education and animal sciences in particular, it is important to understand the historical role of Latinas/os and other immigrant and ethnic groups in United States agriculture. Native Americans, Africans

to be enslaved, as well as emigrants from Japan, China, and German Russia, and others have all provided agricultural labor within the United States (Street, 2004; Donato, 2003). As the above quote illustrates, land owners and business owners benefitted greatly from a cheap and reliable labor force. Latinas/os, especially Mexicanas/os, have historically been and continue to be a significant and valuable part of the agricultural landscape, including animal agriculture, in the United States. In fact, Latina/o labor has enabled agriculture within the United States for well over a century. Some of this labor support was documented through a series of governmental agreements called the Bracero programs, though much of this labor supply was provided by people without governmental documentation (Alaniz & Cornish, 2008; Meier & Ribera, 1993). This systematic reliance on Latina/o agricultural labor has yielded a labor force that continues to subsidize agriculture in the United States into the 21<sup>st</sup> century.

The United States Department of Agriculture and others have identified the need for educated agriculturalists (“Education,” n.d.). The Food and Agricultural Education Information System published data showing that in 2008, 4.5% of the total agricultural undergraduate student enrollment was Hispanic (“Using FAEIS to Explore Gender and Race Data,” 2009). There are not enough people graduating with degrees, both undergraduate and graduate, in agricultural fields, especially those with any real agricultural experience (Galt, Clark, & Parr, 2012; Jones & Larke, 2001). It is a foundational assumption of this research project that those who have been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Latinas/os and other ethnic groups, in agricultural education and not just in the labor pool. The issue then becomes the learning environment that these students encounter when they arrive at a land grant university to study.

**Land Grant Mission.** In 2011, John Slaughter called those in higher education to anger and action quoting higher-education leaders convened by the Carnegie Corporation of New York, “American colleges and universities have been inexcusably deficient in providing fair educational opportunities to our poorest students” (Slaughter, 2009, p. A68). Given the contemporary interpretation of the land grant mission, which is one of access, this indictment calls educators of land grant institutions to action and critical assessment of the current educational environments at said institutions.

In 1862, President Abraham Lincoln signed The Morrill Act creating the land grant university system in the United States (Fogel, 2012). As Justin Smith Morrill stated in 1858, the Act was originally designed to create university systems “to teach men the way to feed, clothe, and enlighten the great brotherhood of man” (“Celebrating 150 Years of Public Higher Education: The Morrill Land-Grant Act at 150,” 2012). The Morrill Act ushered in the era of access to higher education for more than society’s elite. It also promoted the notion that education should be practical as well as theoretical. The land grant universities were focused on agriculture and mechanics, a heritage that is still celebrated by these universities. The contemporary interpretation of the Morrill Act as espoused by the Association of Public and Land-Grant Universities is the land grant mission, i.e. providing access to higher education for a broad population of students, where ideally students with the talent and desire for higher education have access to higher education (“Celebrating 150 Years of Public Higher Education: The Morrill Land-Grant Act at 150,” 2012; Fogel, 2012). Land grant universities are designed by their very mission to be inclusive education centers. Colleges of Agriculture and the study of livestock and animal husbandry have been foundational academic disciplines within the land grant mission since the creation of these universities (Fogel, 2012).

**Stereotype Threat and the Learning Environment.** The achievement gap is well documented and delineates the academic underperformance of marginalized groups, who carry the burden of negative stereotypes regarding their academic ability. The quantified achievement gap, which is the numerical difference between the rate of graduation with a bachelor's degree for White students compared to that of non-White students, differs depending on the year of the study and the population investigated, although the pattern is consistent in that women underperform relative to men in the physical sciences and in math, and both African Americans and Latinas/os underperform compared to European Americans and Asian Americans in overall academic achievement (Aronson, Quinn, & Spencer, 1998; Fulwood III, 2012; Romo & Falbo, 1995; Slaughter, 2009; Telles & Ortiz, 2008; Valencia, 2002).

One of the explanations for this underperformance has been identified as “stereotype threat” (Steele, Spencer, & Aronson, 2002; Aronson *et al.*, 1998). Stereotype threat has been defined “as the discomfort targets feel when they are at risk of fulfilling a negative stereotype about their group; the apprehension that they could behave in such a way as to confirm the stereotype” (Aronson *et al.*, 1998, p. 85). Aronson, Steele, and others contend that stereotype threat “undermines academic achievement both by interfering with performance on mental tasks, and, over time, by prompting students to protect their self-esteem by disengaging from the threatened domain” (Aronson *et al.*, 1998, p. 85). One of the critical activating factors in triggering stereotype threat is when people think they are in an environment where they will be treated stereotypically (Steele *et al.*, 2002, Aronson *et al.*, 1998). It is important, then, to assess what the university's physical artifacts are communicating in educational settings. Are the educational environments playing a role in increasing or decreasing stereotype threat?

## Visual Ethnography as a Method to Assess Equity Climate

If a picture is worth a thousand words, photographs of our educational spaces speak volumes about our institutional values. Visual ethnography is an anthropological specialization that studies culture through photographic methods, including the use of the still camera (Pink, 2007; Rose, 2012; Seymore-Smith, 1986 van Leeuwen & Jewitt, 2001). The photograph within research design has also been described as an inductive technique to capture a cultural slice of reality (Collier & Collier, 1986). Banning (1997) has utilized visual ethnography in multiple higher education settings to assess values, ethics and climate. He has harnessed the power of this methodology to assess campus ecology for messages of sexism (Banning, 1992), messages about Hispanic/Latino culture (Banning & Luna, 1992), homoprejudice (Banning, 1995), and messages about gender (Banning, Sexton, Most, & Maier, 2007). His work has established multiple taxonomies with which to analyze the photograph (Banning, 1997; Banning & Bartels, 1997; Banning *et al.*, 2008). While it is understood that people do not fit into boxes and intersectionality is foundational to understanding lived experiences, utilizing Banning, Sexton and Deniston's taxonomy allows for rigorous systematic examination of the physical artifacts that are encountered in educational settings (2008). Further, stereotype threat and LatCrit, an epistemology that seeks to expose and transform the master narrative, provide a theoretical framework within this taxonomy with which to make meaning of the data.

The present study utilizes the most recent taxonomy published to assess equity climate (Banning, Sexton & Deniston, 2008). Messages depicted in photographs are analyzed in this taxonomy to assess the equity messages conveyed. This framework is composed of four dimensions: the type of physical artifact sending the message, the equity parameters relevant to groups within the organization, the content of the message, and the equity approach level of the

message. First, the types of physical artifacts within educational settings take a variety of forms but usually fall into four categories: art, signs, graffiti, and architecture. Second, in this taxonomy, physical artifacts found in educational settings are interpreted from a number of equity parameters including gender, race, ethnicity, religion, sexual orientation, and physical ability differences. Banning, Sexton and Deniston call the last equity parameter physical while in this analysis it will be termed physical (access) to more clearly define what is intended by this equity parameter (2008). Third, this taxonomy allows for assessment of the content of the message into four categories, though many messages relate to more than one category. For the third level of assessment regarding equity climate the relevant categories are: messages of belonging, messages of safety, messages of equality, and messages regarding roles. Finally, the taxonomy labels four different approaches in regard to how the artifact addresses issues of equity. These categories are the negative approach, the null approach (Betz, 1989; Freeman, 1979), the contributions/additive approach (Banks, 1999), and the transformational/social action approach (Banks 1999). These four levels of analysis are summarized in Table 2.1.

### **Theoretical Framework**

“Epistemology...can be...defined as a ‘system of knowing’ that is linked to worldviews based on the conditions under which people live and learn” (Delgado Bernal, 2002, p 106). A number of education scholars have established the imperative for critical raced and raced-gendered epistemologies in research (Crenshaw, 2011; Crenshaw, Gotanda, Peller, & Thomas, 1995; Delgado Bernal, 2012, 2002; Dillard, 2000; Ladson-Billings, 2000, 1995). This study adds to this growing body of knowledge within the academy founded on Latina/o Critical Theory (LatCrit). LatCrit has theoretical roots in Critical Race Theory (Mills, 1997; Valdes, Culp, & Harris, 2002). As such this research is concerned with privilege and oppression and is

emancipatory in its inquiry aims (Freire, 1993). In the context of agriculture in the United States and this article, LatCrit seeks to expose and transform the master narrative in which Latinas/os are confined to stoop labor while White land owners reap the benefit of that labor (Anzaldúa, 2012; Crenshaw *et al.*, 1995; Creswell, 2013; Darder *et al.*, 2009; Delgado Bernal, 2012, 2002).

My positionality and the agricultural heritage of Latina/o labor places this study comfortably within a LatCrit theoretical framework. This study utilizes LatCrit to understand the systems encountered by students within higher education (Marvin & Dixon, 2013). Based on this theoretical framework, my positionality informs the research. I am a Latina researcher with a Mexican American upbringing that most closely identifies as a Chicana feminist because of my politics and working class and agricultural roots. Combined, this standpoint allows for analysis of physical artifacts in departments of animal sciences from the perspective of one who has labored in agricultural fields but has never owned one.

### **Conceptual Framework**

Physical artifacts present in educational settings make visible the values of the institution. These messages signal the institution's desire for a culturally inclusive and supportive environment. Further, they signal who is welcome. Given the land grant mission of inclusive education, the heritage of agriculture, especially its relationship with Latina/o labor, and the saliency of stereotype threat in creating an inclusive learning environment, critically assessing the equity climate of departments of animal sciences in land grant universities is overdue. The purpose of this study is to utilize *Banning, Sexton and Deniston's* taxonomy of visual ethnography methodology to interpret the equity climate of three departments of animal sciences at land grant institutions to answer three overarching research questions:

1. In terms of equity climate, what are the messages being communicated by the physical artifacts in three departments of animal sciences?
2. What are the messages regarding difference to dominant culture in terms of gender, race, ethnicity, religion, sexual orientation, and physical ability?
3. Are these three departments of animal sciences inclusive and welcoming?

## **Method**

### **Participants**

After requesting and receiving permission from administrators at the respective institutions, I visited three departments of animal sciences at land grant institutions in the Rocky Mountain region. For the purposes of this study, these institutions will be referred to be the pseudonyms State University, University of State, and State. The visits to State University and University of State occurred in the summer semester of 2012. The visit to State occurred in the summer semester of 2013. State University is located in a state that is 81.3% White and 20.7% Latina/o; University of State is the land grant institution in a state that is 73.0% White and 29.6% Latina/o; and State is located in a state that is 90.7% White and 8.9% Latina/o (2010 United States Census data). State University's undergraduate population is 51% female and 84.6% White; University of State has an undergraduate population that is 52.3% female and 62.4% White; and State's undergraduate population is 48% female and 77.1% White (institutional enrollment reports). State University's department of animal sciences was to begin a major remodeling project within six months of the visit to State University. Examples of architecture such as access points, stairs, curb cuts and the like are to be rectified in the remodel of the building; thus State University did not have any physical artifacts coded as architecture.

## **Data Collection**

Photographic images were taken with a still camera at visits to the three departments of animal sciences. A total of 127 images were collected for analysis from the three institutions. To triangulate the analysis another five images were collected at the 2012 summer conference of the American Society of Animal Science and another 41 images were collected from State's College of Agriculture. To further triangulate and add depth to the investigation and the equity assessment, the websites from the three institutions were reviewed for negative case analysis (Merriam, 2002; Banning *et al.*, 2007).

## **Data Analysis**

Malcolm Collier's four stage model for analysis in visual anthropology was followed in the analysis of this visual ethnography (Collier in van Leeuwen & Jewitt, eds., 2001). For the first stage, each image was printed at 8.5" x 11" size and displayed *en masse*. The data was observed and patterns and emerging themes were noted in a research memo. During the second stage of analysis, an inventory of all of the images was created; the inventory was designed around the three institutions as well as the two triangulation image collections. For the third stage of the analysis, all images were coded with the *a priori* codes provided by the Banning, Sexton and Deniston's taxonomy. The images were coded first by the type of physical artifact represented in the image, namely art, signs, graffiti, or architecture. Secondly, the images were coded by equity parameter, specifically gender, race, ethnicity, religion, sexual orientation, and physical (access). Thirdly, images were coded based on message content: that is belonging, safety, equality, and roles. Finally, the images were coded based on equity approach namely negative, null, contributions/additive, and transformational. Code counts were tabulated and

percentages for each code were calculated. Collier's fourth stage calls for returning to the complete image record, what Braun and Clarke (2006) call data corpus. Thematic analysis, guided by Braun and Clarke, was then conducted to assess the images in a hermeneutic process that allowed for themes to emerge from the data corpus while informed by individual images, individual image codes, and the coding tables.

### **Trustworthiness Criteria**

The trustworthiness of this project will be documented by intentionally describing the credibility, dependability, transferability, and confirmability of the investigation based on the recommendations of Lincoln and Guba (1986). Research memos and triangulation through the images from the 2012 American Society of Animal Science conference, the images collected from State's College of Agriculture, and the negative case analysis utilizing each department's website support the trustworthiness of this study. Collecting images from three separate land grant universities supports the claim of credibility in that the visual ethnography is not limited to one department of animal sciences. Given the research questions for this study, visual ethnography is the appropriate research method to assess the physical artifacts present in the animal sciences learning environments; this provides dependability for the project.

Transferability of this project is limited to departments of animal sciences at land grant universities; the decision remains the responsibility of researchers seeking to transfer these findings. Lincoln and Guba define confirmability or neutrality through questioning how one can establish the degree to which the findings of a study are determined by the subjects and conditions of the study and not be the biases, motivations, interests, or perspectives of the researcher (Lincoln & Guba, 1986). Stating my positionality as a researcher, situating the research within a Critical theoretical framework, actively engaging in reflexivity, and

documenting my subjectivity through research memos support a claim of confirmability (Rose, 2012; Glesne, 2011; Lincoln & Guba, 1986). While not included in this study, involving a second researcher would enhance the confirmability of this study.

## Results

In the images of the three departments of animal sciences, three of the four codes for type of physical artifact were found. Of the State University images, 64.7% were coded as art and 35.3% were coded as signs. Of the University of State images, 22.2% were coded as art, 66.7% were coded as signs, and 11.1% were coded as architecture. Of the State images, 48.9% were coded as art, 40.8% were coded as signs, and 15.3% were coded as architecture. No images in this data set were coded for graffiti. These calculations are represented in Table 2.

The coding percentages found at State University for equity parameters, message content, and equity approach are depicted in Table 3. The coding percentages found at University of State for equity parameters, message content, and equity approach are depicted in Table 4. The coding percentages found at State for equity parameters, message content, and equity approach are depicted in Table 5. Dimension 3, Message Content, and Dimension 4, Equity Approach were coded utilizing a LatCrit and stereotype threat informed lens. In summary, message content was coded 727 times across the three institutions, 62.2% of those were coded for belonging, 2.6% were coded for safety, 19.4% were coded for equality, and 15.8% were coded for roles. Equity approach was coded 487 times across the three institutions, 16.8% were coded negative, 69.6% were coded null, 13.6% were coded additive/contributions, and none were coded transformational. To make a more generalized comparison in the equity approach across the three institutions, the negative and null codes were summed to achieve an *exclusive* sum total,

86.4%, while the additive/contributions and transformational codes were summed to achieve an *inclusive* sum total, 13.6% (Banks, 1999).

The thematic analysis indicates two themes: inclusive and exclusive with three sub-themes situated within the exclusive theme: hegemony, patriarchy, and disengaged. The majority of the images fall into the thematic category of exclusive given that 86.4% of the images were coded as negative or null. A small sample of the images categorized as exclusive are shown in Figures 2.1-2.5.

Figure 2.1 is one wall of a conference room at State University. The opposite wall in the conference room has a similar portrait display. These portraits are 24" x 18" and no description of who these portraits depict is provided. In entirety these walls clearly state that European American men succeed in animal sciences; they further indicate superiority and dominance (Freeman, 1979). Images such as this one supported the development of the exclusive sub-theme, patriarchy. Figure 2.2 is a poster on a faculty member's door on the main level at State University. A picture of a quintessential American cowboy is represented in the poster with a caption that reads, "There were a helluva lot of things they didn't tell me when I hired on with this outfit." This image holds up the American cowboy as the ideal in animal sciences (Johnson, 2006; Banks, 1999). Images such as these supported the development of the exclusive sub-theme, hegemony.

Figure 2.3 is an image of a piece of art that stands over six feet tall in State's entrance. It depicts a stereotypical battle scene with the cowboy being chased by the savage Indians. Figure 3 is another example of an image within the exclusive theme and hegemony sub-theme. Figure 2.4 shows an image just within the entrance doors in the department of animal sciences at

University of State. It is the first physical artifact that one encounters when entering the building. It shows the small departmental sign next to the time clock and suggests that there is not investment in the institution, employees punch in and punch out with the time clock. Informed by the data corpus of University of State, this image indicated the exclusion theme and the disengaged sub-theme. Figure 2.5 is also categorized in the exclusion theme and the disengaged sub-theme. Displayed next to a faculty member's door, it depicts a one inch square upon which students may submit their complaints. The image demonstrates a lack of concern and investment in the students and their concerns.

Figures 2.6 and 2.7 illustrate the images that indicated the inclusive theme. Figure 2.6 shows a framed quote that is displayed on the wall of the Department Head's office at State. The 1907 Liberty Hyde Bailey quote states, "The University Belongs to the People of the State. It Will Justify Its Existence Only as it Serves the People." This image encapsulates the land grant mission to serve the people, all of the people, not just people with privilege. Figure 2.7 is an image of a display board at State that describes the particular contributions of a cattlegwoman that is referred to in the display as the Cattle Queen. This display was hung next to two other displays dedicated to women within the livestock industry. The displays state clearly that women have long been a part of animal sciences, not just in supporting roles but as leaders.

## **Discussion**

The Food and Agriculture Organization of the United Nations (FAO) spells out clearly the need for innovation and education in all of agriculture, including animal agriculture in order to produce, secure, research, and inspect our food supply ("How to Feed the World in 2050," n.d.). For departments of animal sciences at land grant universities to address this problem, they

will need to question if students can *see* themselves studying animal sciences. Further, for scientific innovation in animal sciences, “We need to be constantly asking: ‘Who else should be here? Who else should be looking at this?’” (Wheatley, 2006, p. 66). To develop innovative and ethical solutions to the problems facing modern agriculture, the input of all involved is necessary; the voices of all classes and ethnic groups need to be engaged (Blake, 2008).

Latinas/os have long played a vital role in animal agriculture in the United States. Why they are not then represented in agricultural higher education? The mission of land grant universities is to provide access to education, especially agricultural education. If these land grant universities are to address our nation’s need for educated animal scientists, Latinas/os must be included as part of the solution. This research is concerned with privilege and oppression and is emancipatory in its inquiry aims (Freire, 1993). In keeping with a LatCrit theoretical framework, the purpose of this article is to expose and transform the master narrative in which Latinas/os are confined to stoop labor while White land owners reap the benefit of that labor (Anzaldúa, 2012; Creswell, 2013; Crenshaw *et al.*, 1995; Darder *et al.*, 2009; Delgado Bernal, 2012, 2002). The purpose of this inquiry is to assess the presence or absence of a hegemonic message being communicated in these halls of agricultural learning.

Nonintrusive research methods, such as visual ethnography that uses photographs of physical artifacts within the educational environment, provide an accurate assessment of the equity climate within an institution. Physical artifacts tell us clearly who is welcome and what is valued. In this examination of departments of animal sciences at three land grant universities, the overwhelming finding on most equity parameters is profound in its silence: the null approach. This approach is devoid of equity messages, thus inherently discriminatory because the “normal” is designed in terms of European American, male, Christian, heterosexual,

physically abled privilege (Darder *et al.*, 2009; Jennings, *et al.*, 2010; Johnson, 2006; Martin, in press; Nieto & Bode, 2012; Tienda, 2103). Add this to the images that were negative in their equity approach and the result is an exclusive learning environment clearly communicated by the physical artifacts present. In keeping with the inquiry aims of a LatCrit theoretical framework, this study suggests that the physical artifacts on display at these land grant animal science's departments reifies a master narrative. While agricultural heritage in the United States is predominantly Latina/o, the master narrative communicated in these departments of animal sciences is that Latinas/os are absent from the conversation.

### **Conclusion**

On March 12, 2013, Hoover alerted readers of *The Chronicle of Higher Education* that “sharply increasing diversity will soon hit many states and institutions with freight-train force” (Hoover, 2013, p. A17). Animal sciences and land grant universities will not be excluded from this increasing diversity. In contrast, animal sciences with its heritage of racially and ethnically diverse laborers and land grant universities with their inherent mission to serve the people of each state, may well be positioned right on the train tracks. If institutions of higher education are to be prepared for this “freight-train,” it is important to assess the educational environments that students encounter.

Stereotype threat has been identified as a key factor in underperformance of stereotyped groups. Stereotype threat undermines academic achievement of stereotyped students by interfering with performance on mental tasks and by prompting students to protect their self-esteem by disengaging from the environment. In other words, students who are experiencing stereotype threat are likely to underperform academically and eventually remove themselves

from the academic discipline. One of the critical factors in triggering stereotype threat is when people think they are in an environment where they will be treated stereotypically and are present in an environment where they may not be welcome. This research project suggests that within the departments of animal sciences that were researched, students are likely to think that they are in an environment where they will be treated stereotypically. Departments of animal sciences are sending the message that the female student presenting her honors thesis in the conference room lined with portraits of European American men can expect to be treated stereotypically. The Native American student who has raised sheep and cattle his entire life who encounters a six foot tall cowboy boot depicting a stereotypical “Cowboys and Indians” battle will likely be treated stereotypically. The Latina/o student who was raised as a dairy worker who encounters nothing that recognizes the Latina/o contributions to animal sciences will be treated stereotypically. These departments of animal sciences are yelling silently that they are not inclusive and welcoming learning environments. The physical artifacts are telling students as well as faculty and staff that one must fit within a stereotyped image of an American cowboy to be a successful animal scientist. The artifacts communicate that there is one accepted way to be a professional agriculturalist, and it does not include female and non-White students.

We can do better. The analysis of State’s images show acknowledgement of the contributions of women to animal sciences; this is a start. Figure 2.8 depicts an image of a bulletin board entitled *The Re-creation of Cowboys and Indians*. It is a triangulation image from State’s College of Agriculture. It actively questions stereotypes and describes the involvement of Native Americans in rodeo, an activity enmeshed in departments of animal sciences. It claims space for Native Americans in animal sciences and in rodeo. This type of inclusive physical artifact goes a long way to alleviate stereotype threat. Departments of animal sciences at land

grant universities need more of these examples if we are to welcome diversity, support all students, and achieve the land grant mission. Animal sciences departments could have physical artifacts that acknowledge the contributions of Latinas/os and others to animal agriculture in the United States. The present study begs the question, where are these acknowledgements? Educators can and should assess the physical artifacts in their educational environments and ask the question, are we inducing or reducing stereotype threat?

More research is necessary to guide the effort to provide inclusive agricultural learning environments. Banning, Sexton and Deniston's taxonomy provides a quantifiable and systematic method to assess physical artifacts in the learning environment, yet as a qualitative method visual ethnography allows for subjective decision making (2008). My positionality both as an agricultural insider and as an ethnic outsider is a vital yet singular lens through which to assess these physical artifacts (Innes, 2009). Future studies could include a comparative analysis of multiple perspectives assessing physical artifacts using Banning, Sexton and Deniston's taxonomy. Other studies could include the lived experiences of Latina/o and other non-White agricultural students. Studies focused on the voicing of these lived experiences could then be compared to the visual ethnography to assess if the students do feel included and supported in their agricultural education pursuits or if their lived experience parallels the finding of this visual ethnography.

Table 2.1

*Coding Descriptions based on Banning et al.'s 2008 Taxonomy*

Level of Analysis	Category/Code	Characteristics of Code
Dimension 1	Art	Paintings, posters, sculpture, and statuary
Types of Physical Artifacts	Sign	Official signs such as restroom signs and directories, unofficial signs such as flyers and announcements
	Graffiti	An illegitimate sign: an inscription, slogan, or drawing scratched or written on a public surface
	Architecture	Physical structures of educational settings, e.g. curbs and stairs
Dimension 2	Gender	Messages about or for males, females, and the gender identity continuum
Equity Parameter	Race	Messages concerning the socially constructed differentiation with Black and White people
	Ethnicity	Messages related to Latina/os, African Americans, Asian Americans, Native Americans, or other ethnically defined groups
	Religion	Messages concerned with religious groups, e.g. religious holiday decorations
	Sexual Orientation	Messages about the sexual orientation continuum
	Physical(access)	Messages related to issues of mobility and access
Dimension 3	Belonging	Inclusion or exclusion of certain groups, e.g. including

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Content of the		posters of Cesar Chavez, Dolores Huerta, Sojourner
Message		Truth etc. in displays about great agricultural leaders in the United States
	Safety	Any artifact that threatens or displays dehumanization of any group, or the celebration of groups or people who threaten or dehumanize others
	Equality	The importance of one group relative to others
	Roles	People presented in stereotyped roles such as men portrayed as business or scientific powerhouses while women are presented as passive or supportive
Dimension 4	Negative	Does not support equity among groups characterized as being different from the dominant culture; may be overt or subtle
Equity Approach	Null	Devoid of equity messages, thus inherently discriminatory because the “normal” is designed in terms of White male privilege
	Additive/ Contributions	Artifacts are added that support equity and inclusion but are presented without an equity centric position
	Transformational	Purposeful inclusion of artifacts that call for a commitment to equity through personal involvement

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Table 2.2

*Physical Artifacts across the Three Institutions, Occurrence Percentage at each Institution*

Code	State University	University of State	State
Art	64.7	22.2	48.9
Signs	35.3	66.7	40.8
Graffiti	0	0	0
Architecture	0	11.1	15.3

Table 2.3  
*Equity Parameters, Message Content, and Equity Approach for State University, Occurrence Percentage of Each Code*

Dimension		Occurrence Percentage			
Gender		24.5%			
Message Content	Belonging	Safety	Equality	Roles	
%	36.8	10.5	31.6	21.1	
Equity Approach	Negative	Null	Additive	Transformational	
%	57.1	14.3	28.6	0	
Race		20.8%			
Message Content	Belonging	Safety	Equality	Roles	
%	39.3	10.7	25.0	25.0	
Equity Approach	Negative	Null	Additive	Transformational	
%	54.5	36.4	9.1	0.0	
Ethnicity		20.8%			
Message Content	Belonging	Safety	Equality	Roles	
%	39.3	10.7	25.0	25.0	
Equity Approach	Negative	Null	Additive	Transformational	
%	54.5	27.3	18.2	0.0	
Religion		9.4%			
Message Content	Belonging	Safety	Equality	Roles	
%	33.3	20.0	26.7	20.0	
Equity Approach	Negative	Null	Additive	Transformational	
%	60	40	0	0	

Sexual Orientation		9.4%		
Message Content	Belonging	Safety	Equality	Roles
%	33.3	20.0	26.7	20.0
Equity Approach	Negative	Null	Additive	Transformational
%	60	40	0	0
Physical (access)		15.1		
Message Content	Belonging	Safety	Equality	Roles
%	36.4	13.6	27.3	22.7
Equity Approach	Negative	Null	Additive	Transformational
%	37.5	37.5	25.0	0.0

Table 2.4  
*Equity Parameters, Message Content, and Equity Approach for University of State, Occurrence Percentage of Each Code*

Dimension		Occurrence Percentage		
Gender		24.7		
Message Content	Belonging	Safety	Equality	Roles
%	35.3	0	35.3	29.4
Equity Approach	Negative	Null	Additive	Transformational
%	21.1	36.8	42.1	0
Race		20.5		
Message Content	Belonging	Safety	Equality	Roles
%	46.2	0	30.8	23.1
Equity Approach	Negative	Null	Additive	Transformational

	%	25.0	43.8	31.3	0.0
Ethnicity				20.5	
Message Content	Belonging		Safety	Equality	Roles
	%	57.1	0.0	23.8	19.0
Equity Approach	Negative		Null	Additive	Transformational
	%	26.7	40.0	33.3	0.0
Religion				11.0	
Message Content	Belonging		Safety	Equality	Roles
	%	63.6	0.0	27.3	9.1
Equity Approach	Negative		Null	Additive	Transformational
	%	28.6	71.4	0.0	0.0
Sexual Orientation				11.0	
Message Content	Belonging		Safety	Equality	Roles
	%	66.7	0.0	22.2	11.1
Equity Approach	Negative		Null	Additive	Transformational
	%	25	75	0	0
Physical (access)				12.3	
Message Content	Belonging		Safety	Equality	Roles
	%	66.7	0.0	25.0	8.3
Equity Approach	Negative		Null	Additive	Transformational
	%	44.4	55.6	0.0	0.0

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Table 2.5  
*Equity Parameters, Message Content, and Equity Approach for State, Occurrence Percentage of Each Code*

Dimension		Occurrence Percentage		
Gender		21.5		
Message Content	Belonging	Safety	Equality	Roles
%	58.6	0	22.4	19.0
Equity Approach	Negative	Null	Additive	Transformational
%	5.2	74.0	20.8	0
Race		19.8		
Message Content	Belonging	Safety	Equality	Roles
%	66.3	0	15.8	17.8
Equity Approach	Negative	Null	Additive	Transformational
%	14.3	78.6	7.1	0.0
Ethnicity		22.1		
Message Content	Belonging	Safety	Equality	Roles
%	67.0	0.0	17.0	16.1
Equity Approach	Negative	Null	Additive	Transformational
%	13.9	75.9	10.1	0.0
Religion		11.7		
Message Content	Belonging	Safety	Equality	Roles
%	90.9	0.0	6.8	2.3
Equity Approach	Negative	Null	Additive	Transformational
%	2.4	90.5	7.1	0.0

Sexual Orientation		12.0		
Message Content	Belonging	Safety	Equality	Roles
%	87.2	0.0	8.5	4.3
Equity Approach	Negative	Null	Additive	Transformational
%	4.8	88.1	7.1	0
Physical (access)		12.8		
Message Content	Belonging	Safety	Equality	Roles
%	89.8	0.0	6.1	4.1
Equity Approach	Negative	Null	Additive	Transformational
%	10.9	80.4	8.7	0.0

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Figure 2.1. Image of Conference Room Wall at State University, Example of Exclusive and Patriarchal Physical Artifacts; These portraits are 24” x 18”.

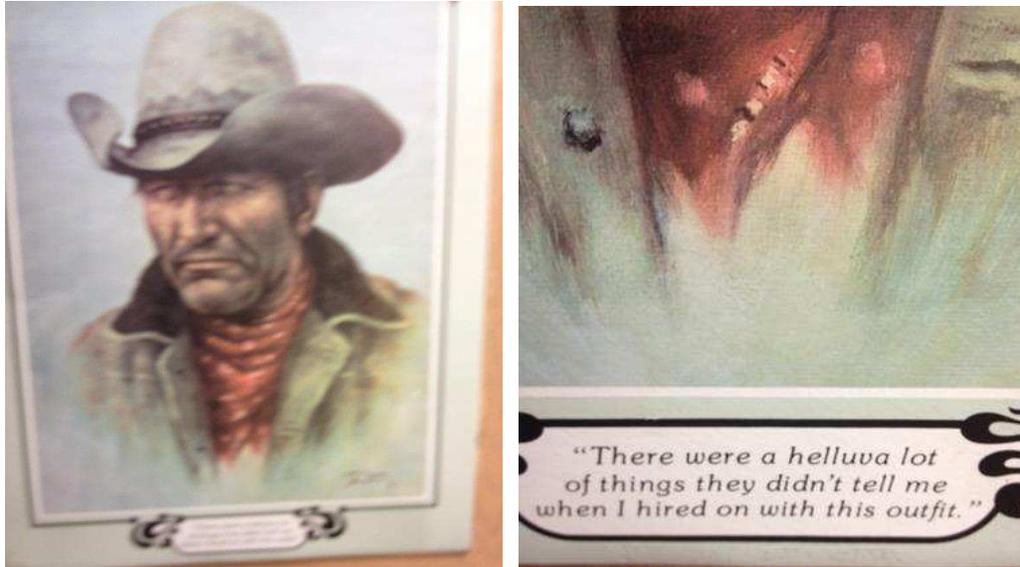


Figure 2.2. Image of Faculty Office Door at State University and Close-up Image of Caption on Poster, Example of Exclusive and Hegemonic Physical Artifacts



Figure 2.3. Image of Art at State and Close-up Image of “Cowboys and Indians” Battle, Example of Exclusive and Hegemonic Physical Artifacts



Figure 2.4. Image of Entrance at University of State, Example of Exclusive and Disengaged Physical Artifacts



Figure 2.5. Image of Poster beside a Faculty Office Door at State University, Example of Exclusive and Disengaged Physical Artifacts

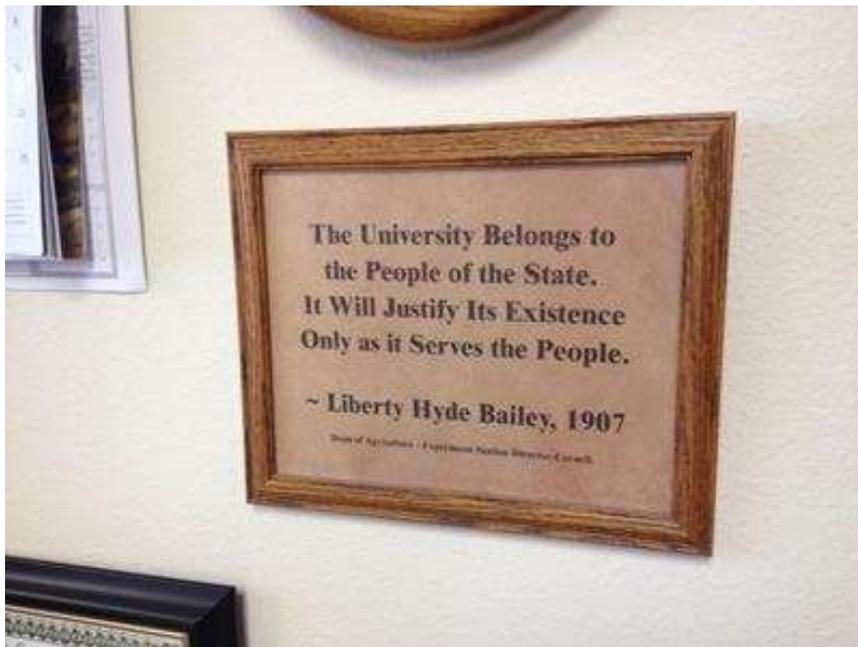


Figure 2.6. Image of Framed Land Grant Quote in the Department Head's Office at State, Example of Inclusive Physical Artifacts



Figure 2.7. Image of Bulletin Board at State regarding a Cattle Queen (location is blocked) and her Contribution to Animal Sciences, Example of Inclusive Physical Artifacts

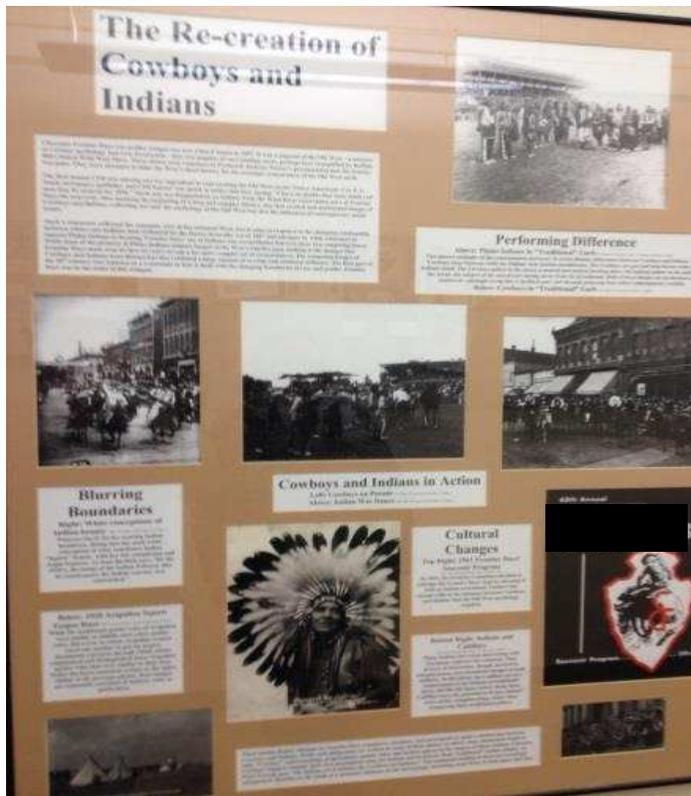


Figure 2.8. Image of Bulletin Board entitled The Re-creation of Cowboys and Indians, Triangulation Image from State's College of Agriculture, Example of Inclusive Physical Artifacts (location is blocked)

## REFERENCES

- Aronson, J., Quinn, D. M., & Spencer, S. J. (1998). Stereotype threat and the academic underperformance of minorities and women. In J. K. Swim, C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 83-103). San Diego, CA: Academic Press.
- Alaniz, A. & Cornish, M. (2008). *Viva la raza: A history of Chicano identity and resistance*. Seattle, WA: Red Letter Press.
- Anzaldúa, G. (2012). *Borderlands/la frontera: The new mestiza*. (4th Ed.). San Francisco, CA: Aunt Lute Books.
- Banning, J. H. (1992). Visual anthropology: Viewing the campus ecology for messages of sexism. *The Campus Ecologist*, 10 (1), 1-4.
- Banning, J. H. (1995). Campus images: Homoprejudice. *The Campus Ecologist*, 12 (3), 3.
- Banning, J.H. (1997). Assessing the campus' ethical climate: A multidimensional approach. In J. Fried, (Ed). *Ethics for today's campus: New Perspectives on education, student development, and institutional management*. New Direction for Student Services #77 (pp. 95-105). San Francisco, CA: Jossey-Bass Publishers.
- Banning, J. H. & Bartels, S. (1997). A taxonomy: Campus physical artifacts as communicators of campus multiculturalism. *NASPA Journal*, 35 (1), 29-37.
- Banning, J. H. & Luna, F. C. (1992). Viewing the campus ecology for messages about Hispanic/Latino culture. *The Campus Ecologist* 10 (4), 1-4.

- Banning, J. H., Middleton, V., & Deniston, T. L. (2008). Using photographs to assess equity climate: A taxonomy. *Multicultural Perspectives*, 10 (1), 41-46.
- Banning, J. H., Sexton, J., Most, D.E., & Maier, S. (2007). Gender asymmetries encountered in the search and exploration of mining engineering program websites: A portrayal of posture and roles. *Journal of Women and Minorities in Science and Engineering* 13, 165-176.
- Banks, J. (1999). *An introduction to multicultural education*, 2<sup>nd</sup> ed. Boston, MA: Allyn & Bacon.
- Betz, N. E. (1989). Implications of the null environment hypothesis for women's career development and for counseling psychology. *The Counseling Psychologist* 17 (1), 136-144.
- Blake, D. J. (2008). *Chicana Sexuality and Gender*. Durham, NC: Duke University Press.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 77-101.
- Celebrating 150 Years of Public Higher Education: The Morrill Land-Grant Act at 150. (2012). In Association of Public and Land-Grant Universities. Retrieved from <http://www.aplu.org/page.aspx?pid=2377>
- Chang, M. (2013). Post-"Fisher": The unfinished research agenda on student diversity in higher education. *Educational Researcher* 42 (3), 172-173.
- Collier, J. Jr. & Collier, M. (1986). *Visual anthropology*. Albuquerque: University of New Mexico Press.

- Corbin Dwyer, S. & Buckle, J. L. (2009). the space between: on being an insider-outsider in qualitative research. *International Journal of Qualitative Methods* 8: 54- 63.
- Crenshaw, K. W. (2011). Twenty years of critical race theory: Looking back to move forward. *Connecticut Law Review* 43, 1253.
- Crenshaw, K. W., Gotanda, N., Peller, G., & Thomas, K. (Eds.) (1995). *Critical race theory: the key writings that formed the movement*. New York, NY: New Press.
- Creswell, J. W. (2013). *Qualitative inquiry: Research and design, 3<sup>rd</sup> ed.* Thousand Oaks, CA: Sage.
- Darder, A., Baltodano, M. P. & Torres, R. D. (Eds.). (2009). *The critical pedagogy reader 2<sup>nd</sup> ed.* New York, NY: Routledge
- Delgado Bernal, D. (2012). *Chicana feminist epistemology: past, present, and future*. *Harvard Educational Review*, 82 (4), 511-512.
- Delgado Bernal, D. (2002). Critical race theory, Latino critical theory, and critical raced-gendered epistemologies: recognizing students of color as holders and creators of knowledge. *Qualitative Inquiry* 8, 105-126.
- Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: examining an endarkened feminist epistemology in culturally engaged research. *International Journal of Qualitative Studies in Education*, 13, 661-681.
- Donato, R. (2003). Sugar beets, segregation, and schools: Mexican Americans in a northern Colorado community, 1920-1960. *Journal of Latinos and Education* 2 (2), 69-88.

Education. (2014). In National Institute of Food and Agriculture. Retrieved from

<http://www.csrees.usda.gov/nea/education/education.cfm>

Espino, R., Leal, D. L., & Meier, K. J. (Eds.) (2008). *Latino politics: Identity, mobilization, and representation*. Charlottesville, VA: University of Virginia Press.

Fogel, D. M. (2012). *Precipice or crossroads?: Where America's great public universities stand and where they are going midway through their second century*. Albany, NY: State University of New York Press.

Freeman, J. (1979). How to discriminate against women without really trying. In J. Freeman (Ed.). *Women: A feminist perspective (2<sup>nd</sup> ed.; pp. 217-232)*. Palo Alto, CA: Mayfield.

Freire, P. (1993). *Pedagogy of the oppressed*. New rev. 20<sup>th</sup>-Anniversary ed. New York: Continuum.

Fulwood III, S. (2012). The brick wall. *Chronicle of Higher Education, Convergence Supplement*, 14-16.

Galt, R. E., Clar, S. F., & Parr, D. (2012). Engaging values in sustainable agriculture and food systems education: toward an explicitly values-based pedagogical approach. *Journal of Agriculture, Food Systems and Community Development*, 2 (3), 43-54.

Glesne, C. (2011). *Becoming qualitative researchers: An introduction, 4<sup>th</sup> ed.* Boston, MA: Pearson

Hoover, E. (2013). Minority applicants to colleges will rise significantly by 2020. *Chronicle Of Higher Education*, 59(19), A16-A17.

How to Feed the World in 2050. (n.d.). In Food and Agriculture Organization of the United States. Retrieved from [http://www.fao.org/fileadmin/templates/wsfs/docs/expert\\_paper/How to Feed the World\\_in\\_2050.pdf/](http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf)

Innes, R. A. (2009). Wait a second. Who are you anyways? The insider/outsider debate and American Indian studies. *American Indian Quarterly* 33, 440-447.

Jennings, L. B., Jewett, P.C., Laman, T. T., Souto-Manning, M. V., & Wilson, J. L. (Eds). (2010). *Sites of possibility: critical dialogue across educational settings*. Cresskill, NJ: Hampton Press.

Jennings, L. B., & Mills, H. (2009). Constructing a discourse of inquiry: Findings from a five-year ethnography at one elementary school. *Teachers College Record*, 111(7), 1583-1618.

Johnson, A. G. (2006). *Privilege, power, and difference 2nd ed.* Boston: McGraw Hill

Johnson, N.B. (1980). The material culture of public school classrooms: The symbolic integration of local school and national culture. *Anthropology & Education Quarterly*, XI (3), 173-190.

Jones, W. A. & Larke, A., Jr., (2001). Factors influencing career choice of African American and Hispanic graduates of a land-grant college of agriculture. *Journal of Agricultural Education* 42, 39-49.

Ladson-Billings. G. (1995). Toward a theory of cultural relevant pedagogy. *American Educational Research Journal*, 32, 465-491.

- Ladson-Billings, G. (2000). Racialized discourses and ethnic epistemologies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research, 2<sup>nd</sup> ed.* Thousand Oaks, CA: Sage
- Lincoln, Y. S., & Guba, E. E. (1986). Research, evaluation, and policy analysis: heuristics for disciplined inquiry. *Policy Studies Review, 5* (3), 546-565.
- Lynn, M., & Dixson, A. D., (Eds.). (2013). *Handbook of critical race theory in education.* New York: Routledge.
- Marable, M. (2000, February 25). We need a new and critical study of race and ethnicity. *Chronicle of Higher Education*, p. B4.
- Martin, M. J. (in press). A witness of whiteness: An autoethnographic examination of a white teacher's own inherent prejudice. *Education as Change.*
- Meier, M. S. & Ribera, F. (1993). *Mexican Americans/American Mexicans from Conquistadors to Chicanos.* New York, NY: Hill and Wang.
- Merriam, S. B. (2002). *Qualitative research in practice: examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.
- Mills, C. (1997). *The racial contract.* Ithaca, NY: Cornell University Press.
- Nieto, S. & Bode, P. (2012) *Affirming diversity: the sociopolitical context of multicultural education, 6th ed.* Boston, MA: Pearson.

- Noriega, C. A. & Sandoval, C. (Eds.) (2011). *The Chicano Studies Reader: An Anthology of Aztlan, 1970-2010*. Los Angeles, CA: UCLA Chicano Studies Research Center Publications.
- Pink, S. (2007). *Doing visual ethnography: images, media, and representation in research 2<sup>nd</sup> ed.* London: Sage Publications.
- Romo, H., & Falbo T. (1995). *Latino high school graduation: Defying the odds*. Austin, TX: University of Texas Press.
- Rose, G. (2012). *Visual methodologies: an introduction to researching with visual materials 3<sup>rd</sup> ed.* London: Sage.
- Seymour-Smith, C. (1986). *Dictionary of anthropology*. Boston, MA: G.K. Hall.
- Slaughter, J. B. (2009, January 23). It's time to get angry about underserved students. *Chronicle of Higher Education*, p. A68.
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, 34, 379-440. San Diego, CA: Academic Press.
- Street, R. S. (2004). *Beasts of the field: a narrative history of California farmworkers, 1769-1913*. Stanford, CA: Stanford University Press.
- Telles, E. E. & Ortiz, V. (2008). *Generations of exclusion: Mexican Americans, assimilation, and race*. New York, NY: Russell Sage Foundation.

Tienda, M. (2013). Diversity ≠ inclusion: Promoting integration in higher education.

*Educational Researcher*, 42 (9), 467-475.

Using FAEIS to Explore Gender and Race Data. (2009). In Food and Agricultural Education

Information System. Retrieved from

[http://www.faeis.ahnrit.vt.edu/intro\\_gender\\_race.shtml](http://www.faeis.ahnrit.vt.edu/intro_gender_race.shtml)

van Leeuwen, T. & Jewitt, C. (2001). *Handbook of visual analysis*. London: SAGE.

Valdes, F., Culp, J. M., & Harris, A. (2002). Battles waged, won, and lost: Critical race theory

at the turn of the millennium. In F. Valdes, J.M. Culp, & A. Harris (Eds.), *Crossroads,*

*directions and a new critical race theory* (pp. 1-6). Philadelphia, PA: Temple University

Press.

Valencia, R. R. (2002). *Chicano school failure and success: Past, present, and future*. 2<sup>nd</sup> ed.

London: Routledge/Falmer.

Wheatley, M.J. (2006). *Leadership and the New Science: Discovering Order in a Chaotic*

*World*. San Francisco, CA: Berrett-Koehler Publisher.

## CHAPTER 3

# LATINA LIVED EXPERIENCE AS AN AGRICULTURAL STUDENT AT A LAND GRANT UNIVERSITY

### **Summary**

From government reports and academic journals to popular media there is a call for more educated agriculturalists. Latinas/os have long been instrumental in United States' agriculture and yet similar numbers of Latinas/os are not studying agricultural sciences at Land Grant Universities. The mission of Land Grant universities is to provide access to education, especially agricultural education. Given the changing demographics of the United States, if Land Grant universities are to address our nation's need for educated agriculturalists, Latinas/os must be included as part of the solution. While there has been a focus on recruiting Latinas/os and others to study agricultural sciences, there has not been an examination of the lived experience of Latinas/os currently studying agricultural sciences in college. The purpose of this narrative study was to describe the lived experience of six Latina undergraduate students studying in a College of Agricultural Sciences at a Predominantly White Land Grant Institution. The thematic analysis of the transcribed interviews yielded three distinct themes, namely, Overt Exclusion, Nepantlera, and Intersectionality through the saliency of agricultural identity. Recommendations for inclusive agricultural education environments were voiced by the participants, providing us a path forward to fully include and support Latina students in the agricultural academy.

## Introduction

From food commercials to the United States Department of Agriculture there are calls for more educated agriculturalists. The need for people who are educated to produce, secure, research, or inspect our food supply is real (“Education,” n.d.; “How to Feed the World in 2050”, n.d.). Meanwhile, the Food and Agricultural Education Information System published data showing that in 2008, 4.5% of the total agricultural undergraduate student enrollment was Hispanic (“Using FAEIS to Explore Gender and Race Data,” 2009). Latinas/os have long been instrumental in agriculture in what is now the United States beginning with the Latin-American farm laborers called Campesinos in the 1700s. Enabled through the 20<sup>th</sup> century by a series of governmental agreements called the Bracero programs, Latinas/os continued to be a significant part of the agricultural landscape of the United States (Telles & Ortiz, 2008; Street, 2004, Donato, 2003; Meier and Ribera, 1993). As indicated by other authors, the systematic reliance on un/documented Latina/o agricultural labor continues to this day (Telles & Ortiz, 2008; Street, 2004, Donato, 2003; Meier and Ribera, 1993). Yet, previous research shows that we do not find the demographics present in agricultural education that we find in the agricultural labor force (Roberts, Hall, Briers, Gill, Shinn, Larke, & Jaure, 2009; Cotton, Hashem, Marsh, & Dadson, 2009; Warren & Alson, 2007; Jones & Larke, 2001). While many factors likely contribute to the absence of significant numbers of Latinas/os studying agriculture, it is a foundational assumption of this research that those who have historically been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Latinas/os and other ethnic groups, in agricultural education and not just in the labor pool. While there has been a focus on recruiting Latinas/os and others to study agricultural sciences, there has not been an examination of the lived experience of Latinas/os

currently studying agricultural sciences in college (Warren & Alson, 2007; Jones & Larke, 2001). Colorado State University (CSU), the site of this investigation is a particular College of Agricultural Sciences (CAS) that speaks of the “Ag Family” in its recruiting and communication materials to describe a welcoming and supportive learning environment. This inquiry probes if “Ag Family” adequately describes the lived experience of all of the CAS undergraduate students.

Recent higher education research has called for analysis of the lived experiences of underrepresented students (Matias, 2013; Espino, 2012; DeMirjyn, 2011; Jennings, Jewett, Laman, Souto-Manning, & Wilson (Eds), 2010; Delgado Bernal, 2002; Solórzano & Yosso, 2002a; Solórzano & Yosso, 2002b). Similar to the investigation of the role of gender in agricultural education, this literature seeks to make visible the stories of students navigating higher education (Kleihauer, Stephens, Hart, & Stripling, 2013; Kelsey, 2007). Investigating the lived experiences of Latina/o undergraduate students studying agriculture is an absent context from this conversation. This study seeks to address this gap by first focusing the analysis on a specific population, Latinas (females). This focus on female students is due to two key factors. First, this project seeks to expand previous work focused on females in agriculture by Kleihauer et al. and Kelsey. Second, there is a larger population of female (Latinas) versus male (Latinos) students studying agricultural sciences at CSU.

Qualitative narrative and interview studies have been recently used to understand multiple aspects of the agricultural higher education experience. Conceptualization of agricultural values and how those values affect their academic experience, agricultural educators’ experiences, and motivation and support for first generation students studying agriculture have all been more fully understood through the utilization of interviews (Martin & Enns, 2014; Lambert, Velez, & Elliott, 2014; Irlbeck, Adams, Akers, Burris, & Jones, 2014). This study

provides a joining of the two rich traditions, lived experiences and agricultural education (Laman, Jewett, Jennings, Wilson, Souto-Manning, 2012). This bridging of the academic silos allows us to investigate in a meaningful manner the overarching research question: What is the lived experience of current Latina students studying agriculture at a Predominantly White Land Grant Institution?

### **Purpose of the Inquiry**

The purpose of this inquiry was to explore the lived experience of six Latina undergraduate students studying agricultural sciences at CSU by a known interviewer. The methodology employs in-depth interviews from a Critical perspective and in a constructive manner (Martin & Kitchel, 2015). The steps followed in the analysis will be described in depth and the findings will be discussed including the students own words in quotes. Finally, recommendations and next steps for agricultural educators will be explored in the Significance of the Findings section. This study aligned to Priority Areas Three (Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21<sup>st</sup> Century), Four (Meaningful, Engaged Learning in All Environments), and Five (Efficient and Effective Agricultural Education Programs) of the American Association for Agricultural Education's (AAAE) National Research Agenda (Doerfert, 2011).

### **Conceptual Framework**

Given the nature of this studying focusing on Latina lived experiences, it is imperative to build upon a theoretical foundation that is consistent with and captures fully their lived experiences. A number of education scholars have established the imperative for Critical epistemologies in research (Martin & Kitchel, 2015; Delgado Bernal, 2012, 2002; Crenshaw,

2011; Ladson-Billings, 2000, 1995; Dillard, 2000; Crenshaw, Gotanda, Peller, & Thomas, 1995). This investigation relies on this rich theoretical foundation. Specifically this project is informed by Critical Race Theory and Intersectionality Theory (Lynn & Dixson, Eds., 2013; Choo & Ferree, 2010; Delgado & Stefanic, 2001). This study adds to this growing body of knowledge within the academy founded on these theories and expands its application to that of agricultural education. As such this research is concerned with privilege and oppression and is emancipatory in its inquiry aims (Guba & Lincoln, 2005; Freire, 1993). Intersectionality Theory provides a foundation to make visible the multiple and interlocking structure of identities, most saliently those of ethnicity, gender, and class (Choo & Ferree, 2010; Collins, 2000; Baca Zinn & Thornton Dill, 1996; Crenshaw, 1991) These theories provide a scaffold with which to make meaning of this data. Both the work of Anzaldúa and Intersectionality Theory problematize single identity theoretical frameworks that attempt to reduce identity to one fundamental type, whether that is sex, race, or class (Anzaldúa, 2012; Choo & Ferree, 2010; Collins, 2000). Although sex, race, class, and (this work offers) agricultural identity are distinct systems of privilege and oppression, these identities intersect and are experienced simultaneously. As such, Intersectionality Theory rejects the ranking of identities.

The trustworthiness of this project will be documented by intentionally describing the credibility, dependability, transferability, and confirmability of the investigation based on the recommendations of Lincoln and Guba (1986). Credibility is critical to the trustworthiness of any research project and is focused on the accuracy of the findings. We maintain credibility through rigorous and thorough use of Research Memos and by presenting the participants' voices in long block quotes. Given the research questions for this study, interviews are the appropriate research method to assess the lived experiences of these students; this provides dependability for

the project. Transferability of this project is limited to other Colleges of Agricultural Sciences at Predominantly White Land Grant Institutions; the decision remains the responsibility of researchers seeking to transfer these findings. Lincoln and Guba define confirmability or neutrality through questioning how one can establish the degree to which the findings of a study are determined by the subjects and conditions of the study and not be the biases, motivations, interests, or perspectives of the researcher (Lincoln & Guba, 1986). Stating our positionalities as researchers, situating the research within a Critical Race Theory and Intersectionality Theory framework, as well as actively engaging in reflexivity and documenting subjectivity through research memos support a claim of confirmability (Glesne, 2011; Lincoln & Guba, 1986). The involvement of three researchers with different identity lenses also enhances the credibility of this study: Archibeque-Engle identifies as a Latina and agricultural insider, Aragon identifies as a Latina and agricultural outsider and Jennings identifies as European American and White and as an agricultural outsider (Corbin Dwyer & Buckle, 2009; Innes, 2009). Finally, the confirmability of this study is developed through an extensive audit trail.

### **What's in a Name?**

“Hispanic” is a term used to identify a people of mixed Spanish and Native American, mestizo, origins who have lived for several centuries in the southwestern United States; the use of Hispanic to refer to this group of people was socially solidified by the United States government’s 1971 decision to create a new ethnic category on its census form (Marable, 2000). Due to the political biases associated with the label Hispanic, Latina/o, a constructed ethnically descriptive term, is used in this work to include women and men who are Hispanic or who are more recent emigrants from Latin American countries (Archibeque-Engle, 2015; Espino, Leal, &

Meier, 2008). When asked how she identifies one of our interviewees, Luisa, captured well the complexity of this ethnic identity:

“(I)t's really hard for me to say what I am. Cause a lot of times it's confusing to even know. Um, I, like I never have been able to identify as Chicana because it's not - I think Chicana is more of a - has a different culture than what I grew up in, with more - it's, to me and to my family it's set more in American traditions than it is in Mexican traditions. Um, and one of the conversations that I had a while ago with one of my coworkers while I was living in Kansas was that I don't know who to identify with. Because when you go to Mexico you're considered as the gringa (Spanish slang, White girl) because you're not born in Mexico, and when you're in, in the United States you're not White enough. So you can't be either/or. And it's kind of like you're in limbo. Because you know what - people ask you what you are and you don't know how to explain it. All I know is, people ask me all the time at work where, what, where I originate from or - all I can say is, ‘My parents are from Mexico, I grew up in Denver, and I'm...’ I don't know how to identify myself. With terms of Latina or Hispanic or - I want to be somewhere in between, but I don't know how to term it.”

In this work, Latina/o will be used as the umbrella term to capture the complexity of this ethnic identity.

## **Methods**

This study focuses on the transcribed narratives of six Latina undergraduate students or recent graduates (less than two years) in CSU's College of Agricultural Sciences (CAS). The CAS enrolls approximately 1400 full time undergraduate students and the population is approximately 13% minority students and 8% Latino. The subjects ranged from one sophomore student to two recent graduates. All of the interviewees chose their own pseudonym and their salient identities are represented in Table 3.1. All of the students were born in the United States and are documented citizens. After obtaining Institutional Review Board Human Subjects approval, semi-structured in-depth interviews were conducted with each subject by Archibeque-Engle. All subjects were known to the interviewer. Interviewees were contacted and asked to

participate; all invitees accepted the invitation to be interviewed. Interviews were conducted in the fall of 2014. The interviews included the following questions:

1. Why did you choose to attend CSU?
2. Why did you choose your major?
3. What is your relationship to agriculture before coming to CSU?
4. How does agricultural background influence your experience as a CSU CAS student?
5. What does “Ag Family” mean to you?
6. In what ways do you feel a part of the “Ag Family”?
7. In what ways do you think your gender influences the ways that you engaged with your classes and professors?
8. In what ways do you think your ethnicity influences the ways that you engaged with your classes and professors?
9. What advice do you have for Latina/o CAS students?
10. What advice do you have for CAS professors?
11. Is there anything you want to tell me that I did not ask?
12. Is there anything you want to ask me?

The data from this study centered on the transcribed interviews of the six participants. Five of the interviews were conducted in person. The longest interview, 91 minutes, was with Lisa. The shortest interview, 27 minutes, was with Esmeralda and was conducted via Skype. Constructive coding analysis was utilized (Creswell, 2013; Glesne, 2011; Gibson & Brown, 2009). Thematic analysis, guided by Braun and Clarke, was then conducted to assess the interviews in a hermeneutic process that allows for themes to be constructed from the data

corpus while informed by individual quotes, individual codes, and a coding table (Braun & Clarke, 2006). The coding and thematic analysis consisted of eight steps. First, Archibeque-Engle read through the entirety (210 pages and 5287 lines of transcription ) of the transcripts twice. On the third read through, Archibeque-Engle coded the transcripts. Fourth, these raw codes were shared with Aragon and Jennings who then read through the transcripts and coded them individually. Fifth, the investigators met to discuss the coding to mediate any discrepancies, to discuss secondary coding, and identify emerging themes. Sixth, Archibeque-Engle conducted secondary coding and created a coding taxonomic table that includes the following themes: Overt Exclusion described in Table 2, Nepantleras depicted in Table 3, and Intersectionality shown in Table 4. Seventh, the thematic analysis and manuscript were shared with Aragon and Jennings and their insight was incorporated. Finally, the written manuscript was shared with the six participants to ensure that their narratives are accurately represented here.

## **Findings**

The thematic analysis discovered three major themes: Overt Exclusion, Nepantlera, and Intersectionality. Three code families emerged from the data which informed the development of the Overt Exclusion theme; these code families are who is welcome?, (lack of) inclusive education practices, and emotional cost/damage. Two code families supported the development of the Nepantlera theme, those code families are pathways to change and cultural capital. The third theme, Intersectionality, included two code families namely intersectionality and identity.

## Overt Exclusion

The Latina students had a clear view of who is on the inside of the “Ag Family” and who is on the outside and all six of them clearly saw themselves on the outside of the “Ag Family”.

Lisa described who was on the inside succinctly when she said, “So like the privileged White cowboy cattlemen. If you own cattle and you come here you’re in that circle automatically.”

Carmen described who is on the inside of the “Ag Family” and who is on the “outside” this way,

“Who’s in the Ag Family? Well it depends cause this Ag family is very very separated... To the kids that have a big background in agriculture. That I mean the big kids who have you know, family farms.... And then there's the students like me, who like don't really fit into those. The kids don't really wear cowboy boots. The kids that don't really you know. The kids that really don't fit the Ag stereotype.... I really didn't fit in with everyone else. I didn't look like everyone else. I mean I'm brown, dark hair. Definitely not blonde or anything and so. I just didn't, didn't fit, like I was the odd ball. And maybe I still am.”

Serafina echoed this excluded experience,

“Um, but there's other ways that you don't feel like you're a part of the AG family, especially when you're outcasted for the way you dress or the way you look or the color of your hair. I don't fit the description of being, you know, tall and blonde or with blue eyes... I don't fit that, you know. I don't look like everybody else, so I feel like that really has outcasted me from, you know, the Ag family.”

This message was conveyed to the students in overt rather than covert fashion as described by

Marie in a recounting of a professor’s lecture:

“And I, he was just like, something about we should have taken over Mexico when we had the chance and he’s like ‘God knows they all live here anyway’ and like he stared right at me... like I didn’t know what to do, so I just, you know, ignored myself. I hid my head down for the rest of my class and walked out. I don’t think I ever actually went back to class because I was like I’m not going to get pointed out ...”

Carmen also expressed feeling singled out, albeit with apparently more benevolent intent:

“(H)e's always talking about, like, his experience with Latinos, with Mexicans particularly, and he's always talking about tortillas, like, always. I'm like, okay, that's cool, you know, tortillas, whatever. And then talking about like food and whatnot. But anytime he mentioned anything Latino related, Mexican related he'd always try to like,

like try, like signal me out, like make eye contact with me. And I'm like okay, you know, that's cool. But it is so constant, all the time. I'm like what are you doing? Like, stop looking at me every time you talk about a Mexican. For one, I'm not Mexican, and for two, like, what if I don't even like tortillas? What if I don't even like any of this stuff? But, yeah, so, that was one and I said ... I was just like just stop, just stop it.”

The overt exclusion of Marie was also apparent in another class when a guest lecturer chose to use racist language to describe Latino agricultural laborers.

“And then he was like, I mean, he was talking, talking, talking and all I heard was, I mean, I like, ‘I worked with wetbacks’ and then I looked up and then I saw him like, you know, go like this (flapped his ears) and he was like, ‘I mean, they were wetbacks’ and I was like ‘What?!’”

The overt exclusion of these Latina students affected their networking opportunities.

Esmerelda said, “I think networking makes it very hard when you don't really have a connection within the school.” The students are painfully aware of being on the outside of the “Ag Family”, as Luisa captures when she states,

“Um, by the time my, my senior year came around, and I saw, like, the connections that others, that my other classmates had with each other (sniffing) I was kind of jealous (clears throat) because I really wished that it could have been something I had.”

The impact of exclusive peer interaction, or student culling, also emerged within the lived experiences of these Latina students. Serafina describes one poignant instance of student culling:

“I feel like I'm not the stereotypical AG student, you know. I don't have my boots on. I don't wear a hat or anything like that. And there's, you know, there's been some instances where my group of friends would be, will be sitting in class and will be discussing, um, will be discussing the class or, you know, something from the week that has happened, and we'll get stares. And in one instance, um, we were sitting together and we were conversing, and one of my friends had overheard a girl saying, ‘Oh, my God. They don't look like AG students.’ And it's things like that. ... ‘Like what are they doing here?’ Just things like that. That's, that's more along the lines. And it kind of deters you from wanting to, to meet, really, like meet people ...”

Esmerelda described the lived experience of student culling in the following excerpt:

“So there was just different things than the classes. You know there was this one people that would talk to you and would be cool with you, but then there was that group that were all affiliated more within the school, and kind of shove you out the way.”

Esmeralda goes on to describe how the faculty rewarded this culling by students, “(s)ome professors kind of put them more like on a pedestal than others, like they would have a better relationship with them.”

All six Latina students had recommendations for inclusive educational practices, much of which centered around a desire for relationship, connection, and support as well as a need for a cultural home and role models and mentors. The recommendations made by the participants will be further discussed in the Significance of the Findings section of this paper. The interviewees were also clear about when they had encountered inclusive educational practices as Carmen describes a particular professor,

“And I think the difference between (this particular professor) and everyone else is (this particular professor) is the same with everyone. (This particular professor), like ... and I've seen this a lot of times, like I'm talking to him, he talks the same to someone else. So, it's like not trying to take preference, not trying to distinguish you from everyone else, you know. He tries to make you feel equal, you know, equal as everyone else. And I think I like, I like that. I like feeling that I'm like ... not just like everyone else but being treated the same because, you know.”

The overt exclusion of the Latina students exacts an emotional toll. Five of the six interviewees had multiple periods of crying during the interviews. Serafina described the emotional cost and damage this way:

“Because I see myself in ten years, hopefully with a PhD and I don't want to have a hard time trying to find a job because of my last name, because of what I look like. I want to be able to hold high positions and my gender, I don't want that to affect, to affect me you know? I want to be able to do what you know, Jo Shmo is doing and I want to be able to be looked at in, in a manner where they're not just going to disregard me like when I'm a student. I have so many aspirations but I feel like, you know, there's road blocks in that way with who I am and it sucks. It sucks to have to, to think that.... That's what I want but getting there is, is tough in a world that's dominated by men. Especially this industry. It's hard to break, it's hard.”

Carmen also eloquently describes the isolation and emotional toll,

“Just cause, it was, it was harsh. Freshman year was harsh, it was I think. (Crying) I look back on that year and I'm just like ‘Oh my goodness. How am I here?’ From that year, because I was so ... I was in bad place freshman year. I really was and I think it was just cause I thought I couldn't do anything. I thought so low of myself and I just I ... Freshman year was just hard. Adapting to this completely new culture. I looked around and I'm like ‘Everyone's so white here, where are all the brown kids?’”

The interviewees had a clear view of who is on the inside of the “Ag Family” and who is on the outside and all six of them clearly saw themselves on the outside of the “Ag Family” because of overt exclusion. The narratives illustrate that who is welcome in the CAS has been overtly communicated to them. Further, their lived experiences indicate a lack of inclusive education practices. Their stories also depict deep emotional cost and damage as a result of their lived experiences while studying in the CAS.

## **Nepantlera**

Gloria Anzaldúa developed the concept of *Nepantla* and *Nepantleras* in her numerous essays and books. Anzaldúa defines *nepantla* as the “unarticulated dimensions of the experience of mestizas living in between overlapping and layered spaces of different culture and social and geographical locations” (Anzaldúa, 2002, p.176). *Nepantla* is a Spanish term used to describe the experience of those who are multicultural and multivoiced and have to move fluidly within different cultures. *Nepantleras* are these multicultural navigators. “*Nepantleras* acknowledge an unmapped common ground: the humanity of the other. We are the other, the other is in us...Honoring people's otherness, *las nepantleras* advocate a ‘nos/otras’ position- an alliance between ‘us’ and ‘others’” (Keating, 2005, p.7). *Nepantlera* emerged as a theme that enabled us to make meaning of the voiced lived experiences of the Latina CAS students.

Cultural Capital also emerged as a code family from the transcribed data. Yosso defines Cultural Capital as the “(v)arious forms of capital nurtured through cultural wealth include aspirational, navigational, social, linguistic, familial, and resistant capital” (Yosso, 2005, p. 69). The codes of family and father in particular are supported in the literature by Aragon’s description of parental cultural wealth (Aragon, in press). The resilience and the Cultural Capital that these Latina students brought with them to CSU allowed them to successfully navigate their undergraduate education. Cultural Capital is one of the assets of the Nepantlera.

Serafina acknowledges the benefits of her Nepantlera experience when she says, “I feel like I’m doing a lot better with tying things all together, and not just seeing it one-sided.” Serafina considers her ability to examine issues from more than one viewpoint, to operate as a multicultural navigator, as a positive trait. Lisa also sees benefits to her Nepantlera experience within the CAS:

“Maybe a part of me understanding my ethnicity and being comfortable with it and being so outspoken with it now has made me comfortable and just be outspoken about anything. And so I think, when I’m with, you know, the faculty or staff and I have a concern, I’m able to put it out there with them and I’m able to talk about, ‘Well, I ... you know, like this hurts people of a diversity.’ I’m more comfortable putting it out there.”

Lisa considers her multicultural understanding as an asset in that she can advocate for herself and others. She is able to position her voice between “us” and “others”.

Esmeralda and Carmen both articulated the value of navigating their professional agricultural experiences. Esmeralda’s professional experience is present tense as she works as an agricultural professional whereas Carmen’s expression is one of future aspiration. Esmeralda describes being a Nepantlera as a professional:

“(Being bi-cultural) helped me communicate more with the plant workers and have a better relationship with them, but when I go upstairs to the people that, um, that are like

the office, like the higher up people, um, I can kinda speak more educated and like, and like have them see me with a better view than just like the people that are down there.”

Carmen hopes to put her Nepantlera experience to work in a similar manner:

“So, I think that my values of that kind of go into play into like if I ever decide to go into management. Then I'm gonna, I'm gonna be good. I'm not going to be a, a horrible manager that's going to make these people do more than what I can do. Like if I can't do what they're doing, then I better get down there and make sure that I can do it, before I make them you know, kind of make them do it, so, yeah.”

Both Esmeralda view their positionality as a professional benefit, an opportunity to make the workplace better for themselves and others.

Evidence of Cultural Capital amongst the student interviews was woven throughout the transcripts. Marie called on her Cultural Capital, in particular her familial and resistant capital, to weather the assault of the wetback comments in her course. Marie's parents supported her through the struggle of the verbal assault on her heritage. The strength of Marie's Cultural Capital is evident in this recount:

“I called my parents like later that night and I just, I told them and they were like, ‘Did that, that happen at Colorado?’ and I was like yeah. They were like, ‘Oh my god, I'm so disappointed.’ Like they were, they weren't even like ... I mean some level of them was angry, but they, you know, it's just like ... I feel like parents like, I'm not upset with you. I'm just disappointed. It was kind of like that then. Colorado was like, had really just disappointed them. And even to this day like my dad still ... he is like fully supportive of me getting out. Like he does not want me to be here at all. And so ... (crying).”

The lived experiences of the interviewed students articulate being multicultural and multivoiced and having to move fluidly within different cultures. These CAS undergraduates are multicultural navigators. The resilience and Cultural Capital that these Latina students brought with them to CSU allowed them to successfully navigate their undergraduate education, to experience their undergraduate careers as Nepantleras.

## **Intersectionality**

It is evident from the data that the Latina undergraduates experienced their identities simultaneously. The intersections of race, agricultural identity, class, and gender all played a role in the lived experience of this population of students. Lisa illustrates the saliency of multiple identities when she says, “If I were White, White male, dressed in ag then it would” be assumed that she was an agricultural insider even though she has a production agriculture background. Marie describes this intersection, “I want to be over there and I feel like if you don’t have that ag background and you’re female it’s really hard. Versus like if you’re a female, but come from an ag background you’re taken a little bit more seriously.”

The intersection of multiple identities, specifically gender and agricultural identities, was also salient for Serafina,

“... as a female, professors ... I want to say, especially the males, because it's mostly male... Um, the males kind of have a stigma placed upon the females already. ... They have a stigma towards females that they're not as capable as the males are of doing (the work). I feel like it's, it's a stigma that's placed upon, upon the girls, and especially, you know, more so going back to not having that agriculture experience, it's even more so, you know, projected on me. (crying) So, yeah, there's definitely a stigma of girls are good in the classroom but boys are good for the manual labor.”

In working with her peers, Lisa experienced the intersectionality of her identities as described below,

“...with my peers, I'm constantly having to, um, what is it called, constantly like having to prove myself ... to them... It's more like proving to them because I think they see me and they're like, whatever, and I'm like, ‘No. Like I know what I'm doing.’ Just because I don't wear boots, just because I don't talk about how I'm in a rodeo or whatever, it doesn't mean that I don't know what I'm doing.”

The saliency of an agricultural identity was furthered highlighted by Lisa,

“If you own a cattle and you come here, you're in that circle automatically. I should have done that. I would have bought like two cows and then I could have been like, (laughs) ‘These are my little cows’, and I'm in a group. But, yeah, that's really how it is... it's almost like assumed that every student that comes in has cows or has a horse or has a goat or something. Well, a lot of kids don't. You can't keep goats in inner-city Houston. So ...”

The impact of the intersectionality was described by Serafina in this way,

“(Y)ou could be conversing with them (a professor) and ... another AG student will come by and it will be like, you know, if you'll be speaking to them, their focus turns and goes on that other person or is projected on the other person and you're kind of just like waiting there. You're kind of essentially waiting, you know, (for the more important kid) to be attended to. And then, okay, okay, let's get back to the, you know, to the spectator, or something along those lines.”

These Latina undergraduates did not experience their identities separately, they experienced them simultaneously. The intersections of race, agricultural identity, class, and gender all played a role in the lived experience of this population of students. This experience is consistent with both the work of Anzaldúa and Intersectionality Theory. Although sex, race, class, and agricultural identity are distinct systems of privilege and oppression, these identities intersect and are experienced simultaneously.

### **Significance of the Findings**

The lived experiences of these Latina CAS students are not what CAS educators were hoping to hear. These experiences are also not what these students deserve nor are they the experiences that CAS educators want for our students. Rigorous thematic analysis discovered three major themes: Overt Exclusion, Nepantlera, and Intersectionality. While our goal may be to answer the call for more educated agriculturalists, the lived experience of Overt Exclusion will make meeting this call difficult. We may be able to recruit students to study agricultural sciences but these data indicate that retaining these students through their undergraduate education will be difficult if they are told overtly and covertly that they are not part of the “Ag

Family”. As stated previously, it is a foundational assumption of this research that those who have been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Latinas/os and other ethnic groups, in agricultural education and not just in the labor pool. Moreover, it is a foundational assumption of this research that these students should not have to rely on their resilience and Cultural Capital as *Nepantleras* to navigate an exclusionary environment in an effort to earn a degree. The Intersectionality of all of an individual students’ identities should be welcomed to learn especially at Land Grant institution.

Fortunately, in keeping with their *Nepantla* experience, these six Latina students have provided those of us in agricultural higher education with a path forward toward a more inclusive educational environment. First, acknowledgement of the saliency of an agricultural identity and its role in agricultural higher education needs to occur. Martin and Enns highlight this saliency in their work around agricultural values (2014). The emotional response described by Martin and Enns for students whose values were challenged support the concept that agricultural identity is at the forefront of the lived experience for our students. Second, the students demand more female and Latina/o role models and mentors. Third, this population of students describes the need for diversity and inclusion training for agricultural education professionals, namely their professors and advisors. Fourth, the students stated a need for a cultural home, a place where they could feel supported by a mentor. The students were quite direct in their recommendations for agricultural educators. Carmen describes the faculty of the College, “The professors are all men”. Later, she goes on to encourage us to “employ more females.” The need for Latina role models and mentors is summarized by Esmeralda,

“So in the more that you can relate to like, (Latinas), to where you would feel more comfortable to ask for advice cause you know they would, they were kind of, they would want the better for you. And, they would be more able to understand maybe your family situation and why you can't go work here or why, you know, to kind of help you find more resources to what you what to do and be more understanding towards that.”

In describing the need for training, Marie bluntly prescribed a wake-up call, “They need a swift kick in the butt sometimes. Um ... I think there's a lot of ... uh, I don't ... um, continuing education that they need to do.” Serafina was more specific in the kind of diversity training that she recommends for faculty and staff in the CAS,

“I would greatly, greatly, greatly advise them to ... This was, this was implemented at my work. So you ... They kind of described it as ‘step in, step out.’ So if you're in a situation and it might be, you know, conversing with a Latino or a Latina or an Asian or, or somebody of ethnicity, they need to check in and check out with the way that they're speaking, the way that the tone is coming off or, you know, try to be present with that person.”

On the need for a cultural home, Carmen says, “Find each other... Coming down to it, we're still brown girls in a College of Ag and we stand out so much. Us, just because of our color, you know.” Luisa describes the impact of a cultural home, “Um, make strong connections with who you can, um, because those connections that you make with people who are willing can make or break you and, and they're, they're part of what makes it just a little bit better.”

In 1997, a model for success for the recruitment and retention of underrepresented groups in agricultural sciences was published (Talbert, Larke, Jr., Jones, & Moore, 1997). These findings support revisiting the 1997 model to determine if the recommendations have been implemented or if the model needs to be modified because the lived experiences described here do not indicate a model for success in the recruitment and retention of at least Latina students.

## Discussion

The significance of the role of relationship and trust in the interview process used in this study cannot be overstated. The richness of this data and the depth of candor and vulnerability demonstrated by the six participants was possible because all of the students were known to and shared ethnic and gender identity with the researcher. She was a known cultural insider. The students trusted the interviewer. We believe this enabled the participants to be honest and candid about their lived experiences within CSU's CAS.

Latinas/os have long been played a vital role in agriculture in the United States. Why are they not, then, represented in agricultural higher education? The mission of Land Grant universities is to provide access to education, especially agricultural education. If these Land Grant universities are to address our nation's need for educated agriculturalists, Latinas/os must be included as part of the solution. In keeping with a Critical Race and Intersectionality Theoretical framework, the purpose of this research project is to make visible the exclusive nature of the lived experiences of Latinas at a Predominantly White Land Grant Institution studying agriculture. The students' own words describe in painful detail how they have been told in certain terms that they are not welcome to study agricultural sciences. The current master narrative communicated in at least this one College of Agricultural Sciences is that the station for Latinas in agriculture is not as educated professional agriculturalists.

On March 12, 2013 Hoover alerted readers of *The Chronicle of Higher Education* that "sharply increasing diversity will soon hit many states and institutions with freight-train force" (Hoover, 2013, A17). Agricultural sciences and Land Grant universities will not be excluded from this increasing diversity. In contrast, agricultural sciences with its heritage of racially and

ethnically diverse laborers and Land Grant universities with their inherent mission to serve the people of each state, may well be positioned right on the train tracks. If institutions of higher education are to be prepared for this “freight-train”, it is important to assess the educational environments that students encounter.

The recommendations by these students can be implemented if we as agricultural educators have the will to do so. Ignoring the recommendations of these students will likely yield what we already have: a student population that does not reflect the demographics of our state or the industry of agriculture. Recruitment efforts will only get us so far if the learning environment is overtly exclusive as was found here. These students are resilient but not every student is willing to test their resiliency in such an environment when they can simply change their major out of the College of Agricultural Sciences. Further, more research is needed to understand if the lived experiences found here are similar at other universities and to determine the lived experiences of other specific populations, such as African Americans. This research should also be expanded to include the lived experiences of professional Latina agriculturalists. More research is needed to determine if the theme of overt exclusion is present at other Colleges of Agricultural Sciences and if the theme carries into the professional space.

Table 3.1  
Description of Participants' Salient Identities

Pseudonym	Preferred Ethnic Descriptor	First Generation	Socio-economic Class	Agricultural Identity	First Language
Marie	Hispanic	No	Upper Middle	No	English
Lisa	Texana	Yes	Working	Yes	Spanish/English
Carmen	Latina	Yes	Working	No	Spanish
Esmeralda	Latina	Yes	Working	No	Spanish
Luisa	Mexican or Mexican- American	Yes	Working	No	Spanish
Serafina	Latina	No	Middle	No	English

Table 3.2  
 Coding and Thematic Taxonomic Table with most numerous Raw Codes for Overt Exclusion  
 Theme

<b>Theme = Overt Exclusion</b>		
Code Family		
Who is welcome?	Code	Count
	Outside	105
	Exclusion	78
	Inside	57
	Isolation	55
	Hegemony	53
	Bias	29
	Culling (includes rewarding student culling)	27
	Forced assimilation	17
	Privilege	16
	“only”	13
	Lack of Intercultural Competence	11
	Safety	8
	Judging Teams	7
	Display of Intercultural Competence	6
	Status quo	6
	Ignorance	4
	Trapped	3
	Patriarchy	2

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	Overt	1
	Fear of retaliation	1
	Stereotype threat	1
	Danger	1
	Departmental politics	1
	Objectification	1
	Survival	1
Inclusive education practices		
	Relationships	62
	Connections	58
	Support	20
	Need for cultural home	18
	Role Models	18
	Networking	15
	Mentors	12
	Representation	10
	Notice	3
	Appreciation	2
Emotional cost/damage		
	Disengage to protect	41
	Questioning self/abilities	30
	Enough?	17

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Emotional cost/damage	13
Overwhelmed	4
Culture shock	2
Eggshells	1
Reading signs/unstable ground	1

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Table 3.3  
 Coding and Thematic Taxonomic Table with most numerous Raw Codes for Nepantlera Theme  
**Theme = Nepantleras**

Code Family		
Pathways to change	Code	Count
	Nepantla	46
	Knowledge	25
	Professional goals/aspirations	23
	Identity as asset	20
	Exploitation	10
	Self-acceptance	4
	Heritage	6
	Borderlands	3
	Black/White dichotomy	2
	Hope	2
	Power distance	1
	Eternal immigrant	1
	Code switch	1
	Satisfaction	1
Cultural Capital	Family	53
	Resilience	39
	Self-advocacy	31
	Expectations	16
	Distance from home	1

Regret	1
Loyalty	1

Table 3.4  
Coding and Thematic Taxonomic Table with most numerous Raw Codes for Intersectionality Theme

<b>Theme = Intersectionality</b>		
Code Family		
	Code	Count
Intersectionality	Agricultural Identity	46
	Class	29
	Intersectionality	13
	Gender roles	10
	Religion	1
	Athletics	1
	First generation	1
	Status/documentation intersection	1
Identity	Identity	4
	Identity ambivalence	2
	Gender internalized oppression	1

## REFERENCES

- Aragon, A. (in press). Achieving Latina students: Critical race reflections on parental community cultural wealth. *Journal of Latinos and Education*.
- Archibeque-Engle, S. L. (2015). Visual ethnography assessment of departments of animal sciences at three land grant universities: who is welcome? *Journal of Critical Thought and Praxis* 4 (1). <http://lib.dr.iastate.edu/jctp/vol4/iss1/4>
- Anzaldúa, G. (2012). *Borderlands/la frontera: The new mestiza 4th ed., 25th anniversary*. San Francisco, CA: Aunt Lute Books.
- Anzaldúa, G. (2002). *Interviews/Entrevistas*. Ed. AnaLouise Keating. New York, NY: Routledge.
- Baca Zinn, M., & Thornton Dill, B. (1996). Theorizing difference from multiracial feminism. *Feminist Studies* 2, 321-331.
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 77-101.
- Choo, H. Y., & Ferree, M. M. (2010). Practicing intersectionality in sociological research: A critical analysis of inclusions, interactions, and institutions in the study of inequalities. *Sociological Theory* 28 (2), 129-149.
- Collins, P. H. (2000). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*. New York, NY: Routledge.

- Corbin Dwyer, S. & Buckle, J. L. (2009). The space between: on being an insider-outsider in qualitative research. *International Journal of Qualitative Methods* 8: 54- 63.
- Cotton, C. P., Hashem, F. M., Marsh, L. E., & Dadson, R. B. (2009). Broadening perspectives: Educating underrepresented youth about food and agricultural sciences through experiential learning. *NACTA Journal* 53 (4), 23 – 29.
- Crenshaw, K. W. (2011). Twenty years of critical race theory: Looking back to move forward. *Connecticut Law Review* 43, 1253.
- Crenshaw, K. W., Gotanda, N., Peller, G., & Thomas, K. (Eds.) (1995). *Critical race theory: the key writings that formed the movement*. New York, NY: New Press.
- Crenshaw, K. W. (1991) Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, 43 (6), 1241-1299.
- Creswell, J. W. (2013). *Qualitative inquiry: Research and design, 3<sup>rd</sup> ed.* Thousand Oaks, CA: Sage.
- Delgado Bernal, D. (2012). *Chicana feminist epistemology: past, present, and future*. *Harvard Educational Review*, 82 (4), 511-512.
- Delgado Bernal, D. (2002). Critical race theory, Latino critical theory, and critical raced-gendered epistemologies: recognizing students of color as holders and creators of knowledge. *Qualitative Inquiry* 8, 105-126.
- Delgado, R. & Stefanic, J. (2001). *Critical race theory: An introduction*. New York, NY: New York University Press.

DeMirjyn, M. (2011). The voicing of Chicana/Latina ethnicity, emotion and equity in higher education narratives. *Making Connections: Interdisciplinary Approaches To Cultural Diversity* 13(1), 75-90.

Dillard, C. B. (2000). The substance of things hoped for, the evidence of things not seen: examining an endarkened feminist epistemology in culturally engaged research. *International Journal of Qualitative Studies in Education*, 13, 661-681.

Doerfert, D. L. (Ed.) (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015*. Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communications.

Donato, R. (2003). Sugar beets, segregation, and schools: Mexican Americans in a northern Colorado community, 1920-1960. *Journal of Latinos and Education* 2 (2), 69-88.

Education. (2014). In National Institute of Food and Agriculture. Retrieved from <http://www.csrees.usda.gov/nea/education/education.cfm>

Espino, M. M. (2012). Seeking the “truth” in the stories we tell: The role of critical race epistemology in higher education research. *The Review of Higher Education*, 36 (1), 31-67.

Espino, R., Leal, D. L., & Meier, K. J. (Eds.) (2008). *Latino politics: Identity, mobilization, and representation*. Charlottesville, VA: University of Virginia Press.

Freire, P. (1993). *Pedagogy of the oppressed*. New rev. 20<sup>th</sup>-Anniversary ed. New York: Continuum.

- Gibson, W. J., & Brown, A. (2009). *Working with Qualitative Data*. Los Angeles, CA: Sage
- Glesne, C. (2011). *Becoming qualitative researchers: An introduction, 4<sup>th</sup> ed.* Boston, MA: Pearson
- Guba, E. G. & Lincoln, Y. S. (2005) Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (pp. 191 – 215). Thousand Oaks, CA: Sage Publications
- Hoover, E. (2013). Minority applicants to colleges will rise significantly by 2020. *Chronicle Of Higher Education*, 59(19), A16-A17.
- How to Feed the World in 2050. (n.d.). In Food and Agriculture Organization of the United States. Retrieved from [http://www.fao.org/fileadmin/templates/wsfs/docs/expert\\_paper/How\\_to\\_Feed\\_the\\_World\\_in\\_2050.pdf/](http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf/)
- Innes, R. A. (2009). Wait a second. Who are you anyways? The insider/outsider debate and American Indian studies. *American Indian Quarterly* 33, 440-447.
- Irlbeck, E., Adams, S., Akers, C., Burris, S., & Jones, S. (2014). First Generation College Students: Motivations and Support Systems. *Journal of Agricultural Education*, 55(2), 154-166. doi: 10.5032/jae.2014.02154
- Jennings, L. B., Jewett, P.C., Laman, T. T., Souto-Manning, M. V., & Wilson, J. L. (Eds). (2010). *Sites of possibility: critical dialogue across educational settings*. Cresskill, NJ: Hampton Press.

- Jones, W. A. & Larke, A., Jr., (2001). Factors influencing career choice of African American and Hispanic graduates of a land-grant college of agriculture. *Journal of Agricultural Education* 42 (1), 39-49. DOI: 10.5032/jae.2001.01039
- Keating, A. (2005). *Entre mundos/among worlds: New perspectives on Gloria E. Anzaldúa*. New York: Palgrave Macmillan.
- Kelsey, K. D. (2007). Overcoming gender bias with self-efficacy: A case study of women agricultural education teachers and preservice students. *Journal of Agricultural Education* 48 (1), 52 – 63. doi: 10.5032/jae.2007.01052
- Kleihauer, S., Stephens, C. A., Hart, W. E., & Stripling, C. T. (2013). How six women deans of agriculture have attained their leadership role: A qualitative study. *Journal of Agricultural Education* 54 (3), 15 – 27. doi: 10.5032/jae.2013.03015
- Ladson-Billings, G. (2000). Racialized discourses and ethnic epistemologies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research, 2<sup>nd</sup> ed.* Thousand Oaks, CA: Sage
- Ladson-Billings, G. (1995). Toward a theory of cultural relevant pedagogy. *American Educational Research Journal*, 32, 465-491.
- Laman, T. T., Jewett, P., Jennings, L. B., Wilson, J. L., & Souto-Manning, M. (2012). Supporting Critical Dialogue Across Educational Contexts. *Equity & Excellence In Education*, 45(1), 197-216. doi:10.1080/10665684.2012.641871

- Lambert, M. D., Velez, J. J., & Elliott, K. M. (2014). What are the teachers' experiences when implementing the Curriculum for Agricultural Science Education? *Journal of Agricultural Education*, 55(4), 100-115. doi: 10.5032/jae.2014.04100
- Lincoln, Y. S., & Guba, E. E. (1986). Research, evaluation, and policy analysis: heuristics for disciplined inquiry. *Policy Studies Review*, 5 (3), 546-565.
- Lynn, M., & Dixson, A. D. (Eds) (2013). *Handbook of critical race theory in education*. New York: Routledge.
- Marable, M. (2000, February 25). We need a new and critical study of race and ethnicity. *Chronicle of Higher Education*, p. B4.
- Martin, M. J., & Enns, K. (2014). Clashing of views: Agricultural education students conceptualization of agricultural values. Manuscript presented at the American Association of Agricultural Educators Research meeting in Salt Lake City, UT.
- Martin, M.J. & Kitchel, T. (in press). Critical theory view of the national FFA convention. *Journal of Agricultural Education*.
- Matias, C. E. (2013). Who you callin' white?! A critical counter-story on colouring white identity. *Race, Ethnicity & Education*, 16(3), 291-315.  
doi:10.1080/13613324.2012.674027
- Meier, M. S. & Ribera, F. (1993). *Mexican Americans/American Mexicans from Conquistadors to Chicanos*. New York, NY: Hill and Wang.

- Roberts, T. G., Hall, J. L., Briers, G. E., Gill, E., Shinn, G. C., Larke, A., Jr., & Jaure, P. (2009). Engaging Hispanic students in agricultural education and the FFA: A 3-year case study. *Journal of Agricultural Education*, 50 (3), 69 – 80. DOI: 10.5032/jae.2009.03069
- Solórzano, D. G., & Yosso, T. J. (2002a). A critical race counterstory of race, racism, and affirmative action. *Equity and Excellence in Education*, 35(2), 155-168.
- Solórzano, D. G., & Yosso, T. J. (2002b). Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative Inquiry*, 8(1), 23-44.
- Street, R. S. (2004). *Beasts of the field: a narrative history of California farmworkers, 1769-1913*. Stanford, CA: Stanford University Press.
- Talbert, B., Moore, R., Jones, W., & Larke, A. J. (1997). Recruitment and retention of underrepresented groups: a model for success. *National Association of Colleges and Teachers of Agriculture. NACTA Journal*, 41(1), 51-56.
- Telles, E. E. & Ortiz, V. (2008). *Generations of exclusion: Mexican Americans, assimilation, and race*. New York, NY: Russell Sage Foundation.
- Using FAEIS to Explore Gender and Race Data. (2009). In Food and Agricultural Education Information System. Retrieved from [http://www.faeis.ahnrit.vt.edu/intro\\_gender\\_race.shtml](http://www.faeis.ahnrit.vt.edu/intro_gender_race.shtml)
- Warren, C. K., & Alson, A. J. (2007). An analysis of diversity inclusion in North Carolina secondary agricultural education programs. *Journal of Agricultural Education*, 48 (2), 66-78.

Yosso, T. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity & Education*, 8(1), 69-91.

doi:10.1080/1361332052000341006

## CHAPTER 4

### A COMPREHENSIVE STUDY OF UNDERGRADUATE STUDENT SUCCESS AT A LAND GRANT UNIVERSITY COLLEGE OF AGRICULTURAL SCIENCES, 1990-2014

#### **Summary**

In recent years, there has been a noted shift in the demographics of students who study agricultural sciences, in particular, animal sciences. This documented shift toward more women, more ethnically diverse students, and students from non-rural communities is likely to increase. Meanwhile, the United States Department of Agriculture and others have identified the need for educated agriculturalists. Universities, particularly Land Grant institutions need to identify how to both recruit and successfully graduate people prepared to lead as professional agriculturalists. Given the financial constraints of most institutions, it is important that we are strategic in our programming to support an ever more diverse undergraduate population. This study offers a rigorous and systematic approach to quantitatively assess programmatic needs in three segments: an analysis of the demographic representation of the state, an analysis of historic opportunity gaps, and an analysis of recent undergraduate student success utilizing predictive logistic regression models. Using Colorado State University (CSU) as a case study for this systematic assessment, CSU was found to not represent the state it serves, Colorado. Further, statistically significant opportunity gaps were found for gender, Pell eligibility, first generation status, residency, and minority students. Finally, the first year retention, four year graduation rate, and six year graduation rate predictive models provided evidence for program investment to support

first generation, minority, and resident students. Of note, non-minority students were found to be 1.78 times more likely to graduate in four years than were minority students. Minority students were 53 percent less likely to graduate than majority students in six years. First generation students were less likely than non-first generation students to graduate in six years and residents were more likely to graduate than non-residents of the state within the six year time frame.

### **Introduction**

In recent years, there has been a noted shift in the demographics of students who study agricultural sciences, in particular, animal sciences (Buchanan, 2008; Burk, Rossano, Silvia, Vanzant, Pescatore, & Harmon, 2013). This documented shift toward more women, more ethnically diverse students, and students from non-rural communities is likely to increase. According to the United States (US) Census Bureau, the US is projected to become more ethnically and racially diverse (US Census Bureau, 2015). The Hispanic (Latino) population alone is projected to grow from 17.4% in 2014 to 28.6% in 2060 while it is projected that 64.4% of people under 18 will identify as non- Hispanic White in 2060 versus 48% in 2014.

These statistics confirm what those in higher education have been predicting. In March of 2013 readers of The Chronicle of Higher Education were alerted that “sharply increasing diversity will soon hit many states and institutions with freight-train force” (Hoover, 2013). Further, Hoover stated that “as these changes take hold, meeting the needs of minority students, especially those from underrepresented groups, will play a greater role in defining institutional success.” If institutions of higher education are to be prepared for this “freight-train”, it is important to assess both historical and current educational trends for our students, including our minority students, to objectively guide educational efforts

Meanwhile, the United States Department of Agriculture and others have identified the need for educated agriculturalists (“Education,” n.d.; “How to Feed the World in 2050”, n.d.). Universities, particularly Land Grant institutions need to identify how to both recruit and successfully graduate people prepared to lead as professional agriculturalists (Fogel, 2012; Association of Public Land-Grant Universities, [APLU], 2009). There are not enough people graduating with degrees in agricultural fields (APLU, 2009; Jones & Larke, 2001). It is a foundational assumption of this research that those who have been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Hispanics and other ethnic groups, in agricultural education and not just in the labor pool.

Given the financial constraints of most institutions, it is important that we are strategic in our programming to support undergraduate students. Most institutions do not have the luxury of such abundant resources that they can address all possible opportunity gaps. Instead, we need to prioritize our programming. Perhaps the most prevailing inequalities in agricultural higher education are associated with ethnicity, gender, socio-economic status, residency, and first generation status. Perhaps these opportunity gaps have remained consistent over the past twenty years. The problem is that we do not yet have a standardized and systematic approach to assessing whether or which opportunity gaps exist in our Colleges of Agricultural Sciences (CAS) as Land Grant institutions. The purpose of this study is to thoroughly examine agricultural higher education demographics at one Land Grant institution from 1990-2014 to guide future program investment. In so doing, this approach may also be employed by other Land Grant institutions wherein we could benchmark and set growth goals for both recruitment and retention.

## Methods

A descriptive, non-experimental, and comparative quantitative research approach is employed (Morgan, Gliner, & Leech, 2009; Morgan, Leech, Gloeckner, & Barrett, 2011). This study uses anonymized secondary data provided to the researchers from the university's institutional research office and received approval via the Internal Review Board to conduct the analysis. The analysis includes three distinct segments. First, this study compared quantitatively the demographics of those studying agriculture at a Land Grant university, CSU as the case study, over a 24 year period and assess whether these demographics are reflective of the overall population of the state of the institution, Colorado. Second, this study employed statistical tests of difference to assess opportunity gaps for retention to second year, first year grade point average (GPA), final or current GPA, four year graduation rate, and six year graduation rate for gender, Pell eligibility (data available for years 1992 – 2014), first generation status, residency status, and ethnicity as defined by majority (White) and minority (non-White). The third segment focused on recent trends and utilized logistic regression analysis of the data for students who began in the fall semesters of 2003 through 2008.

In the first segment, demographics of the undergraduate populations within CSU's CAS were investigated to determine the gender and ethnic representation between 1990 and 2014. Second, the demographics of the CAS were compared numerically and visually with those of the Colorado. Theoretically, the most valid method for this comparison is using a visual aid such as a pie chart to depict the demographic differences because the data sets used for this investigation are unrelated to the state's census data set (Huck, 2008; Thompson, 2008). To honor this theoretical construct, pie charts were developed to show the ethnic percentages for Colorado in 1990, 2000, and 2010, compared to the ethnic percentages for the University's CAS

undergraduate students in similar years. Further, a statistical test was desired to quantify any observed differences. To explore differences statistically, expected frequencies were calculated for the CAS 1990, 2000, and 2010 data sets to match the demographics of the state. A Chi Square Goodness of Fit test was then employed to compare the ethnic percentages observed in the comparison years for the CSU CAS undergraduate students to what is expected if the CAS is representative of Colorado's ethnic demographics. (Morgan, Leech, Gloeckner, & Barrett, 2011; Morgan, Gliner, & Leech, 2009). Finally, to test whether the calculated ratio of Colorado population percentage as compared to the CSU CAS population percentage representation for the largest minority population in the state, Hispanics/Latinos, has changed over time, such ratios were calculated for 1990, 2000, and 2010.

In the second segment, independent samples *t* tests were run to investigate first year GPA and final or current GPA opportunity gaps (difference) for the CAS undergraduate population between 1990 and 2014. Pearson Chi Square tests were run to investigate retention to second year, four year graduation, and six year graduation opportunity gaps for the CAS undergraduate population between 1990 and 2014. The level of significance was set to 99% to insure the investigation against Type 1 error (Morgan, *et al.*, 2011; Morgan, *et al.*, 2009). The first round of *t* tests asked if there was a difference in first year GPA for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents/non-residents, and majority/minority students. The second round of *t* tests asked if there was a difference in final/current GPA for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents/non-residents, and majority/minority students. The first round of chi square tests asked if there was a difference in retention to the second year for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents/non-

residents, and majority/minority students. In the chi-square statistics for retention to the second year study abroad students were counted as retained and the one deceased student was counted as not retained. The second round of chi square tests asked if there was a difference in four year graduation rates for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents/non-residents, and majority/minority students. Finally, the third round of *t* tests asked if there was a difference in six year graduation rates for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents/non-residents, and majority/minority students.

The third segment focuses on recent trends for the undergraduate students. The analysis used data from the cohorts entering in the fall semesters of 2003 through 2008 in three separate step wise logistic regression models to assess whether the predictor variables of gender, ethnicity (minority/majority), residency status, Pell eligibility, and first generation status are significant predictors for retention to second year, four year graduation, or six year graduation.

## **Results**

### **Segment 1, Statistical Differences for Ethnicity Representation within the CSU CAS as compared to the demographics of Colorado**

Figures 4.1, 4.3, and 4.5 show a pie chart of the ethnicity percentages for Colorado based on the 1990, 2000, and 2010 census. For comparative purposes, Figures 4.2, 4.4, and 4.6 show a pie chart of the ethnicity percentages for the 1990, 2000 and 2010 CAS undergraduate students. It is visually obvious that CAS demographics are not similar in ethnic composition of Colorado in 1990, 2000, and 2010. A statistical test is not necessary to observe, for example, that in 1990 2.2% of the CSU CAS undergraduate population was Hispanic/Latino while the Hispanic/Latino

population for the state was 12.9%. One can also distinguish a difference in 2000 between the Hispanic/Latino for Colorado, 17.1%, and the Hispanic/Latino representation in the College, 3.2%. Again in 2010, the difference between the 20.7% Hispanic/Latino population for the state of Colorado and the 4.7% Hispanic/Latino representation for the 2010 undergraduate students is readily observable.

To further illustrate whether CAS demographics were similar in ethnic composition of the [STATE], the results from Chi Square Goodness of Fit tests are shown in Table 4.1. For 1990, 2000, and 2010 the CAS Hispanic/Latino and African American undergraduate representation is significantly lower than expected. For Asians/Pacific Islanders (combined) the Chi Square results were significant in 2010. In 2010, Asian student representation within CAS was less than expected and Pacific Islander representation was more than expected. In 2000, the Native American population was significantly lower than expected.

Finally, to test whether the calculated ratio of Colorado population percentage as compared to the CSU CAS population percentage representation for the largest minority population in the state, Hispanics/Latinos, has changed over time, such ratios were calculated for 1990, 2000, and 2010. In 1990 the ratio is 5.9, in 2000 the ratio is 5.3, and in 2010 the ratio is 4.4. The relative representation of the CSU CAS is decreasing, that is, CSU's CAS was more representative of the state of Colorado in 1990 than it is in 2010.

### ***Segment 2, Opportunity gaps for CAS undergraduate students 1990 - 2014***

Table 4.2 presents the results of the first round of *t* tests which queried if there was a difference in first year GPA for females/males, Pell eligible/non-eligible, first generation

students/non-first generation students, residents/non-residents, and majority/minority students; *d* is also shown as an interpretation of the strength of the relationship or effect size (Morgan, *et al.*, 2011; Morgan, *et al.*, 2009; Cohen, 1988). At the  $p < 0.01$  level, males had a significantly lower first year GPA (mean = 2.8) than females (mean = 3.0). At the  $p < 0.01$  level, students not eligible for Pell grants had a significantly higher first year GPA (mean = 3.0) than students eligible for Pell grants (mean = 2.9). At the  $p < 0.01$  level, non-first generation students had a significantly higher first year GPA (mean = 3.0) than first generation students (mean = 2.9). At the  $p < 0.01$  level, residents had a significantly lower first year GPA (mean = 2.9) than non-residents (mean = 3.0). At the  $p < 0.01$  level, majority students had a significantly higher first year GPA (mean = 3.0) than minority undergraduates (mean = 2.8). For all *t* test results the effect size was small or smaller than typical.

Table 4.3 presents the results of the second round of *t* tests asked if there was a difference in final/current GPA for females/males, Pell eligible/non-eligible, first generation students/non-first generation students, residents of the [STATE]/non-residents, and majority/minority students. At the  $p < 0.01$  level, males had a significantly lower final/current GPA (mean = 2.7) than females (mean = 2.9). At the  $p < 0.01$  level, students not eligible for Pell grants had a significantly higher final/current GPA (mean = 2.9) than students eligible for Pell grants (mean = 2.7). At the  $p < 0.01$  level, non-first generation students had a significantly higher final/current GPA (mean = 2.9) than first generation students (mean = 2.7). At the  $p < 0.01$  level, majority students had a significantly higher final/current GPA (mean = 2.9) than minority undergraduates (mean = 2.7). For all *t* test results the effect size was small or smaller than typical.

To investigate whether females and males differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked

and were met. Table 4.4 shows the Pearson chi-square results and indicates that there is not a significant association ( $\chi^2 = 0.03$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.9$ ). Females are not more likely than expected under the null hypothesis to have low or high rates of retention to the second year. Phi, which indicates the strength of the association between the two variables, is 0.003. The retention to second year rate for females was 85.6% and the retention to second year rate for males was 85.8%.

To investigate whether Pell eligible and non-eligible students differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.5 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 6.34$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.01$ ). Pell eligible are more likely than expected under the null hypothesis to have low rates of retention to the second year. Phi, which indicates the strength of the association between the two variables, is 0.003, which is a small or smaller than typical effect size. The retention to second year rate for Pell eligible students was 82.1% and the retention to second year rate for non-Pell eligible students was 86.2%.

To investigate whether first generation students and non-first generation students differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.6 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 22.84$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). First generation students are more likely than expected under the null hypothesis to have low rates of retention to the second year. Phi, which indicates the strength of the association between the two variables, is 0.074, which is a small or smaller than typical effect size. The retention to second year rate for first generation students was 81.6% and the retention to second year rate for non-first generation students was 87.4%.

To investigate whether residents and non-residents differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.7 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 6.27$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.01$ ). Residents are more likely than expected under the null hypothesis to have high rates of retention to the second year. Phi, which indicates the strength of the association between the two variables, is 0.039, which is a small or smaller than typical effect size. The retention to second year rate for residents was 87.0% and the retention to second year rate for non-residents was 84.3%.

To investigate whether majority and minority students differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.8 shows the Pearson chi-square results and indicates that there is not a significant association ( $\chi^2 = 2.30$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.130$ ). Majority students are not more likely than expected under the null hypothesis to have low or high rates of retention to the second year. Phi, which indicates the strength of the association between the two variables, is 0.024. The retention to second year rate for majority students was 86.0% and the retention to second year rate for minority students was 83.4%.

To investigate whether females and males differ on whether they have high or low four year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.9 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 11.962$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Females are significantly more likely than expected under the null hypothesis to have high four year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.054, which is a small or

smaller than typical effect size. The four year graduation rate for females was 36.6% and the four year graduation rate for males was 30.9%.

To investigate whether Pell eligible and non-Pell eligible students differ on whether they have high or low four year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.10 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 19.389$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Pell eligible undergraduate students are more likely than expected under the null hypothesis to have low rates four year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.068, which is a small or smaller than typical effect size. The four year graduation rate for Pell eligible students was 26.3% and the four year graduation rate for non-Pell eligible students was 36.2%.

To investigate whether first generation students and non-first generation students differ on whether they have high or low four year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.11 shows the Pearson chi-square results and indicates that there is not a significant association at the 99% confidence level ( $\chi^2 = 4.580$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.032$ ). Phi, which indicates the strength of the association between the two variables, is 0.033. The four year graduation rate for first generation students was 32.5% and the four year graduation rate for non-first generation students was 36.0%.

To investigate whether residents and non-residents differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.12 shows the Pearson chi-square results and indicates that there is not a significant association at the 99% confidence level ( $\chi^2 = 5.514$ ,  $df = 1$ ,  $n = 4135$ ,  $p =$

0.019). Phi, which indicates the strength of the association between the two variables, is 0.037. The four year graduation rate for residents was 36.7% and the four year graduation rate for non-residents was 33.2%.

To investigate whether majority and minority students differ on whether they have high or low four year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.13 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 36.078$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Majority students are significantly more likely than expected under the null hypothesis to have high four year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.093, which is a small or smaller than typical effect size. The four year graduation rate for majority students was 36.6% and the four year graduation rate for minority students was 22.6%.

To investigate whether females and males differ on whether they have high or low six year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.14 shows the Pearson chi-square results and indicates that there is not a significant association ( $\chi^2 = 2.313$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.128$ ). Females are not more likely than expected under the null hypothesis to have high six year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.024. The six year graduation rate for females was 54.2% and the six year graduation rate for males was 56.8%.

To investigate whether Pell eligible and non-Pell eligible students differ on whether they have high or low six year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.15 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 55.921$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Pell eligible

undergraduate students are more likely than expected under the null hypothesis to have low six year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.116, which is a small or smaller than typical effect size. The six year graduation rate for Pell eligible students was 39.6% and the six year graduation rate for non-Pell eligible students was 57.1%.

To investigate whether first generation students and non-first generation students differ on whether they have high or low six year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.16 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 21.517$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). First generation undergraduate students are more likely than expected under the null hypothesis to have low six year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.072, which is a small or smaller than typical effect size. The six year graduation rate for first generation students was 49.3% and the six year graduation rate for non-first generation students was 57.2%.

To investigate whether residents and non-residents differ on whether they have high or low retention to the second year a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.17 shows the Pearson chi-square results and indicates that there is a significant association at the 99% confidence level ( $\chi^2 = 16.141$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Residents are more likely than expected under the null hypothesis to have high six year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.062, which is a small or smaller than typical effect size. The six year graduation rate for residents was 57.9% and the six year graduation rate for non-residents was 51.7%.

To investigate whether majority and minority students differ on whether they have high or low six year graduation rates a chi-square statistic was conducted. Assumptions were checked and were met. Table 4.18 shows the Pearson chi-square results and indicates that there is a significant association ( $\chi^2 = 40.022$ ,  $df = 1$ ,  $n = 4135$ ,  $p = 0.001$ ). Majority students are significantly more likely than expected under the null hypothesis to have high six year graduation rates. Phi, which indicates the strength of the association between the two variables, is 0.098, which is a small or smaller than typical effect size. The six year graduation rate for majority students was 56.7% and the six year graduation rate for minority students was 41.3%.

### ***Segment 3, Predictive models for CAS undergraduate student 2003-2008***

Table 4.19 depicts the characteristic of the CAS undergraduate students in the cohorts entering in the fall semesters of 2003-2008. These variables (Minority, Gender, Resident, Pell Recipient, First Generation, Retained to Second Fall, Graduated in 4 years, and Graduated in 6 years) were utilized to create predictive models through logistic regression analysis for retention to second fall, four year graduation and six year graduation.

Logistic regression was conducted to assess whether the predictor variables of gender, minority/majority, residency, Pell eligibility, and first generation status were used in various combinations to predict retention from first year to second year first semester defined as first-year retention rate. This model had little value since the zero order model predicted 86% of the cases. In other words, most students went on to their second year so the variables added little to the by chance model. Nagelkerke squared was .04, so the model did improve by a few percentage points. (Chi square = 27.07,  $p < .001$ ). Perhaps not surprisingly, non-first generation

students were far more likely to be retained in the second year (Odds Ratio 1.65), than first generation students. Minority status was not a significant contributor to the model.

Logistic regression was conducted to assess whether the predictor variables of gender, minority/majority, residency, Pell eligibility, and first generation status were used in various combinations to predict four year graduation rates. The assumptions of observations being independent and independent variables being linearly related to the log were checked and met. The model predicted 16% of the variance (Nagelkerke Squared = .159). The Chi Square = 137.34 (2),  $p < .001$ . This is similar to a  $R = .4$  or a medium to large effect size Cohen's (1988). In this model the primary contributor to the equation was minority status. Non-minority students were 1.78 (Odds ratio 1.784) times more likely to graduate in four years than were minority students.

The last Logistic regression was conducted to assess whether the predictor variables of gender, minority/majority, residency, Pell eligibility, and first generation status were used in various combinations to predict six year graduation rates. The assumptions of observations being independent and independent variables being linearly related to the log were checked and met. After multiple iterations of Logistic Regression the best predictive model accounted for 12% of the variance or in other words, our ability to predict graduation rates was increased by 12% from the zero order model (Nagelkerke  $R^2 = .12$ ). This is equivalent to Cohen's  $r$  effect size of  $R = .33$  which is considered a typical or medium effect size (Morgan, Leech, Gloeckner, & Barrett, 2013). The model that predicted the best included minority status, residency, and first generation status. Although other predictors were significant alone, when all variables were placed into the model collinear effects of gender and Pell eligible fell out and minority status, residency, and first generation status were the best predictors of six year graduation rate.

## Discussion

The purpose of this study was to thoroughly examine demographics at one land-grant institution from 1990-2014 to guide future program investment. This examination was conducted through three separate yet related segments. Whether through pie charts or Chi Square Goodness of Fit, the first segment of this analysis clearly demonstrates that this CAS is not currently representative of the ethnic demographics of the state it serves. In fact, it's representation of Hispanic/Latino students has decreased from 1990 – 2010. This begs the question of whether the CAS is meeting its land grant mission when it so clearly does not represent the state. Given the significance of the differences found in 1990, 2000, and 2010 for CAS Hispanic/Latino and African American undergraduate under-representation this is an area that has great recruitment potential. The recruitment model previously published in the NACTA Journal may serve as a model for recruitment efforts and future study (Talbert, *et al.*, 1997).

The second segment of this study shed light on many opportunity gaps for undergraduate students entering the university through 1990-2014. Male students had significantly lower first year GPAs, and final/current GPAs, and four year graduation rates than female students. The practical significance of the GPA differences could be argued but it does indicate an area of investigation as to why male students have lower GPAs. Further investigation could also look at if there is a difference in first year salary or admission into graduate school for male students given their lower GPAs as there may be no practical implication to the lower GPAs. The difference found here indicates that support for male students to graduate sooner is warranted. Pell eligible students had significantly lower first year GPAs and final/current GPAs than non-Pell eligible students; Pell eligible students also had significantly lower retention to second year rates, four year graduation rates, and six year graduation rates than non-Pell eligible students.

Once again, the practical significance of the lower GPA can be argued. However, the academic and financial effects of the differences in retention to the second year as well as four and six year graduation rates for Pell eligible students clearly indicates that they need more support. The opportunity gap analysis also indicates that there is a significant need for more support and programming targeted at first generation students. First generation students had significantly lower first year and final/current GPAs. First generation students also were significantly less likely to be retained to the second year and they had significantly lower six year graduation rates. If the standard of significance for this study had been  $p < 0.05$  then the chi-square statistic for four year graduation would have also been significant meaning that first generation opportunity gaps would have been significant in every area tested. Resident students are being significantly outperformed by non-residents in terms of first year GPA. However, residents are significantly more likely to be retained to the second year and they have significantly higher six year graduation rates. There are also a number of statistically significant opportunity gaps for minority students studying in the CAS. Minority students had significantly lower first year GPAs and final/current GPAs. Minority students also had a significantly lower four year graduation rate and a lower six year graduation rate than majority students. These differences indicate that there is a need for more support and programming for minority students as well.

The third segment was targeted at current trends within the CAS. As such, this segment of the study was focused on the cohorts of undergraduate students entering in the fall semesters of 2003 through 2008 in three separate step wise logistic regression models to assess whether the predictor variables of gender, ethnicity (minority/majority), residency status, Pell eligibility, and first generation status are significant predictors for retention to second year, four year graduation, and six year graduation. The evidence found in the model for first-year retention gives a modest

amount of support targeted at first generation students; this finding was further supported by the opportunity gap evidence found in segment 2 of the investigation. However, the logistic regression models did show predictive value for some of our variables for four and six year graduation rates. Of note, non-minority students were found to be 1.78 times more likely to graduate in four years than were minority students with minority status being the primary contributor to the model. In the final investigated model, the strongest predictor of six year graduation rate was minority/majority status. Minority students were 53 percent less likely to graduate than majority students in six years. First generation students were less likely than non-first generation students to graduate in six years and non-residents were more likely to graduate than residents of the state within the six year time frame.

At least at this College of Agricultural Science, this rigorous analysis of undergraduate data does not support the notion that the College is achieving the land grant Mission. The CAS is not representative of the state population. Additionally, in the historical analysis, numerous differences were found in student success indicators such as retention to the second year, first year GPA, final/current GPA, four year graduation rates, and six year graduation rates. Furthermore, in the analysis of current opportunity gaps, gender, Pell-eligibility, minority status, first generation status and residency all played a significant role in predicting some level of student success. These findings provide further evidence that this College of Agricultural Sciences is not successful in achieving its mission. Idealistic mission aside, this investigation is clear in its findings that with the changing demographics of the United States, it will be difficult to educate sufficient numbers of professional agriculturalists if the current student success gaps are not addressed. The purpose of this study was to thoroughly examine agricultural higher education demographics at one land-grant institution from 1990-2014 to guide future program

investment. Future research can employ this approach at other land grant institutions. In so doing, agricultural educators could benchmark and set growth goals for both recruitment and retention.

In 2009, Slaughter told those reading the Chronicle of Higher Education that it was “time to get angry about underserved students” (Slaughter, 2009, p. A68). Slaughter argued that the lack of attention to underserved populations like Hispanics and African-Americans threatened United States preeminence in higher education. While the need for anger can be argued, based on the findings of this study, the need for more investment in programming for Pell-eligible, first generation, and minority students is clear.

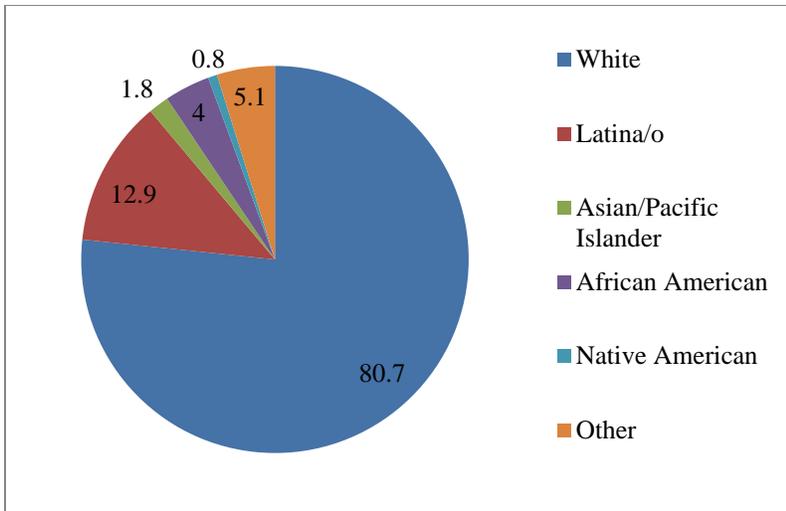


Figure 4.1. Ethnicity percentages of Colorado in 1990

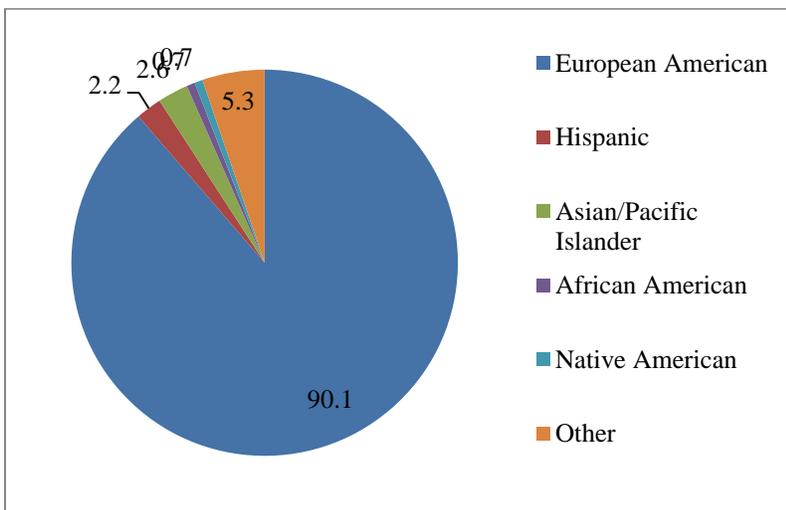


Figure 4.2. Ethnicity percentages for the 1990 CAS undergraduate students

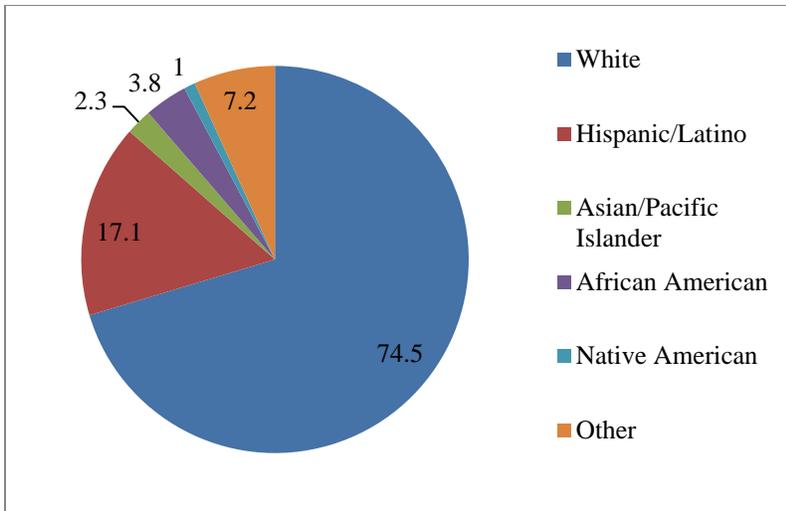


Figure 4.3. Ethnicity percentages for Colorado in 2000

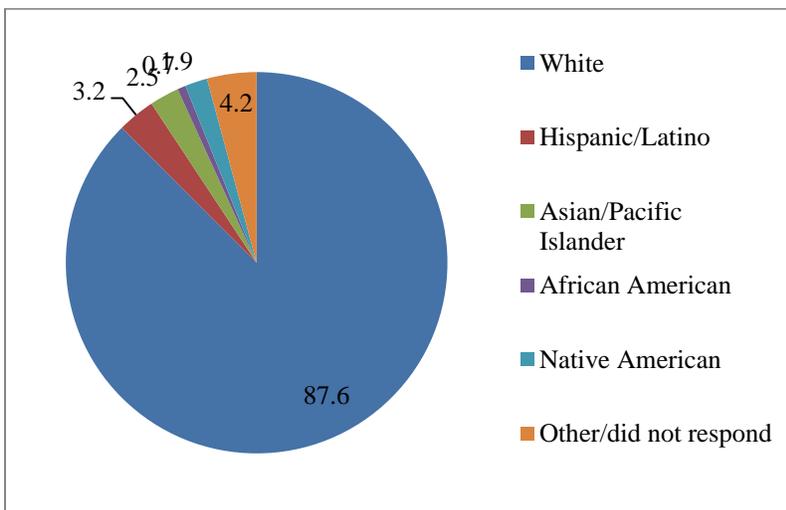


Figure 4.4. Ethnicity percentages for the 2000 CAS undergraduate students

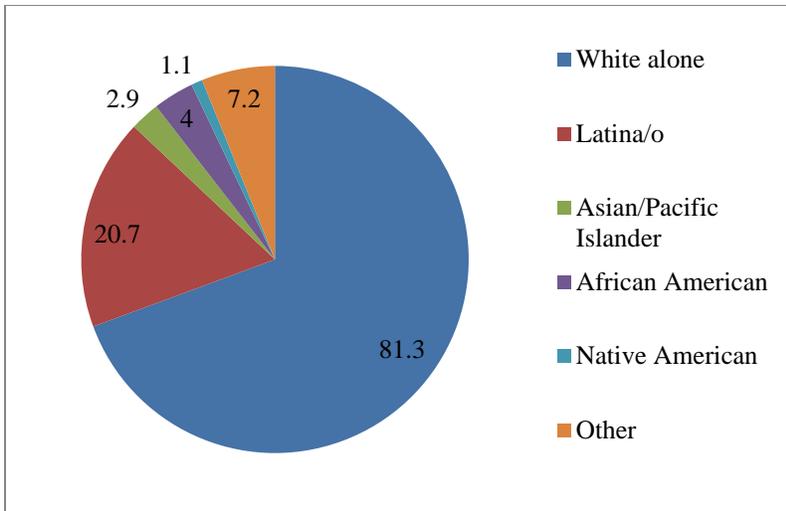


Figure 4.5. Ethnicity percentages for the Colorado in 2010

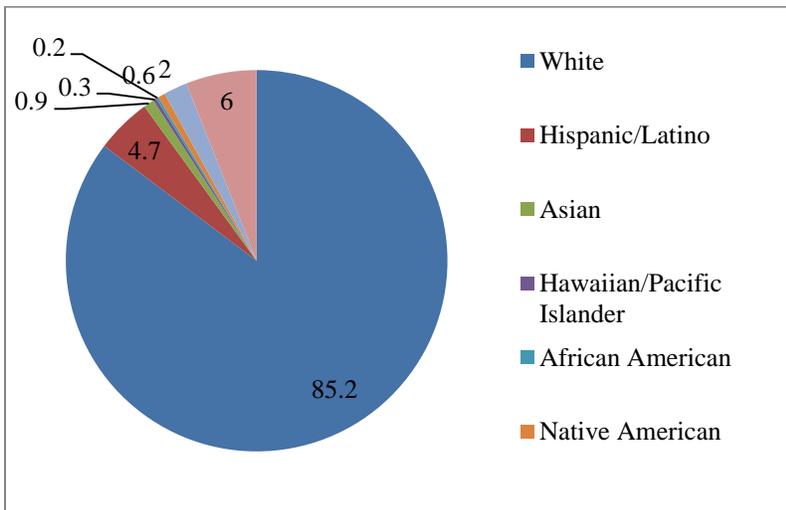


Figure 4.6. Ethnicity percentages for the 2010CAS undergraduate students

Table 4.1. Chi Square Goodness of Fit analysis comparing observed demographics within the CAS undergraduate population with the demographics of State

<b>Ethnic Population</b>	<b>1990 CAS Undergraduates</b>	<b>2000 CAS Undergraduate</b>	<b>2010 CAS Undergraduates</b>
Hispanic/Latino	X <sup>2</sup> =67.0	X <sup>2</sup> =158.8	X <sup>2</sup> =156.5
Asian/Pacific Islander	X <sup>2</sup> =2.4	X <sup>2</sup> =0.2*	Asian: X <sup>2</sup> =16.7 Pacific Islander: X <sup>2</sup> =5.6*
African American	X <sup>2</sup> =21.2	X <sup>2</sup> =35.3	X <sup>2</sup> =42.2
Native American	X <sup>2</sup> =0.2	X <sup>2</sup> =10.0	X <sup>2</sup> =2.5

\*CAS representation greater than expected as compared to Colorado's population

Table 4.2. Independent *t* test analysis for differences in first year grade point average for CAS undergraduate students for multiple demographics

<b>Tested demographic</b>	<b>t</b>	<b>99% Confidence Interval</b>	<b>d</b>
Male/female	-6.8*	-0.24 - -0.11	0.03
Pell eligible/not eligible	2.9*	0.01 – 0.19	0.15
First generation/not first generation	3.1*	0.01 – 0.14	0.12
Residents/non-residents	-2.7*	-0.12 - -0.003	0.09
Majority/minority	4.2*	0.06 – 0.26	0.23

\*Significant at P < 0.01

*Table 4.3.* Independent *t* test analysis for differences in final or current grade point average for CAS undergraduate students for multiple demographics

<b>Tested demographic</b>	<b>t</b>	<b>99% Confidence Interval</b>	<b><i>d</i></b>
Male/female	-5.0*	-0.22 - -0.07	0.18
Pell eligible/not eligible	3.7*	0.04 – 0.25	0.18
First generation/not first generation	4.9*	0.07 – 0.21	0.17
Residents/non-residents	-1.7	-0.11 – 0.02	0.05
Majority/minority	4.6*	0.08 – 0.29	0.22

\*Significant at  $P < 0.01$

*Table 4.4.* Pearson Chi Square analysis of prevalence in retention to second year for CAS undergraduate students among females and males

Variable	n	Gender		$\chi^2$	<i>p</i>
		Males	Females		
Retention to 2 <sup>nd</sup> year				0.03	0.9
Yes	3544	1008	2536		
No	591	166	425		
Totals	4135	1174	2961		

*Table 4.5.* Pearson Chi Square analysis of prevalence in retention to second year for Pell eligible and non-Pell eligible CAS undergraduate students

Variable	n	Pell		$\chi^2$	<i>p</i>
		Non-eligible	Eligible		
Retention to 2 <sup>nd</sup> year				6.34	0.01
Yes	3544	3123	421		
No	591	499	92		
Totals	4135	3622	513		

*Table 4.6.* Pearson Chi Square analysis of prevalence in retention to second year for first generation and non-first generation CAS undergraduate students

Variable	N	First Generation		$\chi^2$	<i>p</i>
		No	Yes		
Retention to 2 <sup>nd</sup> year				22.84	0.001
Yes	3544	2577	967		
No	591	373	218		
Totals	4135	2950	1185		

*Table 4.7.* Pearson Chi Square analysis of prevalence in retention to second year for residents of Colorado and non-residents of the CAS undergraduate students

Variable	N	Residency of Colorado		$\chi^2$	<i>p</i>
		No	Yes		
Retention to 2 <sup>nd</sup> year				6.27	0.01
Yes	3544	1674	1870		
No	591	312	279		
Totals	4135	1986	2149		

*Table 4.8.* Pearson Chi Square analysis of prevalence in retention to second year for majority and minority CAS undergraduate students

Variable	N	Race		$\chi^2$	<i>p</i>
		Majority	Minority		
Retention to 2 <sup>nd</sup> year				2.30	0.130
Yes	3544	3152	392		
No	591	513	78		
Totals	4135	3665	470		

*Table 4.9.* Pearson Chi Square analysis of prevalence in four year graduation rates for CAS undergraduate students among females and males

Variable	N	Gender		$\chi^2$	<i>p</i>
		Males	Females		
Four year graduation				0.03	0.9
Yes	1447	363	1084		
No	2688	811	1877		
Totals	4135	1174	2961		

*Table 4.10.* Pearson Chi Square analysis of prevalence in four year graduation rates for Pell eligible and non-Pell eligible CAS undergraduate students

Variable	N	Pell		$\chi^2$	<i>p</i>
		Non-eligible	Eligible		
Four year graduation				19.389	0.001
Yes	1447	1312	135		
No	2688	2310	378		
Totals	4135	3622	513		

*Table 4.11.* Pearson Chi Square analysis of prevalence in four year graduation rates for first generation and non-first generation CAS undergraduate students

Variable	N	First Generation		$\chi^2$	<i>p</i>
		No	Yes		
Four year graduation				4.580	0.032
Yes	3544	2577	967		
No	591	373	218		
Totals	4135	2950	1185		

*Table 4.12.* Pearson Chi Square analysis of prevalence in four year graduation rates for residents and non-residents of the CAS undergraduate students

Variable	N	Residency of Colorado		$\chi^2$	<i>p</i>
		No	Yes		
Four year graduation				5.514	0.019
Yes	1447	659	788		
No	2688	1327	1361		
Totals	4135	1986	2149		

*Table 4.13.* Pearson Chi Square analysis of prevalence in four year graduation rates for majority and minority CAS undergraduate students

Variable	N	Race		$\chi^2$	<i>p</i>
		Majority	Minority		
Four year graduation				36.078	0.001
Yes	1447	1341	106		
No	2688	2324	364		
Totals	4135	3665	470		

*Table 4.14.* Pearson Chi Square analysis of prevalence in six year graduation rates for CAS undergraduate students among females and males

Variable	N	Gender		$\chi^2$	<i>p</i>
		Males	Females		
Six year graduation				2.313	0.128
Yes	2272	667	1605		
No	1863	507	1356		
Totals	4135	1174	2961		

*Table 4.15.* Pearson Chi Square analysis of prevalence in six year graduation rates for Pell eligible and non-Pell eligible CAS undergraduate students

Variable	N	Pell		$\chi^2$	<i>p</i>
		Non-eligible	Eligible		
Six year graduation				55.921	0.001
Yes	2272	2069	203		
No	1863	1553	310		
Totals	4135	3622	513		

*Table 4.16.* Pearson Chi Square analysis of prevalence in six year graduation rates for first generation and non-first generation CAS undergraduate students

Variable	N	First Generation		$\chi^2$	<i>p</i>
		No	Yes		
Six year graduation				21.517	0.001
Yes	2272	1688	584		
No	1863	1262	601		
Totals	4135	2950	1185		

*Table 4.17.* Pearson Chi Square analysis of prevalence in six year graduation rates for residents of Colorado and non-residents of the CAS undergraduate students

Variable	N	Residency of Colorado		$\chi^2$	<i>p</i>
		No	Yes		
Six year graduation				16.141	0.001
Yes	2272	1027	1245		
No	1863	959	904		
Totals	4135	1986	2149		

*Table 4.18.* Pearson Chi Square analysis of prevalence in six year graduation rates for majority and minority CAS undergraduate students

Variable	N	Race		$\chi^2$	<i>p</i>
		Majority	Minority		
Six year graduation				40.022	0.001
Yes	2272	2078	194		
No	1863	1587	276		
Totals	4135	3665	470		

*Table 4.19.* Characteristics of College of Agricultural Sciences undergraduate students, cohorts entering the university Fall 2003-2008. Variables listed were included in final models for prediction of retention to second fall, four year graduation, and six year graduation

Demographic Variable	Yes n (percentage)	No n (percentage)
Minority	120 (10.1%)	1066 (89.9%)
Female (Gender)	841 (71.0%)	344 (29.0%)
Resident	666 (56.2%)	519 (43.8%)
Pell Recipient	194 (16.4%)	991 (83.6%)
First Generation	368 (31.1%)	817 (68.9%)
Retained Second Fall	1019 (86.0%)	166 (14.0%)
Graduated in 4 years	501 (42.3%)	684 (57.5%)
Graduated in 6 years	799 (67.4%)	386 (32.6%)

## REFERENCES

- Association of Public Land-Grant Universities. (2009). Human capacity development: The road to global competitiveness and leadership in Food, Agriculture, Natural Resources and Related Sciences. Washington, DC: Association of Public and Land-Grant Universities. <http://www.aplu.org/members/commissions/food-environment-and-renewable-resources/board-on-agriculture-assembly/academic-programs-section/documents/human-capacity-development.pdf>
- Buchanan, D. S. (2008). Animal science teaching: A century of excellence. *Journal of Animal Science* 86 (12), 3640-3646.
- Burk, S. V., Rossano, M. G., Silvia, W. J., Vanzant, E. S. Pescatore, A. J., Haromon, R., J. (2013). Factors associated with course withdrawal and final course grade in an introductory animal science course. *NACTA Journal* 57 (2), 16 – 23.
- Cohen, J. (1988). *Statistical power for the social sciences*. Hillsdale, NJ: Laurence Erlbaum and Associates.
- Education. (2014). In National Institute of Food and Agriculture. Retrieved from <http://www.csrees.usda.gov/nea/education/education.cfm>
- Fogel, D. M. (2012). *Precipice or crossroads?: Where America's great public universities stand and where they are going midway through their second century*. Albany, NY: State University of New York Press.
- Hoover, E. (2013). Minority applicants to colleges will rise significantly by 2020. *Chronicle Of Higher Education*, 59(19), A16-A17.

- How to Feed the World in 2050. (n.d.). In Food and Agriculture Organization of the United States. Retrieved from [http://www.fao.org/fileadmin/templates/wsfs/docs/expert\\_paper/How to Feed the World\\_in\\_2050.pdf/](http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf/)
- Huck, S. W. (2008). *Reading statistics and research, 5<sup>th</sup> ed.* Boston, MA: Pearson.
- Jones, W. A. & Larke, A., Jr., (2001). Factors influencing career choice of African American and Hispanic graduates of a land-grant college of agriculture. *Journal of Agricultural Education* 42, 39-49.
- Marable, M. (2000). We need a new and critical study of race and ethnicity. *Chronicle of Higher Education* 46 (1): 25, B4.
- Morgan, G. A., Gliner, J. A., & Leech, N. (2009). *Research in applied settings: An integrated approach to design and analysis.* New York, NY: Routledge, Taylor and Francis.
- Morgan, G., Leech, N., Gloeckner, G.W., & Barrett, K. (2011) *IBM SPSS for introductory statistics: Use and interpretation, 4<sup>th</sup> ed.* New York, NY: Routledge, Taylor and Francis.
- Slaughter, J. B. (2009). It's time to get angry about underserved students. *Chronicle of Higher Education*, 55 (20), A68.
- Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: counter-storytelling as an analytical framework for education research. *Qualitative Inquiry*, 8 (1), 23.
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. In M. P. Zanna (Ed.) , *Advances in*

*experimental social psychology*, Vol. 34 (pp. 379-440). San Diego, CA: Academic Press.

Street, R. S. (2004). *Beasts of the field: a narrative history of California farmworkers, 1769-1913*. Stanford, CA: Stanford University Press.

Talbert, B. A., Larke, A. Jr., Jones, W. A., & Moore, R. O. (1997). Recruitment and retention of underrepresented groups: A model for success. *NACTA Journal*, March 1997 (pp. 51 – 56).

United States Census Bureau. (2015). Projections of the size and composition of the U.S. Population: 2014 to 2060: Population estimates and projections.

[http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf?eml=gd&utm\\_medium=email&utm\\_source=govdelivery](http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf?eml=gd&utm_medium=email&utm_source=govdelivery) .

<http://www.census.gov/2010census/data/>

## CHAPTER 5

### MIXED METHODS ANALYSIS AND CONCLUSION

This conclusion begins with a summary of the findings of the three distinct studies in relation to the research questions that were developed to guide the study. Suggestions for future study will be explored. Finally, recommendations for addressing the findings using the Multicultural Organization Development (MCOB) model will be outlined (Pope, Reynolds, & Mueller, 2014; Jackson, 2006; Marchesani & Jackson, 2005; Jackson & Hardiman, 1994).

#### **Mixed Methods Analysis**

The transformative research design and the convergent parallel research design are prototypical mixed methods designs (Creswell & Plano Clark, 2011). Transformative convergent parallel mixed method design is a novel research design. “Conducting mixed methods research involves collecting, analyzing, and interpreting quantitative and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon” (Onwuegbuzie & Leech, 2006, p. 476). Mixed methods analysis allows investigators to utilize the methodology, e. g. visual ethnography, narrative inquiry, and post-positivist statistical approaches, that best suit the research question in an overall effort to get a richer answer to the overall research question(s) (Tashakkori & Teddlie; 2003). In the case of this research study, the results of the three independent studies are now compared and related to the theoretical framework to enable overall interpretation to answer the guiding research questions: are all students welcome in the agricultural learning environment and to the discipline of agricultural sciences? What is the historical evidence of inclusivity into agricultural higher education? Is the

College of Agricultural Sciences (CAS) at a Predominantly White major land grant institution prepared for the “freight train” of diversity? Essentially, is the CAS learning environment supportive of all agricultural students?

### **Study A. Visual Ethnography Assessment of Departments of Animal Sciences at Three Land Grant Universities: Who is Welcome?**

The Food and Agriculture Organization of the United Nations (FAO) spells out clearly the need for innovation and education in all of agriculture, including animal agriculture in order to produce, secure, research, and inspect our food supply (“How to Feed the World in 2050,” n.d.). For CAS and departments of animal sciences at land grant universities to address this problem, higher education professionals will need to question if students can *see* themselves studying agricultural sciences, including animal sciences. Further, for scientific innovation in agricultural sciences, “We need to be constantly asking: ‘Who else should be here? Who else should be looking at this?’” (Wheatley, 2006, p. 66). To develop innovative and ethical solutions to the problems facing modern agriculture, the input of all involved is necessary; the voices of all classes and ethnic groups need to be engaged (Blake, 2008).

Latinas/os have long played a vital role in animal agriculture in the United States. Why they are not then represented in agricultural higher education? The mission of land grant universities is to provide access to education, especially agricultural education. If these land grant universities are to address our nation’s need for educated agriculturalists, Latinas/os must be included as part of the solution. This research is concerned with privilege and oppression and is emancipatory in its inquiry aims (Freire, 1993). In keeping with a LatCrit theoretical framework, the purpose of this individual study is to expose and transform the master narrative

in which Latinas/os are confined to stoop labor while White land owners reap the benefit of that labor (Anzaldúa, 2012; Creswell, 2013; Crenshaw *et al.*, 1995; Darder *et al.*, 2009; Delgado Bernal, 2012, 2002). The purpose of this inquiry is to assess the presence or absence of a hegemonic message being communicated in these halls of agricultural learning.

Nonintrusive research methods, such as visual ethnography that uses photographs of physical artifacts within the educational environment, provide an accurate assessment of the equity climate within an institution. Physical artifacts tell us clearly who is welcome and what is valued. In this examination of departments of animal sciences at three land grant universities, the overwhelming finding on most equity parameters is profound in its silence: the null approach. This approach is devoid of equity messages, thus inherently discriminatory because the “normal” is designed in terms of European American, male, Christian, heterosexual, physically abled privilege (Darder *et al.*, 2009; Jennings, *et al.*, 2010; Johnson, 2006; Nieto & Bode, 2012; Tienda, 2103). Add this to the images that were negative in their equity approach and the result is an exclusive learning environment clearly communicated by the physical artifacts present. In keeping with the inquiry aims of a LatCrit theoretical framework, this study suggests that the physical artifacts on display at these land grant animal science’s departments reifies a master narrative. While agricultural heritage in the United States is predominantly Latina/o, the master narrative communicated in these departments of animal sciences is that Latinas/os are absent from the conversation.

### **Study B. Latina Lived Experience as an Agricultural Student at a Land Grant University**

This study provides a joining of the two rich traditions, lived experiences and agricultural education (Laman, Jewett, Jennings, Wilson, Souto-Manning, 2012). This bridging of the

academic silos allows us to investigate in a meaningful manner the overarching research question: What is the lived experience of current Latina students studying agriculture at a Predominantly White Land Grant Institution? The purpose of this inquiry was to explore the lived experience of six Latina undergraduate students studying agricultural sciences at CSU by a known interviewer. The methodology employs in-depth interviews from a Critical perspective and in a constructive manner (Martin & Kitchel, 2015). Rigorous thematic analysis discovered three major themes: Overt Exclusion, Nepantlera, and Intersectionality. The lived experiences of these Latina CAS students are not what CAS educators were hoping to hear. These experiences are also not what these students deserve nor are they the experiences that CAS educators want for our students. While our goal may be to answer the call for more educated agriculturalists, the lived experience of Overt Exclusion will make meeting this call difficult. We may be able to recruit students to study agricultural sciences but these data indicate that retaining these students through their undergraduate education will be difficult if they are told overtly and covertly that they are not part of the “Ag Family”. As stated previously, it is a foundational assumption of this research that those who have been a part of agricultural labor are a critical answer to the societal need for educated agriculturalists; there is space for all, including Latinas/os and other ethnic groups, in agricultural education and not just in the labor pool. Moreover, students should not have to rely on their resilience and Cultural Capital as Nepantleras to navigate an exclusionary environment in an effort to earn a degree. The Intersectionality of all of an individual students’ identities should be welcomed to learn especially at Land Grant institution (Aragon, in press; Yosso, 2005).

## **Study C. A Comprehensive Study of Undergraduate Student Success at a Land Grant University College of Agricultural Sciences, 1990 – 2014**

The purpose of this portion of the overall study was to thoroughly examine demographics at one land-grant institution from 1990-2014 to guide future program investment. This examination was conducted through three separate yet related segments. Whether through pie charts or Chi Square Goodness of Fit, the first segment of this analysis clearly demonstrates that this CAS is not currently representative of the ethnic demographics of the state it serves. This begs the question of whether the CAS is meeting its land grant mission when it so clearly does not represent the state. Given the significance of the differences found in 1990, 2000, and 2010 for CAS Hispanic/Latino and African American undergraduate under-representation this is an area that has great recruitment potential. The recruitment model previously published in the NACTA Journal may serve as a model for recruitment efforts and future study (Talbert, *et al.*, 1997).

The second segment of this study shed light on many opportunity gaps for undergraduate students entering the university through 1990-2014. Male students had significantly lower first year GPAs, and final/current GPAs, and four year graduation rates than female students. The practical significance of the GPA differences could be argued but it does indicate an area of investigation as to why male students have lower GPAs. Further investigation could also look at if there is a difference in first year salary or admission into graduate school for male students given their lower GPAs as there may be no practical implication to the lower GPAs. The difference found here indicates that support for male students to graduate sooner is warranted. Pell eligible students had significantly lower first year GPAs and final/current GPAs than non-Pell eligible students; Pell eligible students also had significantly lower retention to second year

rates, four year graduation rates, and six year graduation rates than non-Pell eligible students. Once again, the practical significance of the lower GPA can be argued. However, the academic and financial effects of the differences in retention to the second year as well as four and six year graduation rates for Pell eligible students clearly indicates that they need more support. The opportunity gap analysis also indicates that there is a significant need for more support and programming targeted at first generation students. First generation students had significantly lower first year and final/current GPAs. First generation students also were significantly less likely to be retained to the second year and they had significantly lower six year graduation rates. If the standard of significance for this study had been  $p < 0.05$  then the chi-square statistic for four year graduation would have also been significant meaning that first generation opportunity gaps would have been significant in every area tested. Resident students are being significantly outperformed by non-residents in terms of first year GPA. However, residents are significantly more likely to be retained to the second year and they have significantly higher six year graduation rates. There are also a number of statistically significant opportunity gaps for minority students studying in the CAS. Minority students had significantly lower first year GPAs and final/current GPAs. Minority students also had a significantly lower four year graduation rate and a lower six year graduation rate than majority students. These differences indicate that there is a need for more support and programming for minority students as well.

The third segment was targeted at current trends within the CAS. As such, this segment of the study was focused on the cohorts of undergraduate students entering in the fall semesters of 2003 through 2008 in three separate step wise logistic regression models to assess whether the predictor variables of gender, ethnicity (minority/majority), residency status, Pell eligibility, and first generation status are significant predictors for retention to second year, four year graduation,

and six year graduation. The evidence found in the model for first-year retention gives a modest amount of support targeted at first generation students; this finding was further supported by the opportunity gap evidence found in segment 2 of the investigation. However, the logistic regression models did show predictive value for some of our variables for four and six year graduation rates. Of note, non-minority students were found to be 1.78 times more likely to graduate in four years than were minority students with minority status being the primary contributor to the model. In the final investigated model, the strongest predictor of six year graduation rate was minority/majority status. Minority students were 53 percent less likely to graduate than majority students in six years. First generation students were less likely than non-first generation students to graduate in six years and non-residents were more likely to graduate than residents of the state within the six year time frame.

At least at this College of Agricultural Sciences, this rigorous analysis of undergraduate data does not support the notion that the College is achieving the land grant Mission. The CAS is not representative of the state population. Additionally, in the historical analysis, numerous differences were found in student success indicators such as retention to the second year, first year GPA, final/current GPA, four year graduation rates, and six year graduation rates. Furthermore, in the analysis of current opportunity gaps, gender, Pell-eligibility, minority status, first generation status and residency all played a significant role in predicting some level of student success. These findings provide further evidence that this College of Agricultural Sciences is not successful in achieving its mission. Idealistic mission aside, this investigation is clear in its findings that with the changing demographics of the United States, it will be difficult to educate sufficient numbers of professional agriculturalists if the current student success gaps are not addressed. The purpose of this study was to thoroughly examine agricultural higher

education demographics at one land-grant institution from 1990-2014 to guide future program investment. Future research can employ this approach at other land grant institutions. In so doing, agricultural educators could benchmark and set growth goals for both recruitment and retention.

### **Synopsis**

The investigation of physical artifacts found an exclusive and hegemonic environment, the narrative analysis found an exclusive and hegemonic environment, and the quantitative analysis of undergraduate student success found multiple opportunity gaps. While looking at the conclusions of the three studies in a fractious manner is informative, looking at them collectively in a transformative mixed methods approach yields weight to the findings. The findings of all three independent studies support the conclusion that the CAS learning environment is not inclusive.

The real world problems facing our planet's food supply are going to be solved by innovative ideas. If the majority of the educated agriculturalists have similar backgrounds and world views, where is innovation supposed to originate? We need many different world views addressing the complex issues facing agriculture today. Thus far, as is demonstrated in the previous four chapters of this dissertation, at least one College of Agricultural Sciences has struggled in its efforts to recruit and retain students of color within our academic programs. "Ethnocentrism can be a major obstacle to effective leadership because it prevents people from fully understanding or respecting the viewpoints of others" (Northouse, 2010, p. 337). The assumption is that higher education professionals want to have supportive educational environments. It is difficult at best for professors to lead students academically if the professors

believe that their “own culture is better or more natural than the culture of others” (Northouse, 2010, p. 337). It is my belief that the best cure for ignorance is education, especially when the intent of the higher education professionals is to support all students, inclusive of background.

So what might be the impediment for faculty and staff in the College of Agricultural Sciences? The source of our dissonance may be the reluctance to acknowledge that “(t)he root of the problem often lies with long-established and deeply embedded ground rules, or habits that govern the group” (Goleman et al., 2002, p. 173). Our struggle to embrace inclusive education may be directly contradictory to some long held beliefs in the culture of agriculture concerning the roles of Latinas/os. “We believe that in order to maintain ourselves and protect our individual freedom, we must defend ourselves from external forces. We tend to think that isolation, secrecy and strong boundaries are the best way to preserve individuality” (Wheatley, 2006, p. 84).

At this time I believe that agriculture “is at a crossroads, standing poised between death and transformation” (Wheatley, 2006, p. 88). The industry cannot continue to do what it’s always done and meet the needs of feeding an ever growing population. To develop innovative and ethical solutions to the problems facing modern agriculture, I believe we need the input of everyone involved.

### **Future Study**

This dissertation adds to the literature on campus ecology and visual ethnography, counter stories, student success in agricultural education, Latina/o and Chicana/o studies, Critical Theory application, Intersectional Theory, and Mixed Methodology. In so doing, this study creates research questions and guides potential research projects.

The visual ethnography assessment described here may be repeated at other land grant universities and in other departments besides animal sciences. One could hypothesize that the hegemonic nature of agricultural education is limited to departments of animal sciences or to the Rocky Mountain region. Another expansion of this research area could investigate whether or not the institutional structure has a relationship to what the investigation yields. In other words, do CAS findings differ from College of Agricultural and Life Sciences findings or a College of Agricultural Sciences and Natural Resources? Do the findings of a Department of Animal Sciences differ from those of a Department of Animal and Rangeland Sciences?

The Latina lived experience study adds another layer of counter story. Of course, the voices of Latino students studying agricultural sciences is missing from this narrative inquiry. This study could also grow by adding more students in the analysis. Other studies could expand on the findings to assess whether or not professional Latina agriculturalists have similar lived experiences. It would be interesting to know if the findings are confined to the undergraduate experience or if the Overt Exclusion and reliance on Nepantlera skills continue in graduate school, the faculty ranks, or in agricultural industry. Other research could also expand on the concept of agricultural identity as a system of privilege and oppression. Such a study should not be limited to Latinas but rather be inclusive of multiple ethnic identities.

The comprehensive study of undergraduate student success should first be compared to similar studies at the university level to explore whether or not the findings are unique to the CAS or if there are similar opportunity gaps at the university level at CSU. The investigation should also be repeated at other land grant universities, perhaps first at the universities visited in the visual ethnography study. A comprehensive and systematic investigation could then guide future Association of Public Land Grant University research agendas.

## **Toward Inclusive Agricultural Education: Multicultural Organization Development**

The implications of these findings are entangled and while they inform the higher education professional it is hard to know where to begin in addressing the clearly stated needs. The theoretical aim of transformative research and all Critical theoretical frameworks is to expose the master narrative of privilege and oppression. The pragmatic aims, though, are to do something about it. Systemically, the exclusive nature of agricultural higher education needs to change. A way forward is through following the recommendations of the MCO model.

The MCO model provides six stages by which to categorize an organization, including an educational organization. These first two stages of the model are The Exclusionary Organization and “The Club”. MCO then has four non-discriminating stages, namely, The Compliance Organization, The Affirming Organization, The Redefining Organization, and The Multicultural Organization (Pope, Reynolds, & Mueller, 2014; Jackson, 2006; Marchesani & Jackson, 2005; Jackson & Hardiman, 1994). The summarized findings of this dissertation support the assertion that the sites of this investigation are Exclusionary Organizations.

As a monocultural organization, characteristics of the Exclusionary Organization include overtly maintaining a hegemonic system of power and privilege through exclusionary actions. Further, harassing actions go unaddressed in an Exclusionary Organization. Such an organization is an unsafe environment for marginalized group members, causing emotional if not physical harm and trauma. Such an organization does not engage with issues of diversity and social justice readily, so the approach for change toward a more multicultural organization is slow, step-wise, and systematic.

First, the organization must build a shared understanding of the current exclusionary practices and behaviors. Clear expectations for behaviors and consequences for exclusionary behavior need to be established and communicated. Multicultural training should be provided for all leaders and faculty, and these trainings should be highly incentivized. Investigation to reveal the status quo of the organization is necessary; for the CAS at CSU a large portion of that investigation is provided here. Shared understanding may also be built through training and shared reading, perhaps of the studies from this dissertation. To move forward, the Exclusionary Organization must increase the visibility of administrators and leaders reinforcing their commitment to an inclusive learning environment. Thus, this requires administrators and leaders who are committed to an inclusive learning environment, which is one of the key pillars of Damon Williams work on Inclusive Excellence (Williams, 2007). “Unless diversity is included in discussions at the highest levels of governance, policy, and leadership, change will not occur” (Williams, 2007, p. 10).

In 2009, Slaughter told those reading the Chronicle of Higher Education that it was “time to get angry about underserved students” (Slaughter, 2009, p. A68). Slaughter argued that the lack of attention to underserved populations like Hispanics and African-Americans threatened United States preeminence in higher education. While the need for anger can be argued, based on the findings of this dissertation, the need for more investment in first generation and minority students, including Latinas/os, at this CAS cannot be argued. However, one of the great lessons of the dissertation process for me is that there is not an absence of literature in the academy establishing opportunity gaps, the need for program investment, the hegemonic nature of education, and a call for social justice. Instead, everywhere I looked there were books and articles that supported the claims, albeit outside of agricultural education specifically. It’s not

that we don't know what the problem is or that the problem has not been established. It's that we have not collectively chosen to do something about supporting *all* students; we have not chosen to provide an inclusive educational environment. There's plenty of work to be done and we know what that work is. It's time that we do it.

### **My Role**

“Perhaps trouble need not carry such a negative valence. To make trouble was, within the reigning discourse of my childhood, something one should never do precisely because that would get one in trouble. The rebellion and its reprimand seemed to be caught up in the same terms, a phenomenon that gave rise to my first critical insight into the subtle ruse of power; the prevailing law threatened one with trouble, even put one in trouble, all to keep one out of trouble. Hence, I concluded that trouble is inevitable and the task, how best to make it, what best way to be in it.” Judith Butler in Entremundos/Among Worlds, 2008, p. 64

I equate living in *nepantla* with being in trouble, especially if I investigate my childhood and what I was socialized to think about race, ethnicity, gender, immigrants, and other cultural groups (Keating, 2008). Trouble we all understand. *Nepantla* is a relative new concept for me, one that I learned while studying for my doctoral degree, a concept coined by Gloria Anzaldúa, a theorist who understands a great deal about my trouble. Anzaldúa describes *nepantla* as “unarticulated dimensions of the experience of *mestizas* living in between overlapping and layered spaces of different culture and social and geographic locations, of events and realities- psychological, sociological, political, spiritual, historical, creative, imagined” (Anzaldúa, in Keating, 2008, pp. 6-7). The concept of *nepantla* explains the majority of my existence this way,

“Though *nepantla* demands isolation and seclusion, it can lead to new forms of community-seen most prominently in the work of *las nepantleras*: those who travel within and among multiple worlds, developing transformative alliances.... *Las nepantleras* are threshold people, agents of change.”

I don't think that any of us fit into a box, that we only have one identity. I believe that we are a melding of identities, creating unique individuals. Similar to the students interviewed for this dissertation, as a mestiza I live in an ethnic borderlands. I also work in the space between student affairs and academic affairs in higher education, between education and agricultural sciences in the academy, between social justice training and Critical theory for change agents, between faculty and staff in my professional position, and between heart and mind in many spaces. However, living in this in-between space, outside of a box, has created a great amount of trouble. I choose to use that trouble in my professional life to create positive change, to promote access to higher education, and to support equitable learning environments in agriculture and elsewhere. It is my hope that this dissertation helps me to make more effective trouble. Whether or not I use this trouble well will only be known through the lived experiences of those who come after me.

## REFERENCES

- Anzaldúa, G. (2012). *Borderlands/la frontera: The new mestiza*. (4th Ed.). San Francisco, CA: Aunt Lute Books.
- Aragon, A. (in press). Achieving Latina students: Critical race reflections on parental community cultural wealth. *Journal of Latinos and Education*.
- Blake, D. J. (2008). *Chicana Sexuality and Gender*. Durham, NC: Duke University Press.
- Crenshaw, K. W., Gotanda, N., Peller, G., & Thomas, K. (Eds.) (1995). *Critical race theory: the key writings that formed the movement*. New York, NY: New Press.
- Creswell, J. W. & Plano Clark, V. L. (2011). *Designing and Conducting Mixed methods Research 2<sup>nd</sup> Ed.* Los Angeles, CA: Sage.
- Darder, A., Baltodano, M. P. & Torres, R. D. (Eds.). (2009). *The critical pedagogy reader 2<sup>nd</sup> ed.* New York, NY: Routledge
- Delgado Bernal, D. (2012). Chicana feminist epistemology: past, present, and future. *Harvard Educational Review*, 82 (4), 511-512.
- Delgado Bernal, D. (2002). Critical race theory, Latino critical theory, and critical raced-gendered epistemologies: recognizing students of color as holders and creators of knowledge. *Qualitative Inquiry* 8, 105-126.
- Freire, P. (1993). *Pedagogy of the oppressed*. New rev. 20th-Anniversary ed. New York: Continuum.
- Goleman, D., Boyatzis, R. & McKee, A. 2002. *Primal Leadership: Learning to lead with Emotional Intelligence*. Boston, MA: Harvard Business School Press
- How to Feed the World in 2050. (n.d.). In Food and Agriculture Organization of the United States. Retrieved from

[http://www.fao.org/fileadmin/templates/wsfs/docs/expert\\_paper/How to Feed the World\\_in\\_2050.pdf/](http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf/)

Jackson, B. W. (2006). Theory and practice of multicultural organization development. In Jones, B. B. & Brazzel, M. (Eds.), *The NTL Handbook of Organization Development and Change* (pps. 139 – 154). San Francisco, CA: Pfeiffer.

Jackson, B. W., & Hardiman, R. (1994). Multicultural organization development. In Cross, E. Y., Katz, J. H., Miller, F. A., & Seashore, E. W. (Eds.), *The promise of diversity: Over 40 voices discuss strategies for eliminating discrimination in organizations* (pp. 231 – 239). Arlington, VA: NTL Institute.

Jennings, L. B., Jewett, P.C., Laman, T. T., Souto-Manning, M. V., & Wilson, J. L. (Eds.). (2010). *Sites of possibility: critical dialogue across educational settings*. Cresskill, NJ: Hampton Press.

Johnson, A. G. (2006). *Privilege, power, and difference 2nd ed.* Boston: McGraw Hill

Keating, A. (Ed.) (2008). *EntreMundos/among worlds new perspectives on Gloria Anzaldua*. New York, NY: Palgrave Macmillan

Marchesani, L. S. & Jackson, B. W. (2005). Transforming higher education institutions using Multicultural Organizational Development: A case study at a large northeastern university. In M. L. Ouellet (Ed.), *Teaching inclusively: Resources for course, department and institutional change in higher education* (pp. 241-257). Stillwater, OK: New Forums Press.

Martin, M.J. & Kitchel, T. (in press). Critical theory view of the national FFA convention. *Journal of Agricultural Education*.

- Nieto, S. & Bode, P. (2012). *Affirming diversity: the sociopolitical context of multicultural education, 6th ed.* Boston, MA: Pearson.
- Northouse, P. G. (2010). *Leadership theory and practice, fifth edition.* Thousand Oaks, CA: Sage.
- Onwuegbuzie, A. J. & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures. *The Qualitative Report, 11* (3), 474-498.
- Pope, R. L., Reynolds, A. L., Mueller, J. A. (2014). *Creating multicultural change on campus.* San Francisco, CA: Jossey-Bass.
- Slaughter, J. B. (2009). It's time to get angry about underserved students. *Chronicle of Higher Education, 55* (20), A68.
- Talbert, B. A., Larke, A. Jr., Jones, W. A., & Moore, R. O. (1997). Recruitment and retention of underrepresented groups: A model for success. *NACTA Journal*, March 1997 (pp. 51 – 56).
- Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social & behavioral research.* Thousand Oaks, CA: Sage Publications.
- Tienda, M. (2013). Diversity ≠ inclusion: Promoting integration in higher education. *Educational Researcher, 42* (9), 467-475.
- Wheatley, M.J. (2006). *Leadership and the New Science: Discovering Order in a Chaotic World.* San Francisco, CA: Berrett-Koehler Publisher.

Williams, D. A. (2007). Achieving inclusive excellence: Strategies for creating real and sustainable change in quality and diversity. *About Campus*, 12 (1), 8 - 14.

Yosso, T. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity & Education*, 8(1), 69-91.

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<http://www.nacada.ksu.edu/clearinghouse/advisingissues/retention-what-works.htm>