2009

Student perceptions of the higher education transfer process from two-year to four-year institutions : a qualitative study viewed through the lenses of student departure, social network, and complexity theories

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STUDENT PERCEPTIONS OF THE HIGHER EDUCATION TRANSFER PROCESS
FROM TWO-YEAR TO FOUR-YEAR INSTITUTIONS:
A QUALITATIVE STUDY VIEWED THROUGH THE LENSES OF
STUDENT DEPARTURE, SOCIAL NETWORK, AND COMPLEXITY THEORIES

A Dissertation Presented
to
The Faculty of the School of Education
Department of Leadership Studies
Organization and Leadership Program

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Kevin Kelly
San Francisco
May 2009

THE UNIVERSITY OF SAN FRANCISCO

Dissertation Abstract

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This qualitative study explored higher education transfer student perceptions of a) the transfer process between two- and four-year institutions, b) social network influences on their decisions to stay in higher education, c) the role of technology in the process, and d) organizational policies and practices that might influence the process. This study used student departure, social network, and complexity theories to describe the higher education transfer student experience from a holistic viewpoint.

The researcher conducted interviews with thirteen higher education transfer students from two- and four-year institutions located in the San Francisco Bay Area. Eight of the thirteen participants belonged to historically underrepresented ethnicity populations. The researcher asked the participants to describe and analyze their experiences and decisions during the transfer process, and influences that came from their background and from external environments.

The participants perceived that they themselves had the greatest influence on their decisions to stay in higher education, but also perceived external influences. The participants relied on different people in their personal networks to achieve various levels of academic and social integration, respectively. Participants perceived great value in using technology for transfer purposes, such as electronic portfolios and social network

sites, but sometimes preferred human interaction. Diversity and encouragement emerged as important themes.

Social network and complexity theories enhanced and reconceptualized the concepts portrayed in Tinto's (1993) longitudinal model of student departure. Tinto's model comprised only part of a much larger fractal pattern of the overall transfer-related phase transition. New initial conditions existed every time the pattern repeated at a smaller scale over time (e.g., every year, every decision). Certain pre-entry attributes— parents' educational experiences and the participants' prior schooling—were also phase transitions, not static historical constants. Participants sought or sought to be strange attractors—influences that could break them or others from repetitive, linear patterns.

Recommendations were made for higher education transfer students and administrators at higher education institutions. Recommendations for future research included calls for further investigation of higher education transfer students who dropped out, barriers for historically underrepresented ethnicity populations, and case studies of inter-institutional programs that use electronic portfolios for transfer purposes.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

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ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I: THE RESEARCH PROBLEM

Statement of the Problem

Sixty percent of the 520,000 first-time community college students in California who began in 1999-2000 had a degree or certificate goal (Shulock and Moore, 2007). However, only one quarter of this group— reportedly a total of just 15% of all first-time community college students—achieved an academic goal of a two-year degree, transfer, or both within six years. Administrators and researchers have several different ideas as to why transfer, and ultimately academic success, has eluded so many students over time. Students' difficulties in transferring from two- to four-year institutions formed the core problem that drove this study.

The California Community College Chancellor's Office (2002) described successful articulation of coursework as "at the heart of a seamless transfer experience for students," but it really resides in only one ventricle or atrium of that heart. While the focus on course articulation and policies is important, it does not provide a holistic picture of the transfer process. Focus of this kind offers a high-level, or top-down, view of what happens when people transfer successfully. However, it does not show what happens to the students themselves throughout the process or why some do not succeed in reaching their academic goals.

The California State University (CSU) system has been implementing a three-part plan to improve degree completion, a high priority for the CSU Chancellor's Office since 2002 (Spence, 2005). One of the plan's three parts revolves around higher education transfer students, since half of the students in the CSU system entered as transfer students in 2005. Almost 90% of those higher education transfer students in 2005 came from

California community colleges, compared to only 74% in 1985 (California State University Analytical Studies, Chancellor's Office, 2007). Over this same twenty-year period, the total number of students who transferred to the CSU system remained relatively static (39,953 admitted in 1985, 39,447 in 2005), but the CSU admission ratio of transfers to first-time freshmen dropped from 60:40 in 1985 to 46:54 in 2005.

Nationwide statistics show that California is not the only state in which low numbers of college students on a national level achieve academic goals. From 1989 to 1994, only 22% of students who entered a community college in academic year 1989-1990 transferred to a four-year institution within those five years (McCormick & Carroll, 1997). These statistics reflect problems that also exist within California K-12 education and within higher education nationwide. An average of only 65% of California high school students graduate on time from high school, meaning up to 35% of these students drop out. "Every year, tens of thousands of students leave high school before graduation, and even larger numbers graduate without the requisite qualifications to attend college" (Children Now, 2008).

Adelman (1992) used data from the National Longitudinal Study of the High School Class of 1972 to examine patterns related to the participants' community college attendance, transfer to other institutions, and careers. He reviewed survey results, transcript reports of high school records and test scores, and postsecondary credits and degrees earned by all United States students who attended any postsecondary institution over twelve years (1972-1984). In this study, he found that over half (55.6%) attended a postsecondary institution. Of the students that started at a community college, only 14.1% reached a two- or four-year certificate or degree goal within twelve years. Meanwhile, as

the numbers of students who complete a two- or four-year degree decrease, the number of job opportunities that require higher education increase. Attendance at a four-year university also dramatically influences a person's economic situation. Despite their similarities to statistics about California transfer students, the California K-12 and nationwide higher education statistics do not identify causes for student departure.

Past studies (Spady, 1970; Tinto, 1975, 1993; Pascarella, 1980; Bean, 1982; Astin, 1985) attempted to identify various possible reasons for student departure from higher education. Spady (1970) theorized that students' background characteristics and social integration were key factors related to dropping out. Bean (1982) listed dozens of variables—organized into six categories: background variables, organizational variables, intentions, environmental variables, outcome and attitudinal variables, and variables for statistical control—that might influence student attrition. Tinto (1975, 1993) made an argument that departure decisions were based on a combination of academic and social integration. Pascarella (1980) looked at informal social interactions between students and faculty members. Certain factors such as financial constraints or lack of academic readiness comprise only a small percentage of reasons why students drop out (Tinto, 1993). While this completes part of the picture, little is known about the aspects of social integration, or lack thereof, that prevent higher education students from reaching their academic goals. Further, all of these studies focused on the bigger picture, lumping higher education transfer students in with all other students. Few factors have been identified specifically in relation to the subset of students who transfer.

Traditionally, two-year and four-year institutions differ in how they support higher education transfer students. More recent studies (Julian, 2001; Flaga, 2002;

Monroe, 2006; Gumm, 2006; and Austin, 2007) have investigated different support strategies for higher education transfer students at four-year universities. Within the collective findings it was determined that university support staff make assumptions that higher education transfer students know what they need and provide limited targeted support for these students. Additional research about how higher education institutions support higher education transfer students is presented in the review of literature.

Tinto (1993) identified social integration as the foremost factor in students' decisions to remain in higher education. Gumm (2006) confirmed that social integration was a major factor in student persistence. Researchers that studied social networks of college students (Antrobus, Dobbelaer, and Salzinger, 1988; Culbert, Good, and Lachenmeyer, 1988) focused on the influence of those networks on academic integration. Their results indicated that a student's network size did not make much difference in his or her performance, but that students tend to network with peers at the same academic level. However, little is known about the influence of students' networks on their social integration.

Most of the studies that form the foundation of research about student departure (Spady, 1970; Tinto, 1975, 1993; Pascarella, 1980; Bean, 1982; Astin, 1985) were conducted before the Internet became an integral part of daily life. Therefore, they did not take technology-mediated communication into account when investigating social integration issues. Within the set of more recent studies, only Huneke (2002) has looked at student perspectives on technology use as a factor in student involvement and persistence. He found a positive association between students' understanding of computers being useful and their institutional commitment, but found no correlation

between commitment and the use of computer-mediated communication. Beyond the analysis of his quantitative survey data about these topics, student perceptions—those of higher education transfer students in particular—had not yet been researched before this study was conducted.

Purpose of the Study

The purpose of this study was to explore higher education transfer student perspectives on the transfer process itself and the influence that social networks—people inside and outside the academic institutions—have on their persistence, or their decisions to continue their education. As there have been dramatic changes in the role that technology plays in everyday activity, this study also investigated technology-specific influences on higher education transfer students' acquisition of information about transfer and social integration at two-year and four-year campuses. Finally, this study researched contextual factors at the organizational level, such as institutional enrollment limits or budget fluctuations, that might influence higher education transfer students' decisions to stay or leave. This study used complexity science and social network theory to broaden the overall perspective of the issues and to describe the higher education transfer student experience from a holistic viewpoint. This approach is different than previous studies that used only student departure theory to explain their findings. In addition, this study used interviews to ask higher education transfer students to describe and analyze the transfer process between two-year and four-year institutions, and their decisions during that process. These students also identified possible influences that came from their background, external environments, their social networks, and the campuses themselves.

The students' responses were compared to elements of student departure, complexity, and network theories.

Background and Need for the Study

Nationwide, over half of first-time, first year higher education students as well as over half of all undergraduates enroll in two-year institutions (Cohen, 2003). Access to higher education has been a key component of each version of the Master Plan for Higher Education in California (California State Department of Education, 1960; Select Committee on the Master Plan for Higher Education, 1972; and Commission for the Review of the Master Plan for Higher Education, 1987) and the most recent California Master Plan for Education (Joint Committee to Develop a Master Plan for Education, 2002). Despite this dedication to access, studies of enrollment patterns within the state (California State University Analytical Studies, Chancellor's Office, 2007) and studies of National Longitudinal Survey data (Grubb, 1991) show that community college transfer rates have decreased over time.

As the author of a 1988 report (California Community Colleges Transfer Center Directors, 1988) on California community college transfer centers, M. Shimabukuro (personal communication, January 10, 2008) found that it is difficult to generate accurate transfer student statistics. Researchers may define transfer students differently based on students' expressed desire to transfer. Further, it is difficult to track certain types of transfer, such as transfers out of state schools and to private schools. Cohen (2003) also noted lack of agreement regarding how to calculate transfer rates. Given these difficulties, Cohen found that forty percent of graduates from four-year universities had acquired community college credits as part of their higher education experience. These

students achieved one or more of their academic goals, but many more have not. According to Adelman (1982), of the students participating in the National Longitudinal Survey of 1972, under four percent transferred and achieved a four-year degree and slightly more than four percent achieved a two-year degree with or without transfer. Using the same sample, nineteen percent completed a four-year degree without transfer.

The length of the transfer process is not limited to the brief time starting directly before leaving the two-year community college and ending directly after reaching the four-year university. The amount of time to degree or certificate completion depends on a number of factors, ranging from family responsibilities to economic status, and from levels of family and friends' support to each student's own motivation to complete a degree. The entire educational pathway begins when students register for their very first higher education classes and ends when they reach a degree or certificate goal.

The researcher works with numerous higher education institutions in his role as the Online Teaching and Learning Coordinator at San Francisco State University. Based on personal observations prior to beginning this study, he found that the transfer process itself is not a simple one. Instead, it is a complicated, requirements-based process that sometimes forces students to determine for themselves whether or not they qualify for transfer. Students often rely on photocopied handouts of long course abbreviation lists grouped into crowded categories to determine if their classes will transfer to a university. Others take advice from faculty members, student peers, and athletic coaches. A small number of potential transfer students make use of academic advising. This study asked transfer students to identify support strategies that administrators, faculty, staff, advisors,

and the students themselves can employ during a process that may take many years to complete—if the students complete it at all.

Californians have taken steps to address the problem of insufficient transfers within the state in the past. From 1985 to 1988, the California Community College Chancellor's Office conducted the Transfer Center Project as a pilot to address the transfer needs of historically underrepresented ethnicity populations (California Community Colleges Transfer Center Directors, 1988). For this project the California Community College Chancellor's Office established transfer centers in twenty community colleges. Fourteen CSU campuses and all eight undergraduate University of California (UC) campuses participated as well. These centers offered services to inform, prepare, and motivate potential transfer students with additional emphasis on supporting higher education transfer students from historically underrepresented ethnicity populations. Outlining the original vision for the transfer centers, M. Shimabukuro (personal communication, January 10, 2008) stated that the goal went beyond just having a center. The centers also needed to help high school counselors with information about transfer requirements, to make students aware of available services and how to use them, and to set up transfer programs with four-year campuses. After the pilot centers were established and proved successful, each community college in California created a transfer center.

Intermittent progress reports subsequently expressed needs for appropriate funding, staffing, and resources to meet the transfer centers' collective mission and to increase transfer capacity (Academic Senate for California Community Colleges, 1996; California Community College Chancellor's Office, 2002). While the transfer centers did

not lead to an increase in numbers of total transfer students, they may have played a role in increasing the number of transfer students who had completed their lower-division coursework. Only sixty-eight percent (68%) of all transfer students were upper-division transfers in 1990-91, but that number rose to ninety percent (90%) in 2000-01 (California Community College Chancellor's Office, 2002).

The transfer pathway is not always straight or direct. Increasing numbers of community college students are concurrently enrolled at local universities, or are reverse transfer students who have already spent time at the four-year institutions. Kearney, Townsend, and Kearney (1995) found that students sometimes go through a combination of horizontal and vertical transfers (e.g., 2 > 2 > 4 or 4 > 2 > 4) rather than a stereotypical vertical transfer (two-year to four-year, or 2 > 4).

Certain barriers within the higher education transfer landscape are beyond individual students' control, such as whether or not there is a space for them at a four-year university when they are ready to transfer. Shulock and Moore (2003, p.1) define the Pipeline-Process-Capacity Model of the transfer process as:

> [t]he number of transfer students is a function of three components: the supply of students intending to transfer, the success of the transfer function in preparing those students, and the ability of receiving four-year institutions to accommodate those students.

Taking into consideration the dramatic increase of students in the pipeline as children of the Baby Boomers reach college age—what is now commonly called "Tidal Wave II" (Breneman, Estrada, & Hayward, 1995)—capacity issues will continue to limit transfer rates. However, the factors of how many students exist in the pipeline, the student preparation process itself, and the capacity of the institutions to admit them do not

account for all dropouts. Not enough is known about why higher education students consciously make the decision to leave higher education before or after transfer.

Theoretical Foundations

This study examined students' perceptions of their experiences transferring between institutions of higher education. These students do not go through the experience in a vacuum. Therefore, an emphasis was placed on students' social interactions with people inside and outside the institutions of higher education as they have gone through the transfer process. These interactions may be face-to-face or technology-mediated, and may be influenced by organizational policies and practices.

The theoretical foundation for this study came from three different theories: (a) student persistence and departure in higher education, (b) complexity theory, and (c) social network theory. A section has been provided for each field, with the last section tying them together. The first section outlines models of student departure, focusing on Tinto (1993) who provided a basis for understanding students' decisions to stay in or leave higher education as a function of academic and social integration. The second section introduces complexity theorists (e.g., Lorenz, 1995; Barabási, 2002; Mandelbrot, 1967) who have offered a different way to look at environments and situations in which researchers cannot isolate specific variables, such as the transfer process. The second section also identifies network theorists (e.g., Granovetter, 1973, 1982; Watts, 2003; Engelbart, 1992) who have focused on social aspects of human behavior, collaboration, and decision-making, which illuminates aspects of transfer students' social integration that influence their persistence or departure. The last section shows how this study combined elements from the different fields to analyze qualitative data.

Theories and Models of Student Departure

Tinto's Theory of Student Departure

Tinto (1975) and other researchers (Astin, 1985; Spady, 1970; Pascarella, 1980) reflect Durkheim's (1897/1997) earlier contention that people are strongly influenced by their integration, or lack of integration, into communities. Durkheim investigated a different topic, suicide, but Tinto found that Durkheim's research provided a model to describe the conditions for student departure. The link between Tinto and Durkheim is clearest with respect to the concept of *anomie*, defined in this case as "personal unrest, alienation, and uncertainty that comes from a lack of purpose or ideals" (Merriam-Webster Online Dictionary, 2008).

Durkheim (1897/1997) described *anomie* as lacking shared values with the community and feeling alienated or without purpose. Liu and Liu (1999, p. 537) compared Tinto's (1975) original student departure model to Durkheim's anomic suicide concept in this way:

> Entrance into institutions of higher education, and therefore entrance into a new society necessitates, to varying degrees, a severance of ties to the individual's past society. This severance of ties catalyzes the creation of anomie, or a state of confusion and insecurity, which can lead to anomic suicide in the form of student departure.

Durkheim's model looked at social integration issues—specifically, a lack thereof—as a direct cause for suicide attempts. From these roots, Tinto created a longitudinal model of institutional departure that focused on both academic and social integration in higher education settings.

Tinto's (1993) revised model (see Figure 1) also took into account a student's background, levels of commitment to the institution, and commitment to his or her

academic goals. The first column in Figure 1, Pre-Entry Attributes, relates to each student's background before entering the higher education environment. The second column, Goals and Commitments, addresses the student's level of commitment to personal goals, the educational institution, and external influences before going through his or her institutional experiences. The third column, Institutional Experiences, divides a student's experiences between academic and social systems. The fourth column, Integration, addresses a student's level of academic and social integration after his or her institutional experiences. The fifth column, Goals and Commitments, addresses the student's level of commitment to personal goals, the educational institution, and external influences after going through his or her institutional experiences. The sixth and last column, Outcome, identifies the student's decision to stay or leave the institution of higher education. All in all, Tinto's longitudinal model of institutional departure describes the factors that might influence each student's departure decisions before, during and after interacting with the institution on different levels.

Tinto's (1993) revised model went beyond the issues of academic and social integration within the institution to include additional factors. A student's background could include aspects of his or her family background, his or her skills or abilities, and his or her previous educational history. For example, Tinto found that historically underrepresented populations—specifically minority students—had more difficulty during the period known as the separation stage. This study included students from historically underrepresented populations with respect to ethnicity to investigate this further. In Tinto's model, a student's intentions and commitments are checked at two points in time—before and after academic and social experiences at a higher education

Pre-Entry
Attributes

Goals /
Commitments

Institutional
Experiences

Integration

Goals /
Commitments

Outcome

Family
Background

Skills and
Abilities

Prior
Schooling

Intentions

Goals &
Institutional
Commitments

External
Commitments

Academic System

Formal:
Academic
Performance

Informal:
Faculty/Staff
Interactions

Formal:
Extracurricular
Activities

Informal:
Peer Group
Interactions

Social System

Academic
Integration

Social
Integration

Intentions

Goals &
Institutional
Commitments

External
Commitments

Departure
Decision

External Forces Influence Goals, Institutional Experiences, Integration, and Outcomes

Figure 1: Tinto's longitudinal model of institutional departure.

Note. From *Leaving College* (p. 114), by V. Tinto, 1993, Chicago: University of Chicago. Copyright 1993 by the University of Chicago Press. Adapted with permission.

institution. The commitments include goal commitment—a student's ability to continue pursuing his or her academic goals—and institutional commitment—a student's ability to complete academic goals at a specific two-year or four-year institution.

All of these factors influence a student's decision to stay or dropout from a college or university. Tinto's goal was to use the model to predict student dropouts. He later emphasized that "[l]ess than 25 percent of all institutional departures, nationally, take the form of academic dismissal" (Tinto, 1993, p. 49). Taken to an extreme, issues with social integration could lead to student departure for up to seventy-five percent of populations with certain characteristics. However, it is clear that students also voluntarily depart due to a lack of academic integration, so this study will work from the premise that issues related to social integration potentially cause the majority of student departures. Tinto (1997) later recognized an emphasis on social integration by describing the academic system as a sphere that itself has a social nature and that sits inside a larger sphere representing the social system.

In a reformulation of his earlier theory, Tinto (1993) further claimed that there are common causes that prompt students to leave an institution of higher education, regardless of their status as a student. Students arrive at each institution of higher education with two internal factors that influence decisions to stay or leave, intention and commitment. These factors can change over time as students interact with other people in and out of the classrooms. As students interact in the institutional context, Tinto stated that there are four influential factors: a student's adjustment or lack thereof, the ease or difficulty of his or her experience, the congruence or incongruence between student and

institution (sometimes called "fit"), and the level of isolation. External influences include each student's family and work obligations, and his or her financial status.

In creating his original theory of student departure, Tinto himself diverged somewhat from Durkheim's model, which looked at aggregate rates of suicide. Instead Tinto chose to account for individuals' decisions to leave or stay in higher education. In addition to recognizing the limitations of his analogy to Durkheim's work, he sought to address the differences between institutions of higher education and society as a whole. For example, Tinto (1993, p. 106) called attention to the differences in the respective community strengths and to the temporary nature of students' membership in higher education communities:

> The communities of the college are, by comparison, less extensive and weaker than those found in the broader society and may be but one group of a number of communities in which the student has membership. …[students'] entry into the institution is always a passage aimed at eventual departure.

After describing his theory, Tinto recommended institutional actions based on factors that improve student retention, including the need for campuses to define departure according to how students perceive it and to align their goals with those of the students.

Theories of Complexity and Social Networks

Just as Tinto (1993) and Liu (2002) recognized the limitations of Durkheim's model of suicide when applied to student departure, this study augmented Tinto's model with other theoretical structures to investigate what happens during the transfer process. After reviewing and synthesizing several different student departure models, Bean (1982) called for new models. He had hoped that future researchers would reduce the number of variables needed for a reductionist approach to studying such a complex topic. Rather than trying to reduce the number of variables, however, this study drew upon complexity

science to investigate individuals' actions within dynamic, large-scale, educational organizations. Tsoukas and Hatch (2001, p. 981) described the idea in this way: "the key concepts of complexity science do not so much constitute a theory with predictive validity as a guide for interpretation."

Complexity science focuses on describing large entities or structures, the relationships of the many parts within those structures, and how the structures interact with their environments. To perform research, complexity scientists use a set of interrelated theories, such as nonlinear dynamics, cybernetics, chaos theory, and general systems theory. For this study about higher education transfer students, complexity theory was used to illuminate how universities or colleges function as systems and how the students interact as components within those systems. The basic building block of complexity science is the complex adaptive entity (Bloch, 2005; Stackman, Henderson, & Bloch, 2006). Like Russian nesting dolls, complex adaptive entities (CAEs) are both individual entities with some unique characteristics and part of a bigger whole that, upon closer inspection, looks similar to the smaller individual.

The articles by Bloch (2005) and Stackman, Henderson, and Bloch (2006) define eleven and twelve characteristics, respectively, of a CAE. These complex adaptive entities are self-organizing, rather than being controlled by outside forces. However, in order to survive an environment, these entities seek dynamic relationships for open exchange of information, resources, or whatever they need to survive, figuratively or literally. These exchanges occur within and between networks and comprise some of the activities that occur during an entity's phase transition, or the process of moving from a state of disorder to a state of order. To do this, CAEs seek opportunities or circumstances,

called fitness peaks, that provide the greatest chance for success or even survival.

Patton (2002) stated that "[c]omplexity theory offers, perhaps more than anything else, a new set of metaphors for thinking about what we observe, how we observe, and what we know as a result of our observations." Some social scientists have used complexity-based methodologies to conduct qualitative research beyond metaphorical applications (Murphy, 2000; Karpiak, 2006). Murphy described two research approaches, one using complexity principles in qualitative interpretation and the other using different computer simulations. While this study used complexity elements as part of the qualitative data analysis process, they have been used primarily as metaphors to view the transfer process differently than has been done in previous research.

For this study, transfer students were compared to CAEs to describe their experiences during the transfer process. As CAEs go through phase transitions, they must also contend with nonlinear dynamics. Several authors (Mandelbrot, 1967; Barabási, 2002; Lorenz, 1995) described principles and theories within complexity science— fractals, phase transition, sensitive dependence to initial conditions, and attractors—that this study used to describe the higher education environment or a series of transfer-related events. For example, Mandelbrot used his study of the British coastline to define self-similarity, a characteristic of fractals. He theorized that most smaller-scale parts of the coastline resembled the larger-scale whole. Barabási described the process of water freezing and becoming ice as an example of a phase transition, or moving to a state of order. Lorenz (1995) defined sensitive dependence to initial conditions as differences in conditions at the beginning of a particular timeline, which will lead to different results over time. He conducted a number of experiments, such as firing a pinball from the same

point at the same speed, which showed that the end results differed due to imperceptible differences, such as the starting position of the pinball or a slight change in its initial velocity. Lorenz identified attractors as patterns, or results that repeat over and over, that emerge from a series of events over time. Despite these patterns, sensitive dependence on initial conditions makes it difficult to predict future results. The attractors help researchers to describe a system and its actions.

While networks are sometimes considered a subset of complexity science, this study treated network and social network theories separately to emphasize their importance in understanding issues of social integration. Granovetter (1973, 1982), Barabási (2002), Watts (2003), and Engelbart (1992) all contributed significant ideas that will be used in this study. Granovetter identified differences between friendships, or strong ties, and acquaintances, or weak ties. He determined that weak ties actually are more likely to help people make connections between clusters of people in their networks. Barabási researched the network structure of the World Wide Web and found that real networks exhibit specific characteristics. They are self-organizing and scale-free, can withstand the removal of any node without major impact, and have no single center. Watts applied network theory concepts with the fields of sociology, biology, business, and information management. He claimed (p. 299) that "what the science of networks can do is provide a new way of thinking about familiar problems," as this study intends to do. Engelbart built upon his own conceptual framework of augmenting human intellect through networks that are both community-based and technology-mediated.

Haythornthwaite (1996) reviewed literature about social network analysis as a method to study information exchange between people or groups. She found that looking

at information exchange patterns makes it possible to identify holes or obstacles within a social network that prevent information from disseminating properly. Similarly, Cross, Borgatti and Parker (2001) studied knowledge management practices—how people consult with others to get information—using network analysis techniques. They found that beyond solutions, actors also seek "meta-knowledge, problem reformulation, validation, and legitimation" (Cross, Borgatti & Parker, p. 231)

Combining the Theories, or Looking through Multiple Lenses

During eye exams, eye doctors first drop one lens in front of a patient's eye and ask if his or her vision is better or worse. Then they drop a second lens in front of the first lens to see if the patient's vision further improves. They continue this exercise for both eyes until the patient can see an eye chart clearly. Similarly, the complexity and network theory lenses were added to the lens of student departure theory to create a richer context for understanding student decisions during the transfer process. As Tinto is considered one of the hallmark theorists related to student persistence and departure in higher education, many people have used his works to provide context for their own studies (e.g., Antrobus, Dobbelaer, and Salzinger, 1988; Culbert, Good, and Lachenmeyer, 1988; Liu and Liu, 1999; Morales, 2000; Green, 2001; Flaga, 2002; Huneke, 2002; Balzer, 2006; Gumm, 2006; Poindexter, 2007). In order to build on this body of work, this study used Tinto's theory of student departure as a framework—juxtaposed with complexity and network theory concepts—when investigating transfer students' perceptions of their experiences.

Tinto (1993) claimed that his theory of student departure reflected the characteristics of a well-known theory of suicide (Durkheim, 1897/1997). He made this

claim based on the voluntary nature of an individual leaving a specific community. Although he described the similarities between the two theories as analogies, they can also be described as fractals, wherein the smaller system mirrors the larger system in several ways. Tinto reviewed the suicide research as a means to determine what to study about institutional departure, resulting in his own research about rates of institutional departure. Along these lines, this study used complexity and network theories to identify analogous structures that help explain student departure and persistence from a different standpoint.

Figure 2 was created before the data collection and analysis portions of this study to depict how the researcher foresaw complexity theory and network theory might augment student departure theory as a way to explain the higher education transfer process. This figure reconceptualizes Tinto's (1993) longitudinal model of institutional departure, depicted by rectangular shapes and connecting lines that use ninety-degree angles, by overlaying complexity and network theory concepts, depicted by oval shapes and connecting lines that do not use ninety-degree angles. In Figure 2, Tinto's first column, Pre-Entry Attributes, is enclosed in an oval to show it is a subset of the complexity concept of sensitive dependence on initial conditions. The second, third, fourth, and fifth columns are enclosed in an oval to show that they are all considered part of a student's transfer-related phase transition. Individually, the second column, Goals and Commitments, still addresses the student's level of commitment to personal goals, the educational institution, and external influences before going through his or her institutional experiences, but includes social network influences. The third column, Institutional Experiences, divides a student's experiences between academic and social

21

Figure 2: Complexity and network theory layers combined with Tinto's longitudinal model of institutional departure.

Note. From *Leaving College* (p. 114), by V. Tinto, 1993, Chicago: University of Chicago. Copyright 1993 by the University of Chicago Press. Adapted with permission pending.

systems and shows the significance of social networks during those experiences. Between the third and fourth columns, ovals depict the role that social network components at the institution play in a student's integration. The fourth column, Integration, addresses a student's level of academic and social integration after his or her institutional experiences. The fifth column, Goals and Commitments, again addresses the student's level of commitment to personal goals, the educational institution, and external influences after going through his or her institutional experiences. Between the fifth and sixth column, a picture of a strange attractor signifies the possible influence of strange attractors on a student's departure decision. The sixth and last column, Outcome, identifies the student's decision to stay or leave the institution of higher education. Overall, Figure 2 uses Tinto's student departure theory as well as complexity and social network theories to describe the factors that might influence each student's departure decisions before, during and after interacting with the institution on different levels.

Starting at the left side, Figure 2 illustrates how sensitive dependence on initial conditions overlaps student background characteristics. As Bean (1982) found in his comparative analysis of theories, several student attrition models described how students' background characteristics influence their interactions within higher education environments and their decisions to leave or stay in those environments. In complexity science, Lorenz (1995) defined this concept as sensitive dependence on initial conditions. Tinto (1975) listed family background, individual attributes and pre-college schooling as three characteristics of a student's background. These characteristics were considered as complexity-based initial conditions for this study, either when students began at a two-year institution or when they transferred to a four-year institution.

Moving to the right from the second to fifth columns, Figure 2 shows how the transfer process overall can be defined as a phase transition period. Barabási (2002) described a phase transition as moving from a state of disorder to a state of order. This transition is sometimes protracted—i.e., the disorder lasts longer—due to inadequate support for transfer students (Julian, 2001; Monroe, 2006; Flaga, 2002). In Tinto's (1993) longitudinal model, the phase transition happens across almost all of the stages. The phase transition begins with students checking their commitment to their own goals, the higher education institution, and any external entities. After this, students go through various institutional experiences, both academic and social. The set of academic experiences includes formal academic experiences, such as taking classes or completing programs, and informal academic experiences, such as interacting with faculty and staff to get academic support. The set of social experiences includes formal social experiences, such as planned extracurricular activities through student organizations or for specific purposes, and informal social experiences, such as study groups or self-organizing athletic interactions (e.g., pickup games of basketball between two groups that want to use the same court). These sets of academic and social experiences can lead to academic integration, social integration, or both. The phase transition ends with students rechecking their commitment to their own goals, the higher education institution, and any external entities. At this point in Tinto's model, students decide to stay or leave.

Throughout the phase transition depicted in Figure 2, higher education transfer students rely on social network connections. Network theory and the components of complexity theory revolving around networks and interconnectedness provide additional ways to view Tinto's concept of social integration. Thomas (2000, p. 595) pointed out

that social network theory was reflected in Durkheim's (1897/1997) research, which in turn influenced Tinto (1975, 1993). While Tinto defined social integration in terms of formal and informal interactions, complexity and network theorists framed social integration differently.

Rather than look at the formality of how each social interaction is constructed, Granovetter (1973, 1982) looked at the influence of the strength or weakness of someone's connection to other individuals. Overlapping Granovetter's viewpoint with Tinto's (1993) social system, which is defined by the formality of the interaction between people, has provided greater depth to this study. Tinto allowed for formal and informal activity between students and peers, and between students and faculty. Thomas (2000) used social network theory specifically to explore student integration and persistence. He found that weak ties, or acquaintances, help students persist, especially in broad networks. Between the third and fourth columns, Figure 2 shows that a student's social network can include a number of strong and weak ties, regardless of the level of formality in the academic and social systems. Weak ties can include counselors and faculty within Tinto's formal academic system, and faculty and classmate acquaintances within the informal academic system. Strong ties that can help or hinder higher education transfer students include family and pre-college friends, and good friends in the college or university settings.

Lorenz (1995) provided language that can be used to describe Tinto's (1993) roots of individual departure. Attractors are patterns that emerge from interactions between many connected entities over time (http://www.anecdote.com.au/archives/2005/02/what_is_ an_attr.html). While higher

education transfer students bring their intention and commitment with them to the institution, Tinto's roots of institutional departure—adjustment, difficulty, congruence, isolation, obligations, and finances—all involve interactions with the institution of higher education or the outside world. Lorenz describes pinballs in a machine to express how two objects with seemingly identical starting velocity and direction end up in different places. The same principles apply to two higher education transfer students who attend the same institution(s). They may start at the same time, but over time the higher education transfer students' patterns will diverge as they go through their own phase transitions.

While Tinto's roots of departure are not attractors by themselves, they shape departure patterns. Linear attractors, such as the point attractor shown in Figure 2, are patterns that show how a higher education transfer student can be drawn repeatedly back to a specific person, place, or thing. In many cases, those linear attractors draw the higher education transfer student away from his or her academic goals. For example, Emma Student has a demanding job as an administrative assistant that does not provide enough flexibility to take classes during the day. She must take night classes or cut her work hours to finish her degree. She has established a pattern of choosing to work over completing her education. Conversely, a nonlinear attractor such as a strange attractor (see Figure 2) is a pattern that shows it is possible for higher education transfer students to break linear patterns when making the decision to leave or stay in a two-year or four-year institution. If linear attractors have drawn transfer students away from higher education, then strange attractors may bring them back. To continue the previous example, Emma Student reentered higher education after her company started an

Employee Education Incentive Program. Completing her Bachelor's Degree would increase her salary and make her eligible for promotion to executive assistant. This program acted as a strange attractor by helping her break her previous pattern.

Both complexity and network theories assume interconnectedness or interdependence as that seen between transfer students, their social networks, the technology they use, and elements of the campuses themselves. Two studies (Albert and Barabási, 2000; and Barabási, 2002) investigated the differences between random and scale-free networks. In random networks, people, or actors, have roughly the same numbers of connections, whereas in scale-free networks, some actors with many connections act as hubs for actors with fewer connections. Watts (2003) studied networks' influences on decision-making processes, finding that as individuals humans look to others for almost all decisions. These concepts from both complexity and network theories can be considered as aspects of a student's decision to persist or depart (see far right of Figure 2), as well as the decisions the student makes throughout the transfer process.

Research Questions

This study explored the perspectives of higher education transfer students on 1) the transfer process between two-year and four-year institutions, 2) on-campus and off-campus social influences on their persistence, 3) specific technology tools and practices used during that process, and 4) organizational policies and practices that influence the process. The following four research questions formed the foundation for the study, with a last research question to tie them together during the data analysis phase:

1.   What are higher education transfer students' perceptions about the overall process over time as they go through a phase transition that begins when they enter a two-year institution for the first time, continues after they transfer between higher education institutions, and ends when they achieve their academic goal(s)?

2.   When considering higher education transfer students as complex adaptive entities within multiple higher education environments, to what extent do these students perceive that their transfer-related experiences are influenced by their social networks?

3.   When considering higher education transfer students as complex adaptive entities within multiple higher education environments, to what extent do these students perceive that their transfer-related experiences are influenced by the use of technology during the transfer process?

4.   When considering higher education transfer students as complex adaptive entities within multiple higher education environments, to what extent do these students perceive that their transfer-related experiences are influenced by contextual factors, such as by annual enrollment sizes, budget fluctuations, and the technology capabilities at each campus?

5.   When analyzing the qualitative data collected during the study, what are the relationships among the responses addressing the four research questions related to higher education transfer students' perceptions of the transfer process, their social networks, the use of technology, and organizational context?

Definition of Terms

The terms defined below are organized into two categories. The first category contains higher education and transfer terms, including terms related to student departure

theory. The second category contains terms related to complexity theory and social network theory.

Higher Education and Transfer Terms

- Departure: Leaving a two-year or four-year institution without reaching the desired goal, such as obtaining a certificate or degree.

- Goal commitment: The degree to which a higher education transfer student is dedicated to achieving academic objectives, such as getting a certificate or degree.

- Higher education transfer student: Someone who begins his or her higher education pathway at a two-year institution, and applies and moves to another two-year institution or a four-year institution in order to obtain a certificate or degree.

- Historically underrepresented ethnicity populations: Racial and ethnic populations that have been underrepresented over time in higher education and in completing higher education transfers relative to their numbers in the general population. One year after the California Community College Transfer Center project began, the California State Postsecondary Education Commission (1989, p. 11) identified African-American and Hispanic students as being underrepresented ethnicity groups within the group of all California higher education transfer students. In 1994, African-Americans, Hispanic and Mexican-Americans, and Native Americans (i.e., American Indians, Alaska Natives, and Native Hawaiians) continued to have much lower transfer rates than other ethnicity groups (California Community College Chancellor's Office, 2002).

- Institutional commitment: The degree to which a higher education transfer student is dedicated to achieving academic objectives at a specific two-year or four-year institution.

- Lateral transfer: A transfer from a two-year institution to another two-year institution, or a transfer from a four-year institution to another four-year institution.

- Native student: Someone admitted to a four-year institution as a freshman.

- Persistence: Remaining at one or more higher education institutions until reaching the desired goal, such as obtaining a certificate or degree.

- Reverse transfer: A transfer from a four-year institution to a two-year institution.

- Transfer process: A phase transition that begins when students enter a two-year institution for the first time, continues as they transfer between institutions of higher education, and ends when they achieve their academic goal(s).

- Vertical transfer: A transfer from a two-year institution to a four-year institution.

Complexity and Network Theory Terms

- Attractor: A state of a system that reoccurs over time, that is, a pattern of attraction that occurs over time. As higher education transfer students go through different transitions over time, they can sometimes see patterns related to how they make choices about departure, persistence, or how to achieve academic goals. Different types of attractors describe different patterns:
  - *Point attractors* are linear patterns that show a person always returning to the same person, place or thing. For example, a higher education transfer student

who follows a friend as the friend moves from campus to campus has a point

attractor pattern.

- o *Pendulum attractors* are linear patterns that show a person swinging back and

  forth between two people, places or things. For example, a higher education

  transfer student who goes back and forth between working for money and

  attending classes at a two-year or four-year institution has a pendulum

  attractor pattern.

- o *Torus attractors* are linear patterns that show a person moving around in a

  circle. They seem to be moving in different directions, but they always end up

  in the same place at the end. The pattern is often described as a bagel or donut,

  where similar actions are at the center (near the hole) and different actions are

  at the outside edge.

- o *Strange attractors* are nonlinear patterns that form unique shapes or fractals.

  For higher education transfer students, strange attractors show that it is

  possible to break out of our linear patterns (such as point, pendulum or torus

  attractors).

- Centrality, or Prominence: The extent to which an individual can influence others

  within a given network. This study investigated the extent to which people

  described as network connections by higher education transfer students were

  perceived to influence those students' decisions about departure or persistence,

  and about how to reach their academic goals.

- Connectedness: The extent to which a node has ties (connections) to other nodes,

  measured by the number of ties. In this study, connectedness was defined as the

extent to which a higher education transfer student (or one of his or her friends, classmates, etc.) had ties to other people, such as counselors, teachers, friends, classmates, etc., who influenced his or her decisions at a two-year or four-year institution.

- Fractal: An entity or object for which, when broken into parts, its parts appear similar to the whole object at any scale or level of magnification. This study looked at the fractality of higher education transfer students within their social networks, namely how similar those students' decisions and experiences appeared to the collective decisions and experiences of people within their network(s). Additionally, this study looked at the fractality of the people within units frequented by higher education transfer students, and the units themselves within the two-year and four-year institutions. Figure 3 depicts a popular fractal image, which is generated mathematically using the Mandelbrot set, or "a set of points in the complex plane, the boundary of which forms a fractal" (Wikipedia, 2004).
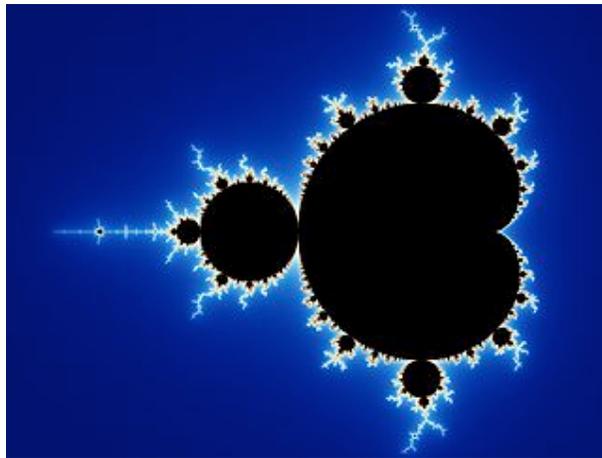
Figure 3. Fractal image of a Mandelbrot set

(Created by Wolfgang Beyer, Licensed under Creative Commons Attribution ShareAlike 2.5, Attribution ShareAlike 2.0 and Attribution ShareAlike 1.0)

- Network: A system of nodes and ties. This study looked at how higher education transfer students used people and their various connections to gain information about the transfer process or to achieve their academic goals.

- Network size: A measurement of the number of nodes and ties. This study investigated the number of people described by the higher education transfer students who participated in the interviews, and how those people were connected at the time of this study.

- Node, or Actor: A point, in this case a person, within a network. In this study, nodes were used to describe higher education transfer students, as well as their family members, friends, teachers, counselors, classmates, co-workers.

- Phase transition: A period during which a system moves from a state of disorder to a state of order, or vice versa. In this study, this term was used to describe the period during which higher education transfer students go through the transfer process.

- Sensitive dependence on initial conditions: Even though elements within a system may appear to be identical, differences in conditions at the beginning of a particular timeline will lead to different results. Initial conditions for a higher education transfer student may include family background, such as his or her ethnicity or parents' level of education; skills and abilities; or prior schooling.

- Strong ties: Connections between individuals that know each other well, or relationships that qualified as the friendships of higher education transfer students who participated in this study.

- Ties: Connections, paths, or links between people or actors. For this study, ties were defined by how the higher education transfer students were related to the people they described at the time of this study.

- Weak ties: Connections between individuals that do not know each other well, or relationships that qualified as the acquaintances of the higher education transfer students who participated in this study.

Significance of the Study

This study has significance for researchers, campus leaders, and state policy makers. Previous researchers (Laanan, 2001) have called for research about transfer students' experiences, rather than focus on academic performance or comparisons to native students. In the literature review for this study, there was little research about student perceptions about the transfer process itself and even less about the use of technology to support transfer students. This study addressed this gap by adding new knowledge based on the data collected from interview questions related to student perceptions.

This study created a better picture of the transfer process, as seen from community college and university students' perspectives. Specifically, this picture was framed by the combination of theories as depicted in Figure 2. The goal of this research was to help identify potential solutions to a dilemma in higher education in California and the nation. This problem of poor degree completion rates will only get worse as the state reaches the peak of Tidal Wave II in 2010 or 2011. There will be more students competing for spots on already crowded campuses. This study gives campuses strategies to help students successfully reach their academic goals in a reasonable amount of time.

The California State University (CSU) system has been implementing a three-part plan to improve degree completion, one of which revolves around transfer students. While state colleges such as the CSU campuses accept more transfer students than the elite universities, there are still additional barriers for them as they move toward graduation. Shulock and Moore (2007) cited policy barriers as one key impediment to degree completion. This research has implications for potential policy changes that will reduce these barriers.

CHAPTER II: REVIEW OF LITERATURE

This chapter contains four sections that reflect the research question groups and conceptual framework for this descriptive study. To address the first set of research questions about the transfer process, the first literature review section discusses campus support mechanisms for transfer students, reviews inter-institutional collaborations related to transfer, and evaluates transfer student perceptions about the transfer process. To address the second set of research questions about social integration, the second literature review section examines theories of student departure and social networks as the conceptual framework through which this study's qualitative data will be analyzed. To address the third set of research questions about technology tools and practices, the third literature review section outlines the role of technology in the transfer process and evaluates transfer student perceptions about the role of technology. To address the fourth set of research questions about organizational policies and practices, the fourth literature review section identifies several contextual factors that influence how campuses support students in the transfer process.

The Transfer Process

Transfer Student Support Programs

Many studies and reports recognize that transfer students face an uphill struggle throughout their academic experience (e.g., The Academic Senate for the California Community College, 1996; Shulock and Moore, 2004, 2007; Adelman, 1982). As compared to research about support for traditional students, though, very little research exists about how two-year and four-year campuses support transfer students. Further, this previous literature generally focused on short-term experiences such as orientation

programs. Due to the variety of support offerings, the studies in this subsection have been grouped by which institution—two-year or four-year—provided the support.

Support at Two-Year Campuses

Tinto (1997) conducted a mixed method study about a coordinated studies program at Seattle Central Community College to determine whether or not students who go through community college in a cohort have stronger academic and social integration. With data from 517 questionnaires and 287 follow-up questionnaires from students in the program and students in a comparison group, Tinto found learning communities did help students by creating support networks for both academic and social issues. From this, Tinto concluded that his earlier model of student departure (1975, 1993) lacked depth because it looked at academic integration and social integration as separate issues to consider. Qualitative data analysis generated three main categories around creating peer support groups, bridging academic and social environments, and participating in knowledge construction. The analysis also showed that the social and academic aspects of student life are often meshed together in ways that cannot be isolated. Tinto's results supported the use of learning communities and collaborative pedagogical practices to bridge the social and academic arenas.

Hagedorn, Perrakis, and Maxwell (2002) analyzed data collected through the Transfer and Retention of Urban Community College Students (TRUCCS) Project, a three-year study of 5,000 community college students in Los Angeles. The authors identified several best practices—"ten commandments"—that community colleges performed to help students persist and reach their academic goals. They found that campuses provide academic integration support through encouraging faculty-student

interaction, hiring faculty who are discipline experts, and providing student study support. They pointed to transfer centers and career days as methods to help students maintain academic goal commitment. They stated that campuses helped students deal with external influences through financial aid, flexible course times and offerings, access to technology, convenient campus locations, work-study programs. Only tangentially did they address social integration issues; the work-study programs help students by keeping them on campus for longer periods of time.

Support at Four-Year Campuses

Britt and Hirt (1999) conducted a qualitative study by conducting focus groups with twenty-five students who had transferred to a four-year university in the spring semester and fourteen administrators and staff members from two of the universities to which they transferred. The researchers categorized comments and key words from the focus group sessions into themes and sub-themes and placed the participants' beliefs about those themes on a scale (impede-no effect-promote). Eighteen percent of the key words fell within the social theme, which contained sub-themes akin to social integration concepts from Tinto's (1993) model of student departure. In all three sub-themes, the most words were placed on the "impede" end of the belief scale (involvement: 249 of 320 key words; making friends: 1,661 of 2,642 key words; and social atmosphere: 242 of 665 key words), meaning that the institution impeded social integration.

In a descriptive research study, Julian (2001) examined programs and services for reentering, transferring, and non-traditional students. His survey-based research focused specifically on programs that were more student-centered than institution-centered. He sent a questionnaire to sixty-one student affairs professionals, comprised of one staff

member identified by the provost at each of the campuses in the Association of American Universities (AAU). Julian adapted a survey instrument from the National Resource Center for the First-Year Experience for this quantitative methodology. He found that services on most of the campuses (80%) did not extend beyond the introductory level, such as orientations, leaving non-traditional students to self-development strategies. Moreover, those introductory activities received only low to moderate support (86.7%) and were not well attended. Julian showed that the first-year programs marginally increased students' persistence to a second semester (9.5%) or graduation (9.5%), but he did not further break down the numbers to identify transfer students within the results.

As part of her qualitative investigation of the non-traditional transfer student experience, Monroe (2006) found that the higher education transfer student she interviewed was often not told about policies about them or that affect them specifically. Her case study interview participant described family issues, fears about academic performance in relation to graduate school goals, lack of information, and unmet expectations as reasons for leaving her campus before graduation. Monroe also identified non-traditional transfer students with customers, associating a need for customer service models that would treat the students accordingly. She found that transfer students did not feel prepared to enter the university.

Austin (2007) conducted qualitative research to look at elements that enhanced non-traditional, female students' success in transferring between two-year and four-year educational institutions. These elements included financial, academic, and social support funded by a corporate-sponsored, partial scholarship program at a university. The program included an orientation, but did not stop there. It also included monthly

presentation sessions, as well as academic and support services. Her mixed method study collected data from a variety of stakeholders—interviews with seven of the nine students and the two program administrators, and surveys of the two mentor faculty members and one mentor staff member assigned to each student. Through her analysis of the qualitative data, Austin found that providing such an ongoing, holistic support package is one way to increase persistence for non-traditional, female transfer students.

Flaga (2002) provided an example of what this holistic support package might resemble. She conducted two sets of interviews with thirty transfer students after their first and second semesters at Michigan State University. After analyzing the qualitative data, she recommended that the university address needs related to academic, social, and physical settings. She advised four-year campuses to involve transfer students as members of the campus community sooner and address those students' needs to adapt to a more decentralized support environment than community colleges generally provide. Flaga identified transfer orientation seminar courses as one method the university campuses might use to provide adaptation support. Moreover, this course might even be offered to students while they are still at the community college, so that they could get exposure to the university environment earlier than usual. She suggested that university campuses use peer mentor programs to encourage transfer students to engage in activities and to provide avenues for them to create peer networks.

Gumm (2006) investigated transfer students' experiences during their first semester at three different Christian universities in Texas. He used survey-based research to look at 348, almost 60%, of all 603 new transfer students' persistence based on academic, social, and commitment-based factors. He found that transfer students were not

as different from the native students as was originally thought. The researcher found that the variable of social integration was highly successful in predicting students' decisions to remain in school (99.1% correct). Conversely, the same variable was not as accurate in predicting students choosing to leave (16.7% correct). The research showed similar predictive accuracy for the variable of the students' commitment to their academic goals and the institution itself (99.7% correct for predicting persisters, 27.8% correct for predicting non-persisters).

Inter-institutional Collaborations Related to Transfer

Beyond the California Community College Transfer Center Project reports (California Community Colleges Transfer Center Directors, 1988; California Community College Chancellor's Office, 2002), a small number of research articles described in this section investigated inter-institutional partnerships to support transfer students (Kearney, Townsend, and Kearney, 1995; Balzer, 2006; Kisker, 2007). Rhine, Milligan, and Nelson (2000) performed a review of literature about transfer shock from which they extract suggestions and implications for two-year and four-year institutions to follow separately and together in supporting transfer students. In their review they described strategies that would help to improve student retention. Notable among these strategies was a social integration strategy, a mentor-mentee program that would pair new transfer students with university students.

Kearney, Townsend, and Kearney (1995) used a survey research design to map a wide range of multi-institution transfer pathways to a large, public, urban, Midwestern university. For this study, the researchers define "multiple-transfer students" as students who transferred two or more times before attending the four-year institution being

studied. The researchers randomly selected half of the total undergraduate, multiple-transfer student population (453 out of 906 students) to participate in the study. The research questions aimed to identify both demographic and academic student background characteristics, to establish transfer patterns, and to get students' reasons for leaving and choosing campuses. The secondary and survey-generated background data included information related to ethnicity, age, gender, enrollment status, grade level at the time of transfer, curriculum emphasis, and grade point average (GPA). The research results showed that there are four common multiple-transfer paths—$4 > 2 > 4$, $2 > 4 > 4$, $2 > 2 > 4$, and $4 > 4 > 4$—leading to the subject institution, accounting for 83% of the random sample. The researchers identified some unique student characteristics for the majority within each pathway. Uniformly across all of the groups, though, multiple-transfer students were not likely to have a quality educational experience.

Balzer (2006) investigated a degree partnership program between a two-year college and a four-year university in Oregon by collecting interview data from six students in the program. She found that the program created a seamless experience for students to go back and forth between institutions by allowing students to test out the university, to take university classes while still at the community college, and to take college classes to save money while at the university. The students' perceptions themselves will be discussed in the next subsection, "Student Perceptions of the Transfer Process."

Only Kisker (2007) examined how colleges and universities make and maintain the transfer partnerships between institutions. She conducted a qualitative study of thirteen individual interviews with upper and mid-level administrators, and faculty from

three community colleges, as well as partnership administrators. The study included research questions about the processes for and factors that influence creating institutional partnerships, as well as the importance of transfer partnerships themselves. Her research found that the partnerships allowed students to see transfer possibilities they may not have considered, while faculty at both two-year and four-year partner institutions played a key role in advising students about the transfer process itself. Additionally, community college faculty had mixed feelings about the university trying to speed up the transfer process.

<center>*Student Perceptions of the Transfer Process*</center>

In addition to studying inter-institutional collaboration, Balzer (2006) collected transfer students' narrative stories about their experiences. The six participants provided a range of backgrounds with respect to eight demographic categories, ranging from gender and age to educational background and living situation. She identified five overlapping phases of the student experience that may provide some solutions to campuses without degree partnerships. "The five phases include 1) identifying as a degree partnership program student, 2) gaining momentum at the community college, 3) testing out the university, 4) moving between two institutions, and 5) settling into the university" (Balzer, p. i). Balzer found that despite having different academic and personal backgrounds, the students had comparable needs during these phases of the transfer process. Possibly due to the nature of the degree partnership program, not one of the students described having difficulties academically. However, with respect to social integration the students identified a lack of any school-sponsored structure that would

allow students in the program to support one another, starting before leaving the community college and continuing through their time at the university.

Through a study that used a mixed data collection approach, Cameron (2005) explored a program for transfer nursing students in Ontario, Canada. She focused on the students' experiences as they went through the process. The quantitative data showed that the students split evenly between the perceived ease or difficulty of the transition (mean = 3.75 on a 7-point scale). The students did not find that the program designed to help them transfer made the process any easier, despite a collaborative curriculum. Even though Cameron's approach emphasized student perceptions, the theme of this literature review section, some of her findings were similar to Gumm's (2006) findings about commitment as a strong predictor of persistence. Namely, she found that the students' commitment to their nursing degree goals to be one of the strongest driving factors that influenced them to keep with it through the high stress levels.

Green (2001) conducted a qualitative study with seven total students in their first semester after transfer to a mid-sized (13,000 students), private university. The male and female participants decried social and classroom cliques, and outlined disappointment in not immediately finding a fit in the four-year environment. They experienced trouble maintaining the same level of academic performance as they had at the community college, a common element of Green's main topic—transfer shock. They also reported negative feedback about their choice to attend community colleges from a wide variety of people in their lives. Despite these reactions from peers, family, and others, they stated that the community college provided a safe environment to set academic goals and make life choices.

In similar research about transfer students at Michigan State University, Flaga (2002) interviewed thirty students twice in their first year after arrival. The students provided a more positive picture of the transfer process than those in Green's study. The students claimed that they rated native student friends the highest as a resource to acclimate to three different environments—academic, social, and physical—of the university. They reported that campus activities were an important mechanism for connecting to the university itself. They advised future transfer students to live on campus or to live with other students in order to provide additional opportunities to join the campus community. When they spoke of the two-year and four-year schools, they felt that the two types of institution should increase communication between their advisors. This was especially important as a way to improve the accuracy and amount of information that was given to the transfer students by community college advisors. Based on feedback from the students, Flaga pointed out that meeting an advisor at the community college could reduce the number of issues related to transfer credits and choosing a major.

Summary of Literature about the Transfer Process

Support programs at two-year campuses (Tinto, 1997) and studies of successful two-year campuses (Hagedorn, Perrakis, and Maxwell, 2002) showed that combining support for both social and academic integration is effective. These practices were not widespread. Once transfer students got to four-year universities, they received only basic or introductory support (Julian, 2001). The very few programs that have lasted over time resulted in higher retention rates (Austin, 2007; Flaga, 2002). In some cases, students perceived that the university environment impedes their integration more than it promotes

it (Britt and Hirt, 1999; Monroe, 2006). Gumm (2006) confirmed Tinto's (1993) assertion that social integration is one of the best predictors of student departure.

Higher education transfer students face a wide variety of obstacles—academic, social, financial, environmental, personal, and institutional (Tinto, 1993). Most research about the transfer process looks at only one or two of these factors at a time, and that research is almost exclusively from the institutional point of view. Articles from this literature review provide evidence of successful collaborative efforts between different higher education institutions in supporting higher education transfer students via grant projects or funded programs that could be replicated elsewhere (e.g., Balzer, 2006). Tinto (1997) also described how individual community colleges can support higher education transfer students via cohort-based programs. Most of the research is limited to a specific time and place, which may account for differences in results. In three different qualitative studies, higher education transfer students reported varying degrees of academic difficulty, ranging from being very difficult (Monroe, 2006) to having significant difficulties (Green, 2001) to being challenging, but fair (Flaga, 2002).

Students' perceptions of the transfer process did not differ much across a wide range of demographic categories (Balzer, 2006). These students also had a common desire for more structured social integration support. Flaga (2002) confirmed this by finding that higher education transfer students valued native student support most highly due to their more extensive knowledge of the campus and greater numbers of network ties. There is inconclusive data about perceived ease or difficulty of academic integration support programs for higher education transfer students (Cameron, 2005; Green, 2001).

Green also found that family values as a background characteristic made departure decisions more difficult.

Additional Literature Related to the Theoretical Rationale for the Study

Several studies in the previous sections of this literature review described higher education transfer students as going through their academic experiences alone (e.g., Monroe, 2006). Others noted the importance of academic integration support, such as advising and mentoring, and social integration support, which includes peers, off-campus friends, and family (e.g., Flaga, 2002). Tinto (1993) described student departure as having a greater relationship to social integration. The review of additional literature related to the conceptual framework for the study has been broken into two sections. The first section looks at researchers who built on Tinto's works on student departure. The second section looks at three areas of literature about social networks: 1) social networks' influences on individuals, 2) social networks' influences on organizations, and 3) technology-enabled networks.

Additional Student Departure Research

As described in the Theoretical Rationale section in Chapter I, above, this study used Tinto's (1993) revised theory of student departure as the foundation for its research. In an effort to move from a descriptive model of student departure (Spady, 1970), Tinto (1975) first generated his theory as a prescriptive tool for institutions of higher education to determine which students were at risk to drop out. Although he differed from Spady (1970, 1971) in the purpose for his model, he followed Spady's example in that he based his theory on Durkheim's (1897/1997) theory of suicide due to its focus on how people voluntarily leave a community. Tinto viewed institutions of higher education as smaller

scale social systems from which most dropouts leave voluntarily as well. Tinto's revised model includes the influences that external commitments and external forces have on students' decisions to persist or depart. Many studies in the past twenty-five years have drawn on Tinto's theories to research specific populations (e.g., Pascarella & Chapman, 1983; Liu & Liu, 1999; Elkins, Braxton, & James, 2000). Additional studies that drew from, contributed to, rebutted, or confirmed Tinto's theories are discussed elsewhere in this review of literature, based on each study's research topic and how it relates to this study (Antrobus, Dobbelaer, and Salzinger, 1988; Culbert, Good, and Lachenmeyer, 1988; Tinto, 1997; Morales, 2000; Green, 2001; Flaga, 2002; Huneke, 2002; Balzer, 2006; Gumm, 2006; Poindexter, 2007).

Pascarella and Chapman (1983) analyzed Student Involvement Questionnaire data collected from 2,326 freshmen and subsequent enrollment data about those students at eleven higher education institutions. In addition to being grouped together, the institutions were broken into three categories, 4-year residential campuses, and 4-year and 2-year commuter campuses. They showed that Tinto's (1975) model predicted a number of students' persistence and withdrawal decisions (with R^2 ranging from 13% to 17%, p < .01). Further, when they looked at the three categories they found that social integration and institutional commitment were bigger factors for residential campuses than commuter campuses.

Liu and Liu (1999) researched Tinto's theory of student departure within the context of a medium-sized, midwestern commuter campus. They used the probit procedure to analyze longitudinal data about a sample of 14,476 students to determine the individual effect of different demographic variables—gender, race, age, and year of

entry—on student tendencies to drop out. They found no significant difference of persistence related to gender (b=-.12270). They did find that students from historically underrepresented ethnicity populations departed more often (b=.35369), older students have a lower graduation rate (b=-.09072), and higher education transfer students persist more than native freshmen (b=1.94110) at that particular commuter campus.

Elkins, Braxton, & James (2000) conducted a longitudinal, quantitative study with 411 students at a public, four-year institution. They focused on Tinto's (1993) stage of separation, the period before and just at the beginning of a student's academic and social experiences at an institution. To analyze the data, they used the path analysis method. They obtained statistically reliable results showing that support for college attendance (beta = .28, p < .001) and student rejection of past attitudes and values (beta = .11, p < .001) both influence persistence from the first to the second semester. The study also showed that students from historically underrepresented ethnicity populations receive less support, which confirmed Tinto's (1993) findings that those students may have more difficulty with the separation stage.

Liu (2002) conducted a methodological critique of path analysis research performed using Tinto's theories of student departure. Based on his results, he found a range of issues to address or that other theorists had addressed. These issues include Tinto's lack of operational definitions later remedied by Pascarella and Terenzini (1979), the large number of variables to include in calculations, and later researchers' use of path analysis despite Tinto's recommendations against that technique due to the dichotomous nature of departure as a dependent variable. Regarding Tinto's theory itself, he specifically questioned Tinto's use of Durkheim's interpretation of integration as one of

the four elements to consider when predicting departure. Liu did so because the data from his study and others showed that, in some cases, what positively influenced integration for white students also negatively influenced integration for non-white students. Students' cultural differences made it highly unlikely to determine a standard pathway to integration in either academic or social environments.

<div align="center">Social Network Research</div>

Social Networks' Influences on Individuals

In an early work about social network analysis, Granovetter (1973) evaluated several sociological studies and explained that "weak ties" were more important than "strong ties" when making connections between separate groups. Granovetter (1982) later reviewed additional studies to refine his argument. Weak ties were more likely to act as a bridge between different dense network clusters, but the majority of such weak ties may have played no role at all.

Robbins and Tanck (1995) conducted a survey-based study of eighty-four students at George Washington University to determine the sources of social support that people seek when under stress. The majority (95%) used friends, family, and other informal sources more frequently than therapists, counselors, and other formal sources to deal with stress. 60% of the students also found the informal social sources to be more helpful as they worked through the stress.

The higher education transfer students to whom Flaga (2002) spoke reinforced this research by claiming that they found informal learning resources, such as native student friends, to be the most crucial resources for their success. In her qualitative research with thirty students at Michigan State University, she attempted to determine the

validity of Tinto's model for higher education transfer students as opposed to freshmen, for whom it had been developed. She found that students used both formal and informal means both to get academic support, such as learning resources, and to get involved socially.

Antrobus, Dobbelaer, and Salzinger (1988), and Culbert, Good, and Lachenmeyer (1988) conducted two different studies regarding the social networks of college students and their influence on students' success. In the first of these studies, Antrobus, Dobbelaer, and Salzinger collected quantitative data from 125 students to determine any correlations between a student's network and his or her Grade Point Average. One of their goals was to address concerns about bias in Tinto's (1975) original study by collecting information about students' social networks and academic performance independently of one other. They concluded that students who had large social networks performed well academically. The authors surmised that the connections that were not close friends—i.e., Granovetter's weak ties—played an important role in those students' success. In the second study, Culbert, Good, and Lachenmeyer studied the social networks of two waves, or cohorts, of students who commute. Dropout students had the most friends on campus, or many strong ties, but had the lowest grades and the fewest work hours. Transfer students—who had the highest grades despite working the most hours—were characterized as having the fewest friends on campus and the greatest number of friends off campus.

In some ways, higher education transfer students take on the characteristics of, or at least ally themselves with, people described as "connectors" by Barabási (2002). As the name implies, connectors are adept at interacting with people and joining networks.

As connectors become affiliated with more diverse groups of people, their abilities to find information or to solve problems increases dramatically. Connectors sometimes rely on those who have access to great amounts of data about specific topics, for information. Within the context of transfer between higher education institutions, undergraduate advisors act as mavens and, in some cases, as connectors to assist students as they chart a path between two or more campuses. Flaga (2002) recommended that community college advisors should be both connectors and well-informed resources for students. She suggested that those advisors seek to increase the number of their connections to university advisors and update their knowledge of university programs to improve the experience for transfer students.

Watts (2003) looked at the social aspects involved in an individual's capacity to make decisions. He drew his findings from his own previous studies, including research topics related to the spread of diseases and ideas (e.g., Internet start-up and other financial investments). One notable study tested theories about network tie strength and connectivity with fairly diverse data sets, such as Hollywood actors' film collaborations and United States electrical power grid networks (Watts & Strogatz, 1998). Watts found that we, as humans, look to one another when we lack information or models of working, and sometimes even when we have the information we need.

Manev and Stevenson (2001) investigated the relationship between the use of communication to span network boundaries and the position that individuals have within network. They found a correlation between boundary spanning and influence that also applies to the stakeholders who play a role in the transfer process. For the most part, those helping the higher education transfer students should help those students to strike a

balance in their work and communication with both the community college and the university. While there will be periods of time when that communication will be weighted toward one institution or another, suggestions such as engaging in transfer orientation courses while still at the community college (Flaga, 2002) support their conclusions.

Social Networks' Influences on Organizations

At the organizational level, Hite (2003) might characterize students' transitions from community colleges to universities as academic or organizational transactions. She conducted case study research about relationally-embedded network ties as they relate to an entrepreneurial firm's abilities to compete economically. This research can be applied to the academic setting. Her work was founded in part on Granovetter's (1985) discussion of the influence that embedded networks of interpersonal relations have on the behavior of organizations. He called for future research to investigate personal relationship patterns that lead to economic transactions, but in his discussion he stated that his argument applies to all behavior, not just economic. Returning to the transfer process, this study looked at interpersonal relationship patterns that support academic transactions, or student transfers.

In her study about creating and maintaining transfer partnerships, Kisker (2007) also viewed the issue through the lens of network embeddedness theory. Gulati (1998) extracted new concepts from previously conducted research about strategic alliances, which provided Kisker with some of her key points about network embeddedness. Foremost amongst these concepts was the shift in perspective, from dyadic to network, when researching how organizations work together. He brought social network theory

into the analysis of interactions between organizations in order to understand how alliances formed. As a result, Kisker suggested that community college faculty members play a key role in structuring transfer partnership relationships due to their position between two clusters of actors—students and administrators—within a campus network.

Technology-Enabled Networks

Technology enables people to interact with one another in different ways to support higher education transfer students who lead complex lives. Interactions occur synchronously, wherein the interactions take place in real time, and asynchronously, wherein the interactions take place over time. These interactions may take place with everyone in the same location, while some or all of the parties may participate over distance. Wellman et al. (1996) and Wellman (2001) described how computer networks allow for the creation of social networks and virtual communities. Wellman et al. (1996) used publicly available data and network-related research to describe the then phenomena of computer-mediated communication (CMC) and computer-supported social networks (CSSNs). They found that people sought CSSNs to create a sense of community that was missing in their face-to-face lives, to work cooperatively with others, and to manage complex work tasks. These three concepts can be applied to Tinto's (1993) concepts of academic and social integration. Using data from an Internet-based, *National Geographic* survey with over 300 respondents, Wellman (2001) focused on the use of technology-based social networks for access to knowledge and community creation.

Wellman et al. (2003) describe a shift toward personal communities, wherein each individual is a central point of contact or connectivity. By reviewing the results from several surveys, they studied connectivity at the local and global levels. They found that

networked society has become more open as a system, people are interacting with more diverse populations than before and switching between different networks, and former hierarchical barriers are disappearing. In essence, technology now enables students to act like connectors (Barabási, 2002), even if only for short periods of time.

Engelbart (1992) described an organization's capability infrastructure as both human-based and tool-based. Based on his research, he developed a process called CODIAK, or COncurrent Development, Integration, and Application of Knowledge. Throughout the process, interconnected participants in his study collectively engaged in dialogue, gathered information, and produced knowledge artifacts. He created an open system for sharing and linking documents, communicating synchronously and asynchronously through print or audio-visual means, and controlling access or permission to each piece of information. This tool-based open system had an intuitive interface for effective presentation, while the human-based side of the system included a communally-developed vocabulary. Brown (2002) and Wolfson (1996) defined different aspects of electronic portfolios that resemble Engelbart's open system in almost every way.

Jordan, Hauser, and Foster (2003) investigated whether or not the next generation of the Internet and its applications, or an augmented social network, can be used to connect people more efficiently for their individual and collective goals. Their interpretation of identity was limited in that it called for a persistent online identity. In reality people have many selves that enable them to function within their complex lives. However, they identified technology-enhanced experiences, such as improving people's abilities to share knowledge and form relationships, that would enable higher education transfer students to overcome many of the barriers that they currently face.

Summary of Additional Literature Related to the Theoretical Rationale

Many studies have drawn on Tinto's (1975, 1993) theories to study persistence of particular populations in higher education settings. Tinto's models proved successful in predicting persistence in some cases or at specific institutions (Pascarella & Chapman, 1983; Liu & Liu, 1999). These subsequent studies also identified factors that influence persistence, such as support for college attendance and student rejection of past attitudes and values (Elkins, Braxton, & James, 2000). In some cases, these subsequent studies were done to critique Tinto's theories and techniques for analyzing data (Liu, 2002).

Additional studies about social networks addressed those networks' influences on individuals and organizations. Some of these studies found that students used strong-tie connections, such as family and friends, more frequently than weak-tie connections, such as therapists or counselors, to deal with stress (Robbins and Tanck, 1995), and as resources for success (Flaga, 2002). These studies also found that weak tie connections were more valuable with respect to academic achievement (Antrobus, Dobbelaer, & Salzinger, 1988) and that transfer students often had more friends off campus than on campus (Culbert, Good, & Lachenmeyer, 1988). Flaga (2002) recommended that, in addition to the students themselves, community college advisors should increase the number of network connections at other institutions of higher education to better support students. Manev and Stevenson (2001) found a correlation between spanning network boundaries that are often organizationally defined and influence.

With respect to network influences on organizations, Kisker (2007) found that community college faculty members play an important role as network bridges between students and administrators. Regarding the use of technology for network purposes,

different studies described how computer networks were used to create social networks

and virtual communities (Wellman et al., 1996; Wellman, 2001). Another study found

that people interact with more diverse populations as networked society becomes more

open (Wellman et al., 2003). Based on his research, Engelbart (1992) created a process to

collectively solve problems and share knowledge. Jordan, Hauser, and Foster (2003)

studied augmented social networks and found that technology-enhanced experiences

helped people share information and form relationships.

Technology Use in Higher Education

The Role of Technology in the Transfer Process

Within the context that the transfer process spans the entire time that a student

works toward his or her academic goals, counselors, faculty, and students can use several

technology solutions to guide students and to provide a way for students to keep track of

where they are on their path. Tools like electronic portfolios, described below, provide

assessment, self-assessment, and advising opportunities at multiple levels. In some cases,

the tools themselves require augmentation through policies or processes. The subsections

below describe technology tools and uses that fit within context-specific frameworks, or

perceptions about technology use, ranging from the high-level viewpoint of staff at state-

wide agencies to the ground-level viewpoint of individual students or advisors.

High-Level Viewpoint: Use of Technology by State Agency Personnel

In a national study using data analysis, questionnaires, and telephone interviews,

Welsh and Kjorlien (2001) addressed state higher education agencies' use of database

technology to track and study higher education transfer students in the fifty United States

and Puerto Rico. Forty-four of the fifty-one agencies (86.3%) have a database system to

track transfer student information. However, they found that over half of the agencies do not use the information systems to support students in their efforts to transfer, nor do they evaluate the effectiveness of the information systems themselves. 32% of the agencies stated that their primary reason for having the system involved using the data to create policies to enhance inter-institutional transfer. In a small number of states, staff members used data from these systems to propose changes to transfer and articulation agreements and to support seeking additional funds for transfer purposes. With these high level recommendations, the staff members felt that the effects would work their way down to the students, but there is no evidence to support these beliefs.

Mid-Level Viewpoint: Use of Technology by Two- and Four-Year Campus Administrators

Shulock and Moore (2007) conducted analytical research of demographic, course enrollment, degree and certificate achievement, and transfer data regarding the California community college student cohort starting in academic year 1999-2000. They found that only sixty percent of the students had a degree or certificate goal, and that only fifteen percent of the total received a two-year degree or transferred by 2006, or within six years. In addition to providing academic integration policy and funding solutions, they suggested improving how advisors and faculty members evaluate transfer students' readiness for college and how higher education transfer students chart their own path throughout their experience.

In a case study about assessing students' prior learning, Wolfson (1996) conducted an investigation at the University College of the Fraser Valley (UCFV) in British Columbia, Canada. To collect data she used surveys and interviews with faculty and administrators, and performed content analysis. She recommended more faculty

development around portfolio-assisted assessment and prior learning assessment for

purposes that include articulation. These mechanisms would allow students to

demonstrate skills and knowledge from co-curricular activities, such as internships or

work experience. In some cases, students could challenge the need to take a specific

course if they already had the skills or knowledge taught within it. Wolfson found that

only 38.1% granted some form of prior learning credit, and only 22.9% of all 118 UCFV

participants considered transfer credit when assessing prior learning.

Ground-Level Viewpoint: Use of Technology by Students, Counselors, and Faculty

Web-based or electronic advising tools comprise another set of technology

options to allow multiple-party interaction with and about higher education transfer

students at the ground level. Within the context of Tinto's (1993) model of student

departure, these tools provide additional avenues for campuses to help students retain and

focus their academic goal commitment, and to address academic integration issues.

Gregory, Heinze, Bagert, and Mengel (2002) provided a case study of E-COACH, a set

of advising tools built originally for engineering students at Texas Tech University. The

study had the entire incoming freshmen engineering class, 200 high school sophomores,

and sixty seventh-graders use the tool. The researchers included an analysis of the tool's

effectiveness related to retaining students and matching intended major with career

interest. The authors pointed to the importance of tools like those within the E-COACH

suite for students who had not considered careers or who did not take courses that

correspond with their career goals. The tool provided additional academic integration

support in the form of web-based learning styles analysis.

In another example, Plotkowski, Sterian, and Ray (2003) authored a case study about positive changes produced by using a database management system and the Internet for advising engineering students at Grand Valley State University in Michigan. These changes represented an improvement in the faculty-student relationship aspect of academic integration. The system provided advisors and advisees with a one-page study plan that could be used for conversations about coursework. In 2003, advisors generated almost 700 study plans for advisees each semester. Faculty also proactively worked with students to prepare for admission to the engineering programs, producing positive results. There was no mention of how they supported higher education transfer students or if they supported them in the same way.

The Articulation System Stimulating Inter-institutional Student Transfer (ASSIST) is an online resource to which California counselors direct students. The database-driven Web site allows students to plan a transfer pathway from their California community colleges to any CSU or University of California (UC) campus. Taggart, Valenzuela, and Sragovicz (2000) conducted focus groups and surveys with sixty-nine students at three campuses to get their feedback about what worked and what did not work on the ASSIST site. All sixty-nine students identified transfer as part of their intention and goal commitment. The students found ASSIST helpful and fairly easy to use, but external, non-technological factors, such as differences in articulation agreement formats and omission of private and out-of-state campuses, created barriers.

Even though the technology exists, students may not access what they need by using it or it may be used inappropriately. Woolston (2002) used case studies to show that the use of curriculum flowcharts and technological support systems, both phone- and

web-based, did not improve student satisfaction with undergraduate advising in his

engineering department. Students wanted more personal interaction with their faculty

mentors. Plotkowski, Sterian, and Ray (2003) responded directly to Woolston's work in

their conference proceedings paper about using technology for advising. They noted that

advising can go beyond simply updating records if the student and advisor put the

engineering requirements into context and sequence with the other requirements for

graduation. This was a step in the right direction, but stopped before moving past a

requirements-driven approach toward including students' demonstration of competencies

or experience-based reflections.

Student Perceptions of Technology Use in Higher Education

Huneke (2002, p. 54) combined two quantitative surveys—the Loyd-Gressard

Computer Attitude Scale and an institutional integration survey—"to examine the

relationships among student attitudes towards computer use, social and academic

integration, and institutional commitment." Conducting the study at University of

California, Davis, he gave the survey to over 350 students living on the campus itself.

Two of the three variables had a positive relationship between student attitudes about

using computers and their institutional commitment: less anxiety about computer use (R^2

= .04, Beta = .26) and perception that computers were useful (R^2 = .02, Beta = .22). The

third variable, liking to use computers (R^2 = .02, Beta = -.30), had a negative relationship.

Variables related to the frequency of students' use of computer-mediated communication

generated no significant relationship information (p > .05).

After searching multiple journal databases, no other empirical, peer-reviewed

research articles could be found about student perceptions of technology use in higher

education. Only one non-research article covered the topic in any depth. Aviles, Phillips,

Rosenblatt, and Vargas (2005) participated in a student panel discussion from which their

beliefs about the use of technology for higher education were extracted. From their

discussion emerged a cross-section of student perceptions about how technology is used

to address academic and social integration issues for people of different generations. The

fifty-three-year-old, Baby Boomer participant described the potential of technologies like

Google Scholar to surpass traditional libraries in effectiveness for performing research. In

a related comment, a twenty-three-year-old, Millennial student demanded that reference

materials be put online to improve availability. Along those lines, the students stated that

instructors needed to provide more value in the classroom, considering that technology

could provide alternative methods to perform some basic classroom functions. More

pertinent to the transfer process, the twenty-six-year-old, Generation X participant

applauded online services that allowed her to get advice from other students about

courses she wanted to take. That same student felt that technology could both support

peer-to-peer and instructor-to-student interactions.

Summary of Literature about Technology Use in Higher Education

Technology is used in different ways and at different levels to support the transfer

process. At a high level, state agencies use databases to track trends and student

information (Welsh and Kjorlien, 2001). At the mid-level, campus administrators make

decisions about whether or not to accept technology-based evidence, such as electronic

portfolios, when admitting transfer students. At the ground level, students, faculty and

counselors use technology to communicate, advise, and plan students course loads for

articulation (Taggart, Valenzuela, and Sragovicz, 2000; Woolston, 2002; Plotkowski, Sterian, and Ray, 2003; Gregory, Heinze, Bagert, and Mengel, 2002).

With limited information about the use of technology to help students through the transfer process, one currently may only draw inferences from articles about related topics, such as first-year orientations for freshmen (e.g., Gumm, 2006; Green, 2001) or overall student persistence in higher education (e.g., Laanan, 2001). Many of the technology solutions designed to help higher education transfer students were used by specific, limited audiences and with varying degrees of effectiveness. Technology-based advising tools helped improve transfer rates, with most examples revolving around engineering programs. Very little is known about student perceptions of technology use, other than a cross-generational discussion of how a select few technology solutions support academic and social integration and how those solutions need to be used more by faculty.

Contextual Factors that Influence the Transfer Process

Enrollment Capacity

Shulock and Moore (2003) analyzed data from documents, web sites, and interviews of transfer experts and administrators from all three segments of California higher education. Namely, these three segments are the California Community Colleges, the California State University system, and the University of California system. After compiling the results, they questioned universities' capacity to admit enough transfer students. Shulock and Moore (2003, p. 2) define a statewide, institutional context for transfer through the Pipeline-Process-Capacity Model: "the supply of students intending to transfer, the success of the transfer function in preparing those students, and the ability

of receiving four-year institutions to accommodate those students." The proposed research will focus on this aspect of transfer process to acknowledge that a certain percentage of students do not have the opportunity to transfer, but will not address capacity issues. Two divisions within the California Community College Chancellor's Office gave a report to the California Legislature outlining transfer capacity and readiness within the California community college system (California Community College Chancellor's Office, 2002). These analyses of the California transfer situation pay little to no attention to the barriers that people themselves create within the higher education institutions.

Campus Attributes and Technology Capabilities

Through a mixed methods study at Sonoma State University, Morales (2000) conducted the Student Needs and Priorities Survey (SNAPS) with 247 higher education transfer students and 221 freshmen. She found that transfer students rated instructional and academic attributes higher than freshmen, either as the most important or as the greatest obstacle. The largest percentage, or thirty-eight percent (38%), of transfer students rated campus-related factors, such as availability of courses, instructors, or services, as the greatest obstacle compared to thirty-four percent (34%) of freshmen. Personal factors (19% transfer vs. 10% freshmen) and no obstacles (20% transfer vs. 29% freshmen) represented the biggest differences between the two groups' perceptions of the greatest obstacles to reaching academic goals. Morales got similar results to Tinto's (1993) research results showing that academic integration factors play a small role in dropout decisions, with only six percent (6%) of transfer students and fourteen percent (14%) of freshmen claiming educational factors like preparation as the biggest obstacle.

In follow up focus groups, Morales found that advising was inconsistent in the departments and that social integration was difficult with 91% of transfer students commuting to campus. She recommended that a program, similar to but less extensive than the one for freshmen, be created for new transfers.

Roberts (2004) conducted multiple surveys and focus groups to determine the influence of technology on students from the Net Generation—those born between 1981 and 1995, also called Generation Y—and their expectations of technology in learning environments. He found that his respondents did not limit their definition of technology to computers and the Internet. Technology was viewed as "any electronically based application or piece of equipment that meets a need for access to information or communication" (Roberts, para. 4). Customizability was another key aspect of technology for participants in his study. When asked about technology applied to learning, Roberts found that students valued instructor competence with technology as well as a balanced use of technology for learning in general. There was no discussion of student perceptions of campus technology capabilities.

Summary of Contextual Factors that Influence the Transfer Process

A number of organizational factors act as context-based influences on higher education transfer students' decisions and experiences. Campus enrollment limits, or the capacity of four-year institutions to admit students who wish to transfer, have the most potential to influence each student's ability to transfer. How potential transfer students rate an institution's academic and instructional attributes influences their decisions to transfer or not to transfer to those institutions. Other contextual factors that could

potentially influence transfer students' experiences include the budget and the technology capabilities of each campus.

Summary

With existing literature, it is possible to piece together a rough picture of what the transfer process entails, as well as contextual factors that present barriers to transfer. Contextual factors, when viewed as Tinto's (1993) external forces, may play a role in students' ability to pursue their academic goals and may have tangential influences on their decisions to persist. Although Tinto's model focused on all students, this study focused its investigation on transfer students and their perceptions of the influence that social integration has on their choice to persist during the transfer process.

In California, capacity issues present a real obstacle to transfer students who may want to enter a specific institution (Shulock and Moore, 2003; California Community College Chancellor's Office, 2002). Researchers and governmental agencies have studied the larger, institutional and policy-related issues for decades (e.g., California Community Colleges Transfer Center Directors, 1988). Annual reports create larger and larger data sets for statistical analysis (California State University Analytical Studies, Chancellor's Office, 2007). However, higher education students' perspectives about their own issues have only recently emerged as a topic of study (Green, 2001; Flaga, 2002; Cameron, 2005; Balzer, 2006). This study used a qualitative research methodology to add to the growing collection of higher education transfer students' perspectives to complement the statistics.

The theoreticians, statisticians, and the storytellers do have some common points to make. Tinto (1975, 1993) himself identified ethnicity as a predictive factor for student

departure within higher education. Statewide reports show that the California Transfer Centers were created to address this disparity (California Community Colleges Transfer Center Directors, 1988; Shulock & Moore, 2004). Recent quantitative researchers (Liu, 2002) and qualitative researchers (Monroe, 2006; Austin, 2007) have provided additional evidence that race or ethnicity can be a barrier to successful completion of a student's transfer-related phase transition. As a result, this study examined the experiences of students from historically underrepresented populations with respect to ethnicity as part of the research sample.

Other researchers supported Tinto's (1993) assertion that social integration is the key component in higher education students' decisions to persist or withdraw (e.g., Gumm, 2006). Morales (2000) also confirmed the role of social integration played in transfer students' departure decisions, but from a different vantage point. Transfer students who commuted found additional external factors that acted as obstacles to success. Tinto (1997) later found that social and academic integration are interrelated to the point where it is difficult to extract one from the other in studies. Tinto, Balzer (2006), and Hagedorn, Perrakis, and Maxwell (2002) highlighted programmatic successes at campuses that looked at all aspects of integration, not just social or academic integration. This study focused primarily on social integration issues in an attempt to build on the work by Morales, which is one of the few qualitative studies to look at transfer students in particular. However, very few articles (e.g., Flaga, 2002) addressed support strategies for transfer students that did not rely on special funding. For this reason, several interview questions addressed the interconnectedness between the social

and academic environments to find social or academic support structures that do not depend on funded programs (see Appendix A).

Most of the literature regarding transfer students was written before Internet-based technologies became such a big part of everyday life. Engelbart (1992) and Jordan, Hauser, and Foster (2003) investigated technology-enabled networks, but did so in non-educational settings. Only Huneke (2002) looked at transfer students' use of computer-mediated communication in connection, doing so through a quantitative study. Since technology-mediated communication is so prevalent today, this study also looked at the role of technology used by transfer students to obtain information (e.g., campus and articulation web sites) to interact with people who influence their decisions (e.g., social networking sites, mobile phones, e-mail, electronic portfolios). The qualitative nature of this study allowed the researcher to identify real and ideal technology uses to support students during the transfer process. An entire set of research questions, with related interview questions, was devoted to this topic.

Bean (1982) and Liu (2002) noted that Tinto's (1975) theory has many variables, causing problems with its use for predictive purposes. Moreover, there is agreement among Bean, Liu, and Tinto (1993) himself that Durkheim's (1897/1997) model of suicide provided an imperfect metaphor to describe student departure in higher education. Therefore, this study added two more theories, complexity science and social networking, to Tinto's theory of student departure when analyzing the data collected from higher education transfer students.

This review of literature influenced several aspects of this study. The sample of interview participants was limited to higher education transfer students and included

historically underrepresented populations with respect to ethnicity. The methodology was designed to collect the higher education transfer students' perspectives about social integration issues, as well as personal, institutional, technological, and external factors that may have influenced their decisions about departure or persistence. Finally, in order to create a holistic picture of the higher education transfer students' experience, the collected data was analyzed primarily through the lenses of complexity and network theories.

CHAPTER III: METHODOLOGY

Restatement of the Purpose

The purpose of this study was to explore higher education transfer student perspectives on the transfer process itself and the influence that social networks—people inside and outside the academic institutions—have on their persistence. As there have been dramatic changes in the role that technology plays in everyday activity, this study also investigated technology-specific influences on higher education transfer students' social integration at two-year and four-year campuses. Finally, this study researched the higher education organizations' contextual influence on higher education transfer students' decisions to stay or leave. This study used student departure theory, social network theory, and complexity theory to broaden the overall perspective of the issues and to describe the higher education transfer student experience from a holistic viewpoint.

The methodology section describes the proposed research design and the study participants. This section explains how the instruments relate to the research questions, as well as how they were tested for reliability and validity. This section closes by showing how I collected and analyzed the data.

Research Design

The study used a qualitative research design to collect data, primarily through interviews and analysis of documents and technology-based artifacts, such as web sites and electronic portfolios. Recognizing the importance of student perspectives, this study was designed to record twenty higher education transfer students' responses to interview questions about various aspects of their individual transfer-related phase transitions. This

study asked these higher education transfer students to describe and analyze their decisions during this phase transition and influences that come from their background and from external environments.

I sought to take the following steps to conduct this research: 1) seek permission to interview higher education transfer students (see Population and Sample, below, for process; see Appendix D for permission letters); 2) ask appropriate parties at higher education institutions to identify potential participants (see Population and Sample, below, for process); 3) collect transfer-related documents from each higher education institution to discuss with participants (see Instrumentation, below, for process); 4) contact the participants by phone or e-mail to set up the interviews and to provide participants with preliminary information (see Population and Sample, below, for participant details); 5) verify that each participant is eighteen years of age and obtain signed informed consent forms (see Appendix E); 6) conduct interviews with participants, during which transfer-related documents and technology-based artifacts will be discussed and fieldnotes will be written (see Appendix A for interview questions); 7) transcribe complete field notes and interviews, and analyze transfer-related documents and technology-based artifacts (see Appendix B for document analysis instrument); 8) conduct follow-up interviews with participants, if necessary; 9) review transcripts and recordings of participant interviews; and 10) code, analyze, and summarize the data. All steps were followed as planned, although the results were different than anticipated. One institution, California State University, East Bay, did not respond to requests for permission to conduct research and was removed from the study. Also, as there were no gaps in the transcripts, no follow-up interviews were necessary with any participants.

Population and Sample

The study used the purposeful sampling approach (Creswell, 2003; Patton, 2002) to obtain a research sample. The study originally had a target number of twenty total participants. I was able to obtain thirteen participants over an eight-month period. While quantitative studies often generate generalizable results by conducting research with a random sample, qualitative studies often use purposeful samples of "information-rich cases" to seek deeper understanding about key issues (Patton, 2002). Therefore, I asked undergraduate counselors and Student Affairs staff and administrators from two public two-year institutions and one public four-year institution in the San Francisco Bay Area to identify participants for this study. I asked these individuals to identify students who were preparing to transfer from, or who had transferred to, their higher education institutions as potential information-rich interview candidates.

I also sought to obtain a fifth group of four participants through social network web sites (e.g., Facebook) that contain affinity groups related to transfer. I intended to interview people from this population to identify characteristics of students who combine technology and social networks to seek information and support related to transfer. I asked higher education transfer students in Facebook to participate by joining the separate Facebook affinity groups for each higher education institution and posting invitations on each group page through both the discussion board and the communal weblog, or blog, tool called the "Wall." However, no students in the Facebook environment responded to my invitations to participate in this study.

Strategies for Protections of Human Subjects

Before conducting this research study, I obtained approval to perform the study from the institutional review board (IRB) at my degree-granting institution, University of San Francisco. I also sought to get approval from the universities at which I wanted to interview students: California State University (CSU) East Bay, and San Jose State University (see Appendix D for permission letters). I received IRB approval from San Jose State University. However, despite repeated attempts over six months of consistent communication by phone and e-mail with administrators and staff members at CSU East Bay, I did not receive a response from the designated administrator or approval during the interview period. The research was done with the approval of the appropriate Student Affairs administrator at each two-year institution that does not have an IRB process, City College of San Francisco and College of San Mateo (see Appendix D for permission letters). All the necessary protocols ensuring participant confidentiality were followed as prescribed by the IRB of each institution. Subject participation was voluntary. I verified that all higher education transfer students who participated were at least eighteen years old. Signed consent forms were obtained from all research participants prior to any interviews (see Appendix E for informed consent form). All participants have been given fabricated names to ensure anonymity. Pseudonyms of students from City College of San Francisco (CCSF) begin with "F," pseudonyms of students from College of San Mateo (CSM) begin with "M," and pseudonyms of students from San Jose State University (SJSU) begin with "J."

Participant Characteristics

California transfer centers began with the focus of helping historically underrepresented ethnicity populations (California Community Colleges Transfer Center Directors, 1988). These populations are comprised of racial and ethnic populations that have been underrepresented over time in higher education and in completing higher education transfers relative to their numbers in the general population. One year after the California Community College Transfer Center project began, the California State Postsecondary Education Commission (1989, p. 11) identified African-American and Hispanic students as being underrepresented ethnicity groups within the group of all California higher education transfer students. In 1994, African-Americans, Hispanic and Mexican-Americans, and Native Americans (i.e., American Indians, Alaska Natives, and Native Hawaiians) continued to have much lower transfer rates than other ethnicity groups (California Community College Chancellor's Office, 2002). Therefore, these three groups comprise the historically underrepresented ethnicity populations for this study.

Almost twenty years later, studies have shown that transfer rates are still the lowest for these same groups of students (Shulock & Moore, 2004, 2007). Specifically, Shulock and Moore (2007, p. 8) identified that "Black and Latino students have lower rates of completion than white and Asian students, due in large part to substantially lower rates of transfer to four-year institutions." Therefore, I asked the counselors, staff, and administrators to identify some of the interview participants from historically underrepresented ethnicity populations. A number of the participant characteristics from the final sample of thirteen are shown in Table 1 below, organized according to their home institution at the time of their interviews.

Table 1.

Participant Characteristics

Pseudonym	Age	Gender	Ethnicity	H.U.E.P.*
City College of San Francisco participants				
Frank	19	Male	African-American	Yes
Fayola	33	Female	African-American	Yes
Farideh	23	Female	Persian/African-American	Yes
College of San Mateo participants				
Michael	20	Male	Chinese	No
Mary	56	Female	Caucasian	No
Mei Xiu	44	Female	Chinese	No
Martín	25	Male	Hispanic	Yes
San Jose State University participants				
Jada	33	Female	African-American/Mexican	Yes
Julia	51	Female	Hispanic	Yes
Jamal	24	Male	African-American	Yes
Jennifer	21	Female	Caucasian	No
Jerry	21	Male	Japanese/Chinese-American	No
Juanita	32	Female	Mexican-American	Yes

Note. *Historically Underrepresented Ethnicity Population

Eight of the thirteen participants came from historically underrepresented ethnicity populations; the other five participants did not. I ensured that the sample included both male and female participants, five and eight respectively. Students in the study ranged from nineteen to fifty-six years old. Six of the eight female participants were mothers or single mothers at the time of the study.

Participants had experienced a variety of campus environments, including but not limited to the three interview sites. College of San Mateo lies geographically between the large, urban cities of San Francisco and San Jose. Enrollment in College of San Mateo in Fall 2007 was 11,083, while the City College of San Francisco enrolled more than 100,000 students that year. The only four-year campus site, San Jose State University, fell in between the two, having enrolled 31,906 students in Fall 2007.

Description of Participants

This section provides a brief description of each participant. The descriptions include physical characteristics, how each person presented him or herself, his or her attitude toward the transfer experience, and his or her attitude about the interview itself. The section is organized by the institution at which each participant studied.

Participants from City College of San Francisco

Frank was an athletic, nineteen-year-old African-American male. He wore a tee shirt and jeans, and pulled on his short beard, a petit goatee limited to the center of his chin, at times during the interview. At times the interviewer was required to ask probing questions, but Frank got more comfortable as the interview progressed, maintaining some eye contact throughout. He gave very short answers—sometimes with one sentence, one word, or even a sound—except when he was engaged in topics like the influence of

different cousins, his own desire to succeed, and the experience of going on a Black College Tour through the African-American Scholastic Program. While he completed the interview in under thirty minutes—the shortest of any interview—he made some significant points about the transfer process.

Fayola was a tall, thirty-three-year-old African-American woman with short hair. She referred to her four children and "a host of stepkids," as well as being a model for them, several times. She displayed confidence by describing how easily and how often she approached peers, teachers, and experts in her desired field for information. She was well-spoken and used positive language about how she approached her transfer experiences. She laughed often throughout the interview.

Farideh was a twenty-three-year-old African-American woman. She appeared shy at first, sometimes putting one hand between her knees. However, she did not take long to become comfortable as a participant. When the topic was more personal or painful during the interview, such as traumatic high school experiences, she made less eye contact. When she was more comfortable with the topic, she made more eye contact. For example, she was animated describing her desire to be a nurse like the nurses who had helped her when her two children were taken to the Intensive Care Unit after birth. She talked about her children at various points in the interview. At other times she made gestures to emphasize her points. She described how she had matured by no longer skipping classes just because no one would tell her mother.

Participants from College of San Mateo

Michael was twenty-year-old Chinese male with short, dark hair, and medium height and build. He often spoke very quickly, which epitomized his approach to higher

education. He displayed his ambitious nature by describing how he had almost completed three Associate's degrees in two years, and had been accepted to UC San Diego where he hoped to double major in Economics and Math or get a major and minor in those two subjects, respectively. After that, he hoped he would go to law school to become a corporate lawyer. At several times during the interview, Michael described his opinions as "honest." For example, he stated that people usually only do 'C' average work because they will not get fired, while in school it is important to aim higher to get accepted to UC campuses.

Mary was a relaxed, young-looking, fifty-six-year-old Caucasian woman with shoulder length blond hair and glasses. Her responses were often short, especially related to the use of technology, but she elaborated when talking about her goal to become a college counselor and about her children. She referred to having an older grown son, to being a grandmother, and to starting over with "a couple more kids." She felt it was important to act as a role model for her children. She was soft-spoken, but seemed to enjoy herself during her interview as shown by her frequent laughter.

Mei Xiu was a friendly, forty-four-year-old Chinese woman. She made a couple references to friends from her hometown in China as time progressed. Mei Xiu had one son in his last year in high school, who had begun applying to enter higher education. She described how her boyfriend encouraged her to find information on her own, rather than asking others as she preferred to do. When working with other students, she observed that some students do not know how to ask questions and credited counselors with helping her through the process. She laughed many times during the interview and did not hesitate to answer any questions.

Martín was a tall, twenty-five-year-old Hispanic man. Born in the United States, Martín's parents came from Spain and Mexico, but both had passed away by the time he was seventeen. He appeared laid back as he sat back in his chair and his face showed no signs of tension. However, when talking about his background, using technology, and sharing information, he quickly jostled one knee up and down. In some of his responses, he described his situation as difficult, such as financially, but also that he felt he would overcome the difficulties. He often spoke of having lived in several countries, having traveled, having studied abroad, planning to study abroad in the future, claiming to have taken thousands of pictures during all his trips, and being aware of global events.

Participants from San Jose State University

Jada was a serene, thirty-three-year-old woman from a mixed ethnic background—African-American and Hispanic. She had hurried to the interview due to a conflict with her class presentation, but she composed herself quickly. She answered questions intelligently with a clear voice. She demonstrated a peaceful demeanor by taking time to breathe and think before responding. She mirrored the interviewer a little, such as sitting with hands folded or arms resting on the table. At some points she put her hands inside the long sleeves of the opposite arms. After the interview ended, she continued the conversation, asking about this research study and even asking for a copy of the dissertation document. She then raised some key points that had not emerged during the interview itself, such as the importance of her scholarship through the Raising Income through Scholarship and Education (RISE) Program, which helped her with child care, tires, food, and gas, and "made all the difference" for getting her AA degree. As she had two children, it was understandable that she thought the RISE acronym stood for the

Raising Income for Single Parents through Education Program. During the conversation after the interview, she also described her father passing away three months before she got her AA degree, which was difficult and provided her with fewer support options with her mother already gone; and the value of required check-in appointments with her case manager, even though she would not have gone to those appointments voluntarily.

Julia was a young-looking, fifty-one-year-old Hispanic woman with long, brown hair. Married with six children, Julia had made an agreement with her husband that he could go to college first and that she would catch up later. When her youngest son started at a four-year university in 1992, she restarted her higher education journey that she had begun over thirty years earlier. She was determined to complete the degree goal that she had started, even though she wanted to use the degree differently—for a promotion at her full-time job and to set her retirement level—than she had imagined when she first began. She stated that "a lot of jobs have passed me by 'cause I don't have that, uh, piece of paper that says I have that degree." Her father had continued to be a big influence on her decision to get a degree, even after he passed away. During the interview her responses were straightforward.

Jamal was a serious and articulate young man. The twenty-four-year-old African-American with short hair arrived at the interview with his backpack. He described his transfer experience as one of acclimation, participation in multiple communities, and success at each institution. He was only months away from graduation when he participated in the interview. Based on the holistic nature of his responses, covering his entire time higher education, the interview seemed to have been an opportunity for Jamal

to look back at his experiences and to point out where each institution had helped or hindered his progress.

Jennifer was a twenty-one-year-old Caucasian woman of medium height and build with short, sandy blond hair. In order to participate in the interview, she stayed after her class in which the study was advertised by the researcher. She jokingly referred to herself as "very white" when describing her ethnicity, which may have been a reference to her pale complexion. She was friendly and open in her responses, demonstrating a fair amount of wisdom about the transfer process for her age. Based on her descriptions of how she resolved various challenges during the process, she seemed highly capable and motivated to succeed in obtaining an engineering degree as a woman.

Jerry was a tall, thin, twenty-one-year-old Japanese/Chinese-American man with dark hair. He was fairly reserved and his responses showed that he was still relying on distant friends for some support while he tried to build a social network on and near campus. He had completed the classes required to transfer in only two years and had only been at the four-year institution for one semester. This accomplishment seemed impressive as he had changed his mind about majors several times at the community college, had wished that the community college had proactively advised him when he had reached a certain number of units, and yet still felt that the transfer was "very easy." He described his ability to get around independently by teaching himself the city bus system. Interestingly enough, he had taken a bus two hours in each direction for his first year in high school, but there did not seem to be any type of correlation between the two experiences with public transit. Despite leaving his friends and family, he had moved from the Los Angeles area because he "was really suffocating."

Juanita was a thirty-two-year-old Mexican-American woman with long, dark hair. Fairly tall—close to six feet tall in high heel boots—she wore fashionable clothes, a dark leather jacket, and several silver bracelets. Throughout the interview, she laughed often and was articulate, bright, and energetic. At times she sat forward in her chair, as if to add emphasis to certain points. Her responses exhibited that she had strong determination throughout her transfer process, attending five different community colleges before getting to the four-year institution. She used an analogy to describe how she felt about what would potentially be an eleven-year period to get a four-year degree:

> I feel like I'm baking this cake, and it's going to take a very long time to finish it. But eventually it'll be ready and it'll be delicious.

Due to her open and full responses, her interview lasted a full ninety minutes and contained quite a few contributions to the study.

Ironically, the first interview was the shortest and the last interview was the longest. There are a number of potential reasons for this. The first participant was the youngest and may have had less to say due to having less experience in higher education—only two semesters and two summer terms. The last participant may have had more to say due to having more experience in higher education—several years at five different community colleges, as well as three semesters at the university. Her passion about encouraging Mexicans and Mexican-Americans to enter higher education emerged through the number of references she made to the topic. It is also possible that I improved in soliciting information from participants as I gained more experience conducting thirteen interviews with higher education transfer students.

Instrumentation

Using a general interview guide approach (Patton, 2002) to address the research questions, the researcher conducted one-hour interviews with students who are going through or have gone through the transfer process. Interview questions were generated to address the first four research questions (see Appendix A for complete list of interview questions). The following sample interview questions were included to show their relationship to the study's research questions.

- Research Question 1: *What are higher education transfer students' perceptions about the overall process as they go through a phase transition over time that begins when they enter a two-year institution for the first time, continues after they transfer between higher education institutions, and ends when they achieve their academic goal(s)?*

- Sample Interview Questions related to Research Question 1:

  o To what extent has the campus support met your transfer-related needs to this point? Please describe.

  o Should the campus be doing something that it is not doing now? If so, describe what that action / those actions should be.

  o Please describe how your background has influenced decisions you have made during any part of the transfer process, if at all.

  o What or who, if anything, influences you to stay and complete your academic goals?

- Research Question 3: *When considering higher education transfer students as complex adaptive entities within multiple higher education*

environments, to what extent do those students perceive that their transfer-related experiences are influenced by the use of technology during the transfer process?

- Sample Interview Questions related to Research Question 3:

    o How are you using / have you used technology to support yourself in the transfer process?

    o How do people within your social network use technology to support you in the transfer process?

    o How do you use / have you used technology to create or maintain social networks on campus? Off campus?

    o Social network sites (e.g., Facebook, Myspace) allow people to connect formally and informally to exchange information and to interact socially. Describe how you think social network sites could be used during the transfer process.

Role of the Researcher

As the researcher I also have been coordinating collaborative academic technology projects between several four-year universities, two-year community colleges, and other educational organizations for over three years. During this time many project participants reported needs that were larger in scope than campus-specific technology issues. It became clear that students, undergraduate advisors, faculty members, technology managers, administrators, and other stakeholders wanted our institutions to collectively address different aspects of the transfer process. In my work with these campuses, I had not supervised, worked with, or directly interacted with the students in

the sample. I did not influence their academic status and had no positional power, either personal or professional, that might have influenced their voluntary participation in the study.

Triangulation

I used two types of triangulation, data triangulation and theory triangulation, to test for consistency (Patton, 2002). For data triangulation, I performed interviews and analyzed documents and technology-based artifacts. I also obtained a purposeful sample from three different campuses. For theory triangulation, I used multiple perspectives—namely, student departure theory, complexity theory, and social network theory—to interpret the data collected throughout the study (see Data Analysis, below).

Data Collection

To determine what happened during the transfer student process, how the various students understood it, and how contextual factors influenced decisions, I a) conducted interviews with thirteen participants who have transferred or who intend to transfer, and b) analyzed documentation, such as paper-based handouts, and technology-based artifacts, such as campus web sites, student electronic portfolios, and higher education transfer student social networking sites. This section is broken into two subsections to describe the interview process, and document and artifact analysis procedures.

Interviews

All interviews were recorded on a laptop computer using Audacity, a free software application for recording and editing audio clips. The thirty- to ninety-minute interviews took place at the two-year or four-year institution where each participant

attended at the time of the interviews. I interviewed each participant only once. There was no need for follow-up interviews or to complete an interrupted interview.

To address the research questions, I combined two interview approaches. I began each interview with a set of structured, open-ended interview questions, but asked additional questions as one would with a more flexible interview guide. I asked each transfer student a set of prepared questions (see Appendix A), which directly related to the research questions. During each interview, probing questions were used to get more details about some of the answers and to follow threads that emerged throughout the conversation. Boje (1991) suggested that it is important to study the stories told within organizations, as well as how those stories are told. Therefore, I recorded each interview and made fieldnotes describing the participants' overt behaviors during the interview.

Document and Technology-Based Artifact Analysis

Based on observations performed during my coursework, I had found that California higher education transfer students at two-year institutions often received paper-based documents and handouts about the transfer process. These documents included diagrams of possible educational degree goals; requirements for an Associate degree, and for transfer to CSU and UC campuses; math and English course prerequisites and pathways; student educational plan worksheets; and college cost comparison sheets with financial aid information. I collected these types of documents from counselors and Student Affairs staff members at each two-year and four-year institution. Whenever possible, I gathered information about the units that created the documents to derive social context (Bogdan and Biklen, 2003).

As this study also focused on the use of technology during the transfer process, I also reviewed technology-based artifacts created by and for the students (see Appendix B for document and technology-based artifact analysis checklist). "It is the exchange of artifacts themselves that constructs social relationships...An adequate study of social interaction thus depends on the incorporation of mute material evidence" (Hodder, 2003). These technology-based artifacts included, but were not limited to, web sites for campus information, social networking, articulation information, and more. The technology-based artifacts were both static, meaning they were content-only resources like web pages, or dynamic, meaning the higher education transfer students may have interacted with a given resource to accomplish a task. I asked both the people from the institutions and the participants to describe any technology-based artifact that they had recommended or had found useful during the transfer process.

During the interviews I asked students about their familiarity with the information-based resources, their preferences for gathering information, and the resources' perceived value. Related to the technology-based artifacts, I also included questions in the interviews, such as "Have you used any websites to get information about transfer?" The responses to these questions helped me to determine how the participants acquired, made, and shared information via paper- or technology-based artifacts, with whom the artifacts were shared, and to what extent the artifacts influenced their transfer-related decisions (see Appendix A for list of interview questions).

After assembling all of the paper-based and technology-based items, I used qualitative data analysis (Miles and Huberman, 1994) to analyze both their content and format (see Appendix B for document and technology-based artifact analysis checklist).

The qualitative data analysis approach has three steps: 1) reducing the data, 2) displaying the data, and 3) drawing conclusions and verification. This approach is discussed more fully in the next section.

Data Analysis

I attempted to use higher education transfer students' responses to learn how they perceived the transfer process, how they used their networks to integrate socially on each campus, and how they used technology to communicate and interact with their networks. I performed document and technology artifact analysis to augment understanding of the participants' responses and to provide environment-specific context. To start the interview analysis process, I transcribed the interview recordings and typed fieldnotes. After reading through the transcripts and fieldnotes, I tagged, or coded, segments of the texts with keywords to make it easier to organize. To do this, I used terms that became apparent from the responses, rather than pre-determined keywords based on my own experiences. I entered those terms into a Microsoft Excel spreadsheet to be able to sort the data according to different criteria, such as age, ethnicity, gender, or position on the transfer timeline.

I went through the data several times, changing the order each time to look at the entire set of participants, as well as subsets such as participants from two-year institutions, participants from four-year institutions who have transferred, and participants from historically underrepresented ethnicity populations. For the entire set and for each subset of participants, I started with a fresh digital copy to avoid carrying interpretations from previous analytical work and noted common and unique responses for each question. Using the same qualitative data analysis technique (Miles and

Huberman, 1994) as for the document and technology-based artifact analysis, I attempted

to reduce and display the data in different ways before drawing conclusions and verifying

the analysis results. Miles and Huberman recommend both maps and matrices as ways to

display data. I used matrices as a way to manage the data for comparisons, and maps to

find and show connections between the various responses and ideas.

Tsoukas and Hatch (2001, p. 1007) stated that "a narrative approach to

complexity theory suggests that our understandings of complex systems and their

properties will always be grounded in the narratives we construct about them." Therefore,

I compared the qualitative data to the following elements of student departure,

complexity, and network theories, as defined in the Definition of Terms section in

Chapter I:

- student departure elements: student background, student commitment, interactions with the campus social system, social integration, decision to persist or depart
- complexity elements: sensitive dependence on initial conditions, phase transition, attractor, fractal
- social network elements: actors (nodes), connectedness, strong ties, weak ties, centrality, network size

I analyzed the data through these lenses and related it in general terms. Using the

common and unique responses for the entire set and each subset of interviews, I noted

any patterns that emerged and described them using student departure, complexity, and

network theory concepts. Adding the data from the document and technology-based

artifact analysis, I looked for connections between how people described the transfer

process and how the transfer process was described on paper and via technology.

Through these various actions, I hoped to inform the sense making process (Boje, 1991) and to "form interpretations that call for action agendas for reform and change" (Creswell, 2003). The next chapter reports my findings. In the final chapter, I made recommendations about effective methods for higher education transfer students to help themselves. Also included are recommendations for people from higher education transfer students' social networks and higher education institutions to support these students as they navigate transfer-related phase transitions.

CHAPTER IV. FINDINGS

This study used a qualitative design to research higher education transfer students' perceptions of the transfer process itself, as well as the extent to which their use of social networks, their use of technology, and organizational or contextual factors influence their decisions and experiences during the process. This section addresses the findings as they relate to the five research questions that form the basis of the study.

Research Question 1 – Students Perceptions of the Transfer Process

This section describes findings related to Research Question 1: *What are higher education transfer students' perceptions about the overall process over time as they go through a phase transition that begins when they enter a two-year institution for the first time, continues after they transfer between higher education institutions, and ends when they achieve their academic goal(s)?* With respect to campus support, participants discussed what had been done to support them at all campuses they had attended, as well as what each campus could do to support them in a way they perceived as better for them. The participants next described their personal backgrounds and educational histories. The last set of responses for this research question pertained to perceived internal and external influences on the participants' decisions during the transfer process.

Perceptions of Campus Support

Perceptions were widely positive about support at two-year institutions. Ten of the thirteen participants identified community college counselors as a key element of support in preparing for the transfer process. Mei Xiu and Martín, two community college students, and Julia, a university student at the end of her first semester after

transfer, stated that they appreciated visits by university staff while they were at the two-year institutions.

Perceptions were mixed regarding support at the four-year institution. Three of the six participants who had already transferred vertically to the four-year institution mentioned taking an optional course, called "Success as Transfers," that was designed "[t]o assist transfer students in becoming successful scholars at San Jose State University" (http://www.science.sjsu.edu/transfer/about.php). In addition to the course designed for transfer students, one participant, Jamal, identified two other programs at the four-year campus that were helpful to transfer students, EOP (Educational Opportunity Program) and the ASPIRE Program (Academic Support Program for Increased Retention in Education). Despite these formal opportunities, five of the six participants at the four-year institution used terms that provided a contrasting viewpoint about how they perceived the campus. Of these five, one stated that the university was "cold," while Juanita and Jamal reported that students were "just numbers," as in this example:

> Juanita: …when I was at DeAnza I was very encouraged. But I don't feel like that at San Jose State. I feel that at San Jose State I don't get the encouragement I got when I was at the community college. And, frankly, a lot of times I feel that here they don't care. Here you're just another number, and they're just hurting people. …And if you do it, good, and if not, 'We don't care. We have another thousands of people lined up for us, and we'll just take the next.'

In addition, three of the university-level transfer students described some aspect of being on their own or supporting themselves.

When asked what each campus could do to better support transfer students, eleven of the thirteen participants provided ideas for both two-year and four-year institutions. Some of these ideas provided opposing viewpoints. For example, Farideh, a twenty-three-

year-old, African-American/Persian female, advocated students taking responsibility for themselves in the transfer process:

> Farideh: …we should not, we don't need to hold people's hands. We're adults now. Even the kids that come that are seventeen years old, that graduated early, they're in college now. You know, you have to do this on your own. This, um, if you need something you have to ask. It's not going to be just handed to you.

Answering the same question, two interviewees—Jerry, a twenty-one-year-old, Asian-American male, and Julia, a fifty-one-year-old, Hispanic female—would have liked more help when they began at the two-year level. Julia described the balance between having a desire for help and being responsible:

> Julia: …they don't come after you, you have to look. And as adults, you're supposed to go after what you need. … But when you don't know what you need it's, it's, it's nice to have someone to be there to help you out.

Farideh and Jerry felt that certain support structures—counselors and an optional class just for transfer students, respectively—needed better advertising. Fayola and Jennifer felt their campuses—one community college and the only university from the study, respectively—could communicate better, either with students or between campus support units. Even though he was accepted to UC San Diego, Michael wished his two-year campus would initiate Transfer Agreement Guarantees with universities that were more difficult to enter, such as UCLA and UC Berkeley. Individual participants from the four-year institution separately asked that the campus reduce the time necessary to process required paperwork, focus on diversity of faculty and staff, and encourage students more.

Background Influences

The diversity of the participants was reflected in their backgrounds as well. Six of the thirteen participants had the potential to be the first in their family to get a degree. Of

these six participants, four were from historically underrepresented minority populations.

Jennifer described how her parents' level of education influenced her in a different way:

> Jennifer: …both my parents have um, undergraduates [degrees], and my mom, my mom just finished her midwifery master's. Um ... it's been obvious to me that that's what I had to do.

Whether they were the first to attend college or university, or had parents who had attended higher education, many participants were aware of the influence that family educational backgrounds had on students in general.

Further, several of the students at the four-year institution were conscious of the difficulties for historically underrepresented minority populations and the need for these populations to succeed in achieving their educational goals.

> Jada: Definitely being African-American, I felt like I needed to have an advanced degree. …I want to say just knowing that because I'm a minority, …it was like, you know, two parts of me were fighting ... 'Well, you don't really need it, but yeah, you know, you're a minority and you never know if this is going to play a factor later on.'

<p style="text-align:center">*   *   *</p>

> Jamal: I say particularly for this campus is, you know, a high drop off rate. …Particularly, you know, at freshman and sophomore and, particularly, I can tell you for African-Americans it's even higher unfortunately.

<p style="text-align:center">*   *   *</p>

> Juanita: …we [Hispanic people] are going to be the largest minority and it's not going to do anybody any good to have a large population that is not educated. …And even in this school I was talking to a counselor because I was part of this program for minority students that are the first time to go to college …and that are minority. And she was telling me that San Jose State, or schools like the ones that have the most minority students, but a large portion of them do not graduate.

Jada, Julia, and Juanita—all three from historically underrepresented minority populations—referenced being urged to enter higher education or the need to urge minority children to enter higher education. Jada and Juanita—both in their early

thirties—settled on a less desirable major because it would allow them to finish more quickly than if they had changed majors.

<p style="text-align:center">Educational History</p>

The participants answered questions about their educational histories—transferring in the past, dropping classes, taking classes at multiple institutions in the same term, and dropping out for a time before returning to higher education. Seven participants had not transferred between institutions at any level before the interviews. Within that group of seven, Jennifer stated that her family had considered moving to Australia, but had stayed in the United States until she had finished high school. Therefore, her closest experience to transfer involved studying abroad at her first four-year institution. Four of the remaining six participants had transferred one or more times in elementary school, high school, or both due to their families moving. These moves took place for different reasons, such as Julia's forced relocation in third grade due to Highway 280 being built through San Jose. In several cases of transfer due to moving, the participant described it as a hard or difficult experience. Jerry had transferred to a local high school after spending a year at a band magnet school that was a two-hour bus ride from his house. He did not like the second school as much, but could not sustain the long commute. Frank transferred to a different high school after seeing his cousin succeed there. His experience after transfer was positive, as he found more focus and was able to graduate on time.

Six participants did not take classes at a second location while enrolled in a first. Four participants had taken a class from an institution at a higher level than the one they attended at that time (e.g., classes from two-year or four-year higher education

institutions while in high school, or classes from four-year institutions while at a two-year institution). For example, Jada repeated this pattern throughout her education:

> Interviewer: So similar to the way when you were in high school you started taking ...community college classes, when you were finished [with high school],… in community college you started taking university classes.

> Jada: Right.

Fayola planned to take a class at San Francisco State while attending City College of San Francisco after she got closer to her actual transfer, which would be within a year of the interview.

Nine of the thirteen participants had left school and had returned one or more times throughout their personal educational histories. The length of time before returning ranged from Jerry leaving for several weeks for a family trip to China in high school, to Julia leaving for sixteen years to have and raise children. Julia also spent the longest total amount of time leaving and returning to higher education, beginning in 1975, returning in 1992, completing her two-year degree in 1996 and transferring to the four-year institution in Fall 2008.

Internal and External Influences

Over half of the interviewees felt that they themselves had the most influence on their decisions to stay in higher education. These participants were diverse in age, gender, ethnicity, and level of education at the time of the interviews. Some were quite emphatic about this internal influence and answered without hesitation:

> Farideh: Oh, I do. That, I do. I mean, my, my parents are supportive, but it's me. I'm the one who does the self-talking. ...I'm in competition with myself, really.

* * *

Frank: Myself. …Like I motivate myself, like, like I don't like to lose or fail. …So I'm like pushing myself to get whatever I want to, like, do whatever I want to do in school. …I don't like being told I can't do something.

* * *

Jennifer: I do. I want to finish my degree. I want to be as good as I can be with this degree. …my family influenced me a bit, but it's more of just me. …I want to prove to myself that I can do it. Because it's one of the hardest degrees, particularly for women. And it would just prove to me and my family that I'm strong, smart, things like that. Things that most women would want, most people would want in general.

* * *

Juanita began by describing her own influence on herself and then described how her parents and people from her ethnic background influenced her as well:

Juanita: I like to finish what I begin. I believe in myself. …And I look up to my parents. And I feel that they have done tremendous things, sacrifices. And part of me thinks that if they were able to endure such difficulties, then I should be able to endure difficulties, too. … I would like for other people to know that, that I'm Mexican and that they could be, they could aim for better things. And that it is possible. Because most of the time, nine times out of ten, people that are Mexican do not go to college. … But maybe if somebody had really encouraged them early on, and if maybe they would have saw somebody that did go to college and they're doing well…then they could think, 'Hey, that person is doing well, they went to college, maybe I can do it too.'

While two of the participants felt they also had the most influence on their decision to drop out, six felt that there were no influences that would cause them to drop out. Others noted jobs, money, stress, and different family members as potential influences for not completing their academic goals.

Six of the eight female participants were mothers at the time of the interviews. Three of these women dropped out and returned, while one more waited to enter higher education in order to have or raise one or more children. Most of the mothers described the importance of finishing a higher education degree to act as an example for their

children. Several described their children's influence on their decisions to stay and

complete their academic goals:

> Fayola: My, my children, definitely...because... I need them to see that it doesn't matter what happens in life. You can definitely achieve any goal that you set forth for yourself, whether it's school, working, I don't care what it is. I mean, if it's your goal and it's something that you really want to do, you can do it.

> *   *   *

> Farideh: …even if I became a celebrity, if I have a degree, if my kids, you know, don't follow, it's that they, they know, 'My mom finished school, let me finish school.' You know? Um, 'cause I don't know what their dad might be doing. …You know, so at least I'm giving them that. You know, my mom did it, and, you know, things are passed down, like my mom, she got her A.A., so it's kind of something that you do show, even though it's not always talked about, it's something your kids do learn because they know you did it. ...So, you just follow the footsteps.

> *   *   *

> Mary: So, I'm the first generation college student, actually, in my family. [Laughter]

> Interviewer: That's great!

> Mary: So, yeah. I have grown daughters that I'm now influencing to go to college, and they're both in college, so ...that was one of my goals, also, was to be a good influence on my kids…. [Laughter] ... I mean, I started having kids when I was young. I have an older son as well, that's grown, and …, I'm a grandma, and then I started over and had a couple more kids, and so I've had kids most of my life. But, I wanted to be a good influence on them, and then encourage them to go to college. So the only way I knew of to do that besides just telling them, which I had no backup [laughter] ...was to go myself, and show them what you can do. [Laughter]

> Interviewer: That's great. Modeling it for them ...

> Mary: Yeah.

This concept was reinforced by their coursework, as expressed by Jada:

> Jada: I took a sociology class in, at DeAnza, which talked about your children leaving off from where, starting off from where you leave off educationally.

While Juanita did not have children at the time of her interview, she also recognized the influence that her own education could have on future generations:

> Juanita: And then if I have kids then I could also, um, encourage them early ...And then hopefully pass that on from generation to generation.

Participants clearly described the influences they perceived having on their children or future children's decision-making about higher education.

Research Question 2 – Student Perceptions of the Influence of Social Networks

This section describes findings related to Research Question 2: *When considering higher education transfer students as complex adaptive entities within multiple higher education environments, to what extent do those students perceive that their transfer-related experiences are influenced by their social networks?* Participant responses covered their perceptions of social network influences on their decision-making in general and their ultimate decision to stay in higher education or to leave. The participants answered questions about the perceived value of their social networks on their academic and social integration.

Social Network Influence on Decision-Making

Ten of the thirteen participants turned to counselors for support or information as they prepared for transfer. While most of these counselors worked at the community college level, some participants from the four-year institution identified both general and specific counselors who provided support, information, or both. In much smaller numbers, the participants identified other people from their social networks who provided support, information, or both. For example, when asked to rank people whose influence he felt had on his decisions to stay in school, Jamal ranked a social justice group he had joined on campus, as well as particular individuals in that group, as the highest:

> Jamal: …one group at the very top of my list would have to be the Gulf Coast Civic Works Project. … I really credit that group with … really expanding, you know, my potential, my power here at San Jose State, just helping me, kind of shaping and molding me into the person that I am now. … people who've really been there for me, helped me, supported me, you know, gave me words of encouragement as far as not just, you know, going to college, but really just, you know, staying here.

Jada identified academic advisors several times as influences on her decisions during the transfer process:

> Jada: …and also in the Success as Transfers [class], actually Elizabeth David was the one who said, 'You know, maybe you should reconsider your double major because, you know, you'll be in school this much time versus, you know, this much time, and pretty much accomplish the same goal with it being a minor.' So that was very instrumental.
>
> Interviewer: And Elizabeth David is ...?
>
> Jada: She's actually an advisor here at San Jose State.

With respect to sources of support and information, the participants identified a wide range of people. Those identified included family and friends—parents, spouses, siblings, cousins, friends, and children—as well as acquaintances—teachers, financial aid staff members, experts in fields of study, and other students going through the transfer process.

On the other side, some participants identified themselves as a potential influence on others, sometimes even strangers, who were making decisions about entering or staying in higher education. Juanita gave two examples:

> Juanita: And I would hear people that I would run into in random places. Like, I went to give a blood donation at Stanford Blood Center, a while back, and the person there, the phlebotomist, um, we were doing some small talk and he said he wanted to be a nurse and that he wanted to be a registered nurse, and that he wanted to go to San Jose State but there was a waiting list. And I was already here, about to start, and I said 'Who told you there was a waiting list?' 'Oh my friend.' I said, 'That's not true.' And I run into people who say things like that, but they don't look to see ... if it's really true. So I discovered that, um, people just hear things by mouth, but they don't take the trouble to go and find out. So I told him, 'That's not true, just apply, and you might get in.'

* * *

> Juanita: I was taking a PE class and there is a guy there and he was African-American. …I was asking him 'What are you doing? What are you taking?', and then he says 'Yeah, I'm taking this class.' I don't remember if it was English or what it was. But he said 'I don't know, I might drop it.' And I said 'Why do you want to drop it?' I was trying to encourage him. …something happened that he didn't go to class another day, and then I said, 'Well, don't make up excuses.' Because he said something to me that sounded like an excuse. … And I just told him, just flat out, and then he was laughing because he knew I was right. And then one of the counselors, after I went to see her, and she says 'I heard you telling that guy to not make up excuses. That's good that you told him.' [Laughs]

Other participants, such as Jerry, described using technology such as Facebook to influence others to continue in higher education and to share different strategies for transfer success.

Social Network Influence on Persistence

When asked to rank people within their social networks according to how much influence participants felt they had on their decisions to stay in school, three interviewees reiterated that they, themselves, ranked as the most influential when making those decisions. Almost half of the participants listed counselors or advisors as influences on their decision to stay in higher education. Some identified specific counselors by name or by something memorable that a specific counselor said. Mei Xiu and Juanita provided these examples:

> Mei Xiu: He [Mike Mitchell, Transfer Services Coordinator at College of San Mateo] always encourage you to get a transfer, get your class, and to get your degrees.

* * *

> Juanita: …here at this school [SJSU] I've seen a counselor, Dr. Francisco. He's great. And well for him, just counseling, to be able to cope with being in the nursing program. And just not giving up. And he's been a great support. And what really helps me stay. …and then the counselors that I remember that I had a DeAnza, and they would say, 'You can do whatever you want.' … and they

would look at me with excitement and say, 'You can. Yes you can do it.' And then I think about that. And that helps me stay here and encouraged and feel that, yes, it is possible and I can do it.

Nine of the thirteen participants identified various family members, some of whom had passed away years before the interviews, within their lists of people who they perceived had influence on their decisions to remain in higher education. Juanita, Fayola, and Martín provide examples of these influences:

> Juanita: …my nephews look up to me. And I'm the first one to go to college. So there's no way that I'm going to drop and then they're looking up to me.
>
> * * *
>
> Fayola: My kids, my family, are the only ones that I can actually say influence me as far as staying in school. Others, they just... I wouldn't say that they would influence me, but they definitely give me some insight into the decisions that I make.
>
> * * *
>
> Martín: …my grandfather. He was secretary of agriculture in Mexico for, like, forty-five years.
>
> Interviewer: Wow.
>
> Martín: And he was always... 'Keep studying geography.' Like, it's because of him. …He didn't travel outside Mexico, but he reads a lot. He knows everything. Like, I used to call him when I was in Istanbul, or when I was in China. And he would tell me 'Oh yeah, oh yeah, the Forbidden Palace, oh yeah,'... he would say things like he would know the place. So I think because of him, because I was a kid, and so my school was close to his house, he would always tell me about history, and ... maybe that's why I like history and ... Like, government in Latin America is … kind of like corrupt. …He work for forty-five years in the government and presidents, ... like, president after president they assign him for the same, 'cause he was a good politician. And he always helped the indigenous people to keep their lands …he retired after forty-five years and he's always proud of what he did... I mean, sometimes when I think of,… I mean not only like I'm coming alive, when I think about life in general, I would like to maybe have his age and be happy of what I did with my family, my career and my life.
>
> * * *

Participants also demonstrated awareness of their own influence on friends and family. Jennifer talked about sharing transfer-related information in a way that might influence her friend's decision to stay or leave:

> Jennifer: …my friend who's moving up here. I've been, I've been talking to her a lot about it because she's, just moving up here and planning to transfer here, and I've been pushing for her to transfer, 'cause she's three years in a community college, and if she doesn't do it soon she's not going to.

Her statement further demonstrated an awareness of how taking a long time to complete any aspect of the transfer process could jeopardize her friend's overall completion.

Looking at the decision to depart, very few participants identified people within their social network who might influence them to leave. Those few influences were primarily the participants' family or friends. Jada talked about how stress and her children influence her to consider leaving school and how instructors at the four-year institution have helped her stay:

> Jada: …seeing them [her children] suffer definitely plays a role in me almost wanting to, just, throw the towel in. But I, but I don't. I haven't, and I can't.
>
> Interviewer: So, um, kind of a tangent then. So the, the campus provides support in some way that ...
>
> Jada: No. My, my instructors have been kind enough with each of my classes to allow my children to either be in class. Where I had one instructor this past semester that kind of warmed up to it ...And actually lied in the beginning and said that they could not allow children in the class. And I called the university and asked their rule, and just chose not to go back to him and say, 'Hey, I found out that you weren't telling me the truth.' And so I just sat the kids outside of the class in the beginning. …And then, he told me he shared it with his wife and his wife told him, 'You know, you'd better let those kids in the class.' So he warmed up to it and eventually allowed them to be in the classroom. But they're very good kids. I mean, extremely well behaved. They've been going to school with me since 2005.

Jamal, Mary, and Julia noted friends and family as a potential influence on their decision to leave. Friends and family did not understand why the two oldest participants, Mary and

Julia, would want to get a degree. They both described this as well as how it did not

influence them to leave.

> Julia: My sister thinks I'm crazy, and my brother thinks I'm crazy. Um, my brother-in-law is the worst one. Thinks I'm really, you know, 'You're too old, what're you doing there?' I've got my uncles that are my dad's, you know, brothers, you know, 'Why?' And even my cousins are just, like, 'Why? Why do you go through all that trouble? It's too much work.' I says, 'Yeah, it is. It's not easy, you know. A degree's not easy. Do you think they're going to hand it over to you on a silver platter? Everybody would have one.'

<div align="center">* * *</div>

> Mary: … in the neighborhood I grew up, which was years ago, but I still see some of those people 'cause they're connected to family members. And they're, like, 'Well, why do you need to go to college? You have a good job.' Whether I need it or whether I don't, I want it. It's my desire to have it. [Laughter] Even though I have it, you know. [Laughter] Anyway, they're a little, because they don't have college educations either and, you know, that's, that's their frame of mind. And I don't want to be in that frame of mind. [Laughter]

While Jada perceived that instructors helped her stay by allowing her children to join her

in class, others claimed that friends were an influence in their decision to stay.

Finally, not all perceptions about leaving higher education were negative. For

instance, Juanita discussed the fact that student departure from higher education did not

always lead to financial struggles. However, she perceived that certain departure success

stories were due in part to connections to specific people that were made in the higher

education environment and in part to those people's backgrounds:

> Juanita: Look at Bill Gates…he dropped out of school, and Steve Jobs, and Mark Zuckerman, and the guys from YouTube. Yeah, but all of these people? They met in college. All of these people went, a, a good number of them went to Ivy League schools. All of these people, their parents didn't work in the fields. One of their parents or both of their parents had a college degree. So, it wasn't like they were the first ones to go to college. It wasn't like their parents were working doing farm work. So, yes, they made it big and they dropped out, but they met other partners at Ivy League schools, and they had venture capitalists that invested in their ideas, and they was at the right place at the right time. And how many Bill Gates' do you know? So, I'm not going to think like that. Because very few make

it. And I don't have that kind of experience or, … it's just very different. And you can't compare apples to oranges. So I think that based on the difficulties of making it in life, um, not going to school makes it even harder.

While this perception described successes without a degree, it was understood that they were exceptions and that they required specific conditions to succeed. For this reason, Juanita emphasized the importance of higher education for herself and others like her.

Perceived Value of Social Network for Academic and Social Integration

When asked whom they approached for academic reasons, the participants identified a range of people in their social network and, in several cases, specific reasons to go to each person. All thirteen participants approached someone who would qualify as an acquaintance for academic support. Six participants went to a counselor—three listed by name—about academic progress, for academic advice about things like test anxiety or balancing work and school, or for general academic purposes. Farideh recommended that some of the counselors would benefit from better intersegmental communication:

> Farideh: …maybe to have more connections with other colleges, um, to talk, you know, to have, um, making sure to have counselors there and just so they can know what is required. Like I said, I had a pr-, I had like a person at Cal Poly that wasn't too helpful, and, you know, versus them just using ASSIST, you know, if they had, um, more contact here so they could have more resources.

<p align="center">*   *   *</p>

Six participants—four of whom did not go to counselors—went to classmates or peers for help with assignments, selecting classes, or for general academic purposes. Fayola perceived that anyone could potentially help her academically:

> Interviewer: … do you also turn to classmates for questions about your, uh, academic stuff, or...teachers?

> Fayola: I have. I have because, um, you know, like I said, everyone has something to offer. I mean, no matter how small it is, that small thing can make a big difference. I mean, just finding out ...someone took a teacher last semester and he

was just not the right teacher... you know, because for whatever reason it wasn't for them, but for me it could be because it could be the way he teaches is the way I, that I like, so even though they didn't like him I still want to know, well, what was it about him that you didn't like. You know, what was it about him that you did like, if there was anything.

Four participants went to instructors for general academic support or, in one case, for proofreading assistance. Some participants described going to the tutoring center or other campus resources for academic support, although Juanita only did so at the two-year institutions. In each instance related to seeking academic help, the participants varied in age, gender, ethnicity, and level of education.

Eight of the thirteen participants approached people who would qualify friends or family for academic reasons. Fayola stated that she consulted her children because she picked her classes around their schedules:

Fayola: I have to let my kids know that even though I'm in school, and even though that I work, …I'm still their mother and they still can depend on me.

Over the course of his interview, Jamal described how his relationship with a specific counselor at the four-year campus changed to be more like a friend, as well as being hired by this person to be a peer counselor.

Jamal: One person specifically who I owe a lot to, on this campus is a person by the name of Manuel _____ who shockingly became, you know, my boss. [laughs] … But he was someone...he was one of the rare, few people that was actually there for me, who was always, you know, someone who was just willing to listen and provide me with information and just encouragement. …if there's any issue on campus of, like, policies, paperwork, anything along those lines, he was more than willing just to give the information without a thought.

Only Martín listed both friends and family, in his case for "casual" support. Jada alone identified something other than a person as a source of academic support. She identified RateMyProfessor.com, stating "I've used technology to guide me."

When asked whom they approached for social reasons, five interviewees stated that they did not have a social life or a very active social life. Very few participants approached acquaintances, such as co-workers, members of student organizations, or classmates, for social reasons. Twelve of the thirteen participants approached primarily family and friends for social purposes. Jamal made an interesting observation about the adjustment period in his first semester at both the two-year and four-year institutions:

> Jamal: You know, an unfortunate aspect of my college career…the very first semester of Mission College, as well as my very first semester here at San Jose State, academically, you know, I kicked butt. It was simply beautiful on that aspect, but on the social level I felt I kind of failed. I really, didn't really have any friends. … often my life was, you know, home, work, school, repeat.

He then went on to discuss how things changed for him in his second semesters, again at both the two-year and four-year institutions:

> Jamal: …life got better for me here. At Mission and San Jose State. …not just on the social level, but on the academic level, 'cause I … met new people. And for me that was almost a therapeutic effect. You know, I physically and mentally felt better, just knowing that there's people here who had those shared experiences as I have. So it really made me feel like I wasn't alone and it really helped provide a sense of ease in the transition process.

In his closing advice to other transfer students, he stated:

> Jamal: I mean, it's oftentimes just not what you know in life, but who you know that can easily, you know, close or open doors for you.

Not surprisingly, he is one of the participants who encouraged higher education transfer students to get involved on campus.

When asked whom they approached for both academic and social reasons, five interviewees stated that they did not approach anyone for both. Three participants stated that they maintain separate worlds, defined best by fifty-one-year-old Julia:

> Julia: You know, ... work is work, home is home, school is school.

In a similar discussion about the separate worlds, nineteen-year-old Frank described two types of people he knew at his two-year institution:

> Frank: It's like, it's people that you could be social with, they not…they not big on school. They're at school, they're just there. And it's, people that are doing the academics…like, it's two different sides, like you got the people you're gonna be social with or do your schoolwork.

Some participants identified people who could fit in both categories—co-workers, classmates, counselors, or teachers who were also friends—as people who they approached for both academic and social purposes. Jamal described a co-worker—a fellow peer mentor—who belonged in this category:

> Jamal: It's, you know, someone that, you know, after a series of events have passed over us, we, we've grown real close. She's someone that, and I never told her this, but I'm able to go to for questions like, you know, academic advice as well as, you know, like, someone that, you know, if you just want to hang out, you know, learn information, or, you know, hang, just go out and get a drink together, you know, she's one of the few people that I actually call up to do that sort of thing.

Similarly, Jennifer had become close with one of her teachers:

> Jennifer: I'm pretty social with my teachers, too. Surprisingly. And one of my teachers this year looks exactly like my oldest sister. It's rather kind of creepy. I'm not kidding. And she has the same mannerisms and she reads the same things and it's ... she's her twin, her American twin.

When asked whom they approached for neither academic nor social reasons, only five participants identified people in this category, including two participants' classmates, one participant's co-workers and boss, one participant's socially awkward roommate, one participant's new roommates, and two participants' sisters.

Research Question 3 – Student Perceptions of the Influence of Technology Use

This section describes findings related to Research Question 3: *When considering higher education transfer students as complex adaptive entities within multiple higher*

education environments, to what extent do those students perceive that their transfer-related experiences are influenced by the use of technology during the transfer process? Participant responses covered their uses of technology during the transfer process, how they used technology for acquiring and sharing information, and how they used technology for social networking.

Technology Use During the Transfer Process

All thirteen interviewees described using web-based technology to support themselves during the transfer process. Nine participants—Fayola, Farideh, Michael, Mary, Mei Xiu, Jada, Jennifer, Jerry, and Juanita—made general references to the Internet or looking up information online when they described how they used technology to support themselves through the transfer process. Fayola was the most emphatic:

> Fayola: Oh, the Internet is my best friend! [laughs]…What better way to get information on another school than by going on the Internet if you can't call them because, like here, calling someone on the telephone...if you catch somebody, you're like 'Oh, thank you! Now, can you help me?' [laughs] 'I'm glad I got a live person, but can you help me?' … people are great to talk to, but I mean when you can't get a hold to the people, or it's late night and you just gotta find out something quick, the Internet has definitely been a great help. I love the Internet.

Eight participants—five who also mentioned the Internet, Fayola, Farideh, Michael, Jada, and Jerry, and three who did not, Frank, Mei Xiu, and Julia—identified e-mail as a technology used for transfer-related tasks, like contacting counselors, and class-related tasks, like submitting papers to teachers for review.

Nine participants—Frank, Farideh, Michael, Mei Xiu, Martín, Jada, Julia, Jamal, and Jennifer—identified specific websites before being asked to identify helpful websites later in the interview. They described using the specific websites for transfer-related tasks, such as to conduct research about the transfer process and specific campus

requirements, to complete financial aid forms, or to register and pay for classes. They also outlined their use of websites and web environments for class-related tasks, such as to submit homework through the learning management system, Moodle; to watch archived lecture videos through an online meeting tool, Elluminate; to use online journal databases like PsychInfo; to submit papers to a publisher website for a grammar check; to buy books online; or to take fully online classes. Two participants mentioned chat. All in all, the thirteen participants each made several references to using web-based technologies for transfer-related and class-related tasks.

In addition to web-based technology, nine of the thirteen participants discussed using computer-based and non-computer based technologies to a lesser extent. Half of the participants from the four-year institution stressed the importance of computers and their availability to students. Juanita felt "crippled" without her laptop, while Julia had a laptop and a desktop at home. Three participants identified using computer applications for transfer- and class-related purposes. Mei Xiu used Excel to plan a two- to three-year budget, Frank mentioned typing essays, and Farideh described using a CD-ROM that came with a textbook. A third set of three participants discussed using the phone for transfer-related tasks, such as Jamal calling to make sure that transfer paperwork went through since the four-year campus had a reputation for losing it.

When asked about the resources they used to prepare for transfer, the participants identified both technology and non-technology resources. Additionally, technology artifacts, and non-technology artifacts and resources were reviewed using a checklist to provide a common set of concepts to use for reducing and displaying data, and later for drawing conclusions and verifying results (see Appendix B for checklist and matrices of

analysis results). Technology artifacts primarily included web-based resources. Of the documents referenced by the participants, many had high value, but their format often made them harder to use. Of the technology-based artifacts (i.e., websites), the most referenced sites—ASSIST (Articulation System Stimulating Inter-institutional Student Transfer) and CSU Mentor—had high value and their formats lent themselves to student success when working individually.

No participants had created an electronic portfolio at or before the time of the interviews, so those were not reviewed as had been planned. Jerry had had the opportunity to make an electronic portfolio at a two-year institution, but had not had time to do so despite perceiving the value for transferring to a film department. Non-technology artifacts included student education plans, catalogs, and handouts. Non-technology resources included transfer fairs. The participants described finding out about these resources in a number of ways, including working at a counseling department, talking to counselors, and searching websites. Jamal recognized that in a few cases random individuals had pointed him in the right direction.

The interviewees described a variety of ways that people from their networks used technology to support them during the transfer process. Eight of the participants reported the use of e-mail, though Farideh said that she and her cousin only used e-mail for "silly things, but nothing for, like, transfer right now." Seven of the participants reported that their connections used the phone to contact people they knew. While the participants mentioned e-mail and phone most often, they also described drawbacks to their use for support as they prepared to transfer. Specifically, there were several recommendations to make technology-based communication more immediate and more personal.

Technology Use for Acquiring and Sharing Information

To get information, six participants preferred to go in person, four preferred to use e-mail, one preferred to use the phone, and two preferred to use the Internet. Jennifer claimed her preference differed based on the purpose, she preferred the Internet, phone, or class handouts to acquire information, while she preferred calling, texting or e-mailing her friends. Those that preferred to go in person still used different technologies to acquire and share transfer-related information. It should be noted that three participants also found issues with having to wait for the person at the other end of the technology. Timeliness and immediacy of responses emerged as concerns for the participants throughout the interviews. The interviewees identified a wide variety of websites that they had used to get information related to transfer: their campus websites at the time of the interview, the websites of the campuses to which they wanted to transfer (e.g., SJSU), search engine sites (Google, Yahoo), and sites that provide transfer-related information (ASSIST, CSU Mentor).

Twelve of the thirteen participants recognized value in using electronic portfolios, ePortfolios, during the transfer process to demonstrate their skills and knowledge to higher education institutions or to specific departments or programs. Some of the perceived value in ePortfolios included using them to clarify transfer requirements that differ from institution to institution, to show evidence of meeting those requirements, and to demonstrate skills and knowledge required when applying to specific programs, like Nursing, Entertainment Management, Counseling, or Film. It was also important for several participants that the higher education institutions know them better and saw the ePortfolio as a way to facilitate that:

Fayola: So your grades don't necessarily... give the true …meaning of you. You know what I mean? Some people test well, some people don't. But if you're able to have the electronic portfolio and actually, you know, show your work... Work grades are different from test grades. … You can show someone, well, 'Yes, I'm not a good test taking person, but as you can see, this is what I am good at. ...I can do this.' And it'll give someone a better perspective of you. I think that that would be fabulous...

* * *

Martín: …it's useful. 'Cause …maybe if I sent my transfer papers to any school and they see my name, my GPA, and… the classes I've taken, maybe they're like missing the point ... so yeah. I guess [electronic portfolios] can be very useful.

* * *

Mei Xiu: I'm thinking that's, that's better be for school to know you, who are you, and let them go through it.

* * *

Jamal: If you happened to have this electronic portfolio showing your [clears throat, apologizes]... you know, your skills, your talents, your writing ability, stuff like that, I could see that being a vital tool in establishing yourself on campus, and making yourself a well-known entity on campus.

While a small number of participants noted that there would be more work involved in both creating or reviewing the ePortfolios, over half of the participants used positive words or phrases to describe their perceptions, including: beneficial, useful, helpful, better, and "make things a lot easier."

Technology Use for Social Networking

The interviewees described a number of ways that they used technology to create and maintain their social networks on and off campus. Seven study participants identified the phone, the cell phone, cell phone applications such as texting, also known as text messaging, and Global Positioning Satellite (GPS) as technology used for this purpose. These seven people were diverse with respect to gender and ethnicity, but ranged

between twenty and thirty-three years old. Outside of this age range at fifty-six years old,

Mary stated that she doesn't use technology to connect to her social network, but

acknowledged that her children call and text her.

Eleven of the thirteen participants had accounts on one or more social network

sites, such as Facebook, LinkedIn, or MySpace. They had used these sites to connect with

classmates and friends at the institution they were attending at the time of the interviews,

classmates and friends at two-year and four-year institutions that they had attended

previously, classmates and friends from outside any higher education institution they

have attended or want to attend, and friends in different countries (England, Mexico,

Spain). As a group, the participants identified a variety of possible ways to use social

network site during the transfer process, including asking and answering questions,

sharing information and experiences, creating network connections with other new

transfer students, finding family-related support (e.g., babysitters in the area), and

meeting people at their desired transfer institutions. Jennifer described wanting to use

social network sites for both academic and social purposes:

> Jennifer: But it would really help, just, even just to have, like, a, just a group for, for 'I have a question and no one seems to know the answer, do you guys know what the answer is, or could you ask someone around you?' Things like that. It would be really useful. If there was a lot more groups on like Facebook or MySpace.
>
> Interviewer: Right. And I think San Francisco State, their transfer student group [in Facebook] is like sixty-five or seventy people now.
>
> Jennifer: Wow. [Laughter] I need to ...
>
> Interviewer: So maybe you can start looking there, at San Jose State.
>
> Jennifer: Start ... obviously I need to. The other thing I need to start is a snowboarding club. There is no snowboarding club on campus. It's bugging me. [Laughter]

Looking forward, Jamal described at length how university faculty and staff should participate in the social network sites as well:

> Jamal: … one avenue I could see Facebook would be useful is creating sort of, like, an online group, … not just transition students, but also, you know, … faculty and staff at a particular university. It could be, like, professors, you know, clerical staff, advisors, really coming together in this group, whereas … those people that work at the university—the faculty, the staff, the advisors—could assist students with the transfer process. And I believe… a website like Facebook could really facilitate that.

Jamal and Jada listed specific types of questions that might be answered in a social networking environment by campus representatives or fellow students, such as what classes would articulate, how to deal with financial aid, or where to find babysitters in the area. Jamal also shared how having faculty and staff participate would show transfer students that the university cared.

The participants also included cautionary comments about using social network sites. Martín demonstrated an awareness of employers watching these sites:

> Martín: And then I check this story where, like, a lot of people have been, like, fired for MySpace or Facebook related stories. Like this guy that said he was sick and then someone at the office saw, like, picture of him… drunk the previous night. …if I go to an interview and they say, 'Can we check right now your Facebook?', I would say, 'Yes, of course.'

A small number of participants expressed concerns about the safety of meeting someone face-to-face whom they had only met in a social network site environment. Frank provided a worst-case scenario example:

> Frank: If I don't know you, and you try…you know what I'm saying? …Naw. You know. [laughs] It's not goin' down. … Ain't gonna throw me in the back of no van and I come up missing. [laughs] For real.

Based on answers to follow-up questions, these safety concerns did not apply to people whom the participants might meet through their own friends or to their own friends with whom they had lost contact.

Video games, a technology not yet discussed in this study, influenced participants' feeling of social integration in different ways. Jennifer actively sought to interact with the campus social system by playing Rock Band, a music-based game that encourages cooperative play by awarding points to the team, or band, rather than individuals, with other new students:

> Jennifer: …it's hard to find the in-person, social interactions when you don't know where to start. ... luckily when you're living on campus they have a whole bunch of programs, which I'm so thankful for. [Laughs] So it's like, you know, 'Come play Rock Band in the dining commons.' Okay. So, I think it would be really useful to help new transfers connect socially with other new transfer.

On the other hand, Jamal recognized that in his first semester attending both the two-year and the four-year institutions, video game technology prevented opportunities for social integration by negating the need for interactions with the campus social system:

> Jamal: You know, weekends, my best friend might have just been the PS2 [PlayStation2] or whatever story lines those games had at the moment.

<p style="text-align:center">* * *</p>

Farideh used technology as part of her job, which allowed her to help other students and increased her feeling of centrality on campus:

> Farideh: I know the WebStar system like the back of my hand, so... I feel like I definitely know City College. I don't know everything about it, but I feel like I'm a little bit more than just a student and a student worker because I do go to school here and work here. So, I, I'm very comfortable with it, and people recognize you and they ask you questions and it's just like, and you feel, you don't feel like you're a student anymore.

Outside of any work setting, Juanita used the social networking site, Facebook, to

encourage a friend to continue toward transfer:

> Juanita: So, I know a student that's at DeAnza and I have him on Facebook. And
> as, since he is in my network of friends I could say, like, 'Hey check this out.' Like
> some kind of link that I could put on Facebook. … And I say 'Hey Carlos, I'm at
> San Jose State and I know you want to transfer and I am already here. So you
> have to continue and you can do it.' So, like, even, like, if people can partner at
> least with one person ... Like me with him. And then when he comes here or
> wherever he goes, and he partners with one person, like one at a time, but that can
> make a difference. And especially because you have a similar background. It
> doesn't mean that if you don't have a similar background you can't do it.

Juanita also recommended websites when encouraging young, Hispanic people to go to

school. Even though she did not know these people well, she hoped to start a chain of

people influencing another to enter higher education.

Research Question 4 – Student Perceptions of the Influence of Contextual Factors

This section describes findings related to Research Question 4: *When considering*

higher education transfer students as complex adaptive entities within multiple higher

education environments, to what extent do those students perceive that their transfer-

related experiences are influenced by contextual factors, such as by annual enrollment

sizes, budget fluctuations, and the technology capabilities at each campus?

Perceived Influence of Enrollment Limits

While some participants recognized the enrollment limits at the campus level,

several students understood the question about enrollment sizes to mean enrollment limits

at the course level. Martín commented on the relationship between the two levels at the

four-year institution to which he had been accepted for transfer:

> Martín: I worry, but not too much. … I don't know about San Francisco State. I
> mean, I heard these comments about people there that say that it's very impacted,
> that it's very hard to get into classes, that the class size are so big.

At the course level, participants noted prerequisite classes either being cancelled due to

low enrollment or hard to enroll due to popularity. Several students described needing

priority registration to get into classes that were important to their progress. Juanita and

Michael described different strategies they used or were prepared to use to get priority

registration at some of the two-year institutions they attended, even if they did not like it:

> Juanita: So I found out how can I get priority registration. Whatever I have to do. So if I got tutored in math or English or one of the classes, I could get priority registration. …So that's what I did. I got tutored, and I got priority registration. And then at one point I was thinking that I'll even play tennis or whatever, not that I know how to play tennis… if you played sports you get priority registration. That's how it was at DeAnza. And I thought like, this is so, like, um, I felt that the school is also very, um, political, or, you, you could be a person who plays a sport and maybe have a bad GPA, but they don't care.

<div align="center">* * *</div>

> Michael: …the way College of San Mateo works, if you have a student educational plan, you get priority … registration for the classes than other students, so that's why I do it, but I mean, … after a while I already know what classes I need … to get what I want, so after a while I just felt that it's a waste of time, … I just think that some students that are self-motivated enough, they don't really need to see a counselor, though.

<div align="center">* * *</div>

In cases when enrollment was possible, participants perceived both educational

benefits and detriments due to overcrowding. In some cases, Fayola perceived that

classes with larger enrollments increased her chances for success:

> Fayola: Like, for an English class, I think it's actually better to have a bigger class because the more students that you have in the class, the more opinions you can get.

On the opposite side, Julia felt that large class sizes in specific spaces decreased her

learning effectiveness:

> Julia: We were in a class, science class that starts, the teacher's down here in kind of like an amphitheater, kind of like. And I need to see close, so I sit in the front

row. ...but I didn't realize we had close to seventy students in that class. ... I only knew, like, maybe ten or something. ...that was our lecture class and then that lecture class was broken down into four sections. And we met separate times and then every Monday ...in the lecture. So... you don't get to know everybody in class. I did get to know my section people that I worked with then. But, that's another factor. ...

Interviewer: You mean the way the room was situated with the fixed seating, and theater style?

Julia: Yeah. You can't see, and I mean, you don't get to really talk to, interact with people.

While several students perceived something about class enrollment sizes, very few perceived influences due to campus enrollment limits. Four participants perceived no influence at all on their own transfer-related experiences.

Perceived Influence of Campus Budget

Several of the higher education transfer students interviewed for this study described direct influences that the campus budget had on their experiences. While the interview question focused on the influence of campus budget on their experiences, the participants' collective discussions covered the budgets at several different levels. First, at the highest level, Farideh described the greater influence of the United States budget situation than the campus budget on her decision to stay in school:

Farideh: If anything, knowing what that, you know, we're going through this recession, it urges me to keep going... until I either can't afford it, um, but I don't, I, the, the budget, at least I don't know of it. I've never before, it never was disclosed how much they make or can give out or anything like that.

Second, Jamal described how the state budget influenced some of his decisions at the four-year institution:

Jamal: ... you know how California works in terms of a budget, so unfortunately some classes kind of fall by the wayside. As a result, ... you have to play catch up and choose a class...usually to get, you know, the twelve units for financial aid.

Third, Juanita described her perceptions of how the four-year institution's budget

influenced transfer students' ability to get accepted:

> Juanita: …when I transferred, um, I would hear that there were problems with the budget and that they were going to cut classes and things like that. And there was always talk about that. But, ... I think recently it's gotten worse than before. For example, there is a cap at San Jose State now. And not everybody who used to get accepted was going to get accepted.

Fourth, three students identified how program budgets within the institutions themselves

influenced their experiences or the experiences of those they knew.

> Julia: I heard that with communications, like, for the last class, one of the last classes we had, were saying that Arnold Schwarzenegger with budget cuts, and that the Dean was trying to cut some of the classes, and communications, 'cause that's where my daughter's focused on.

<p align="center">* * *</p>

> Jamal: I'll give you an example, like, EOP. I remember that someone told that ten years ago, that EOP [Educational Opportunity Program] actually had an office here. … Their own entity, their own staff, and everything. Over the years, that program has basically almost been borderline destroyed. It's right now on life support. So for me getting into that program at, you know, Fall 2006, at Mission College, at the EOP program was vibrant, that had an impact on me in terms of the amount of funding I could get to supplement, you know, the existing financial aid that I would get from San Jose State.

<p align="center">* * *</p>

> Jennifer: I think they cut a bunch of teachers. They fired all of the part-time math teachers, including the best math teacher that they had, which really pissed me off. …just the semester after I left. … And that was the big reason why I left [Cal Poly Pomona], was because of the budget issue and because of the engineering issue. But it was, that was a big thing. … if they were going to have that kind of budget cuts and … they were messing with the math department and the physics department, which is the biggest things for me… the engineering program wasn't going to survive very well.

<p align="center">* * *</p>

> Mary: …classes have been cut ...to handle the budget. Yeah, so ... it makes a difference. Yeah. How many classes are offered, you know, of that kind. And if

they're only offered during the day then that limits the nights and the Saturday classes that I generally take.

Fifth and finally, three students identified how the campus budget influenced their individual budget situations.

Jada: "it's really my budget…that is impacted."

* * *

Mei Xiu: …for this summer I just working thirty-seven hours and then finally said 'Oh, we don't have money, we want to reduce your hours.'

* * *

Juanita: …now I'm here and I know that there's a lot of problems and I didn't get my financial aid until later. … Because usually you get it sooner. And I got a message saying that they apologized for the delays, but because of the budget problems they didn't get the money earlier so it took longer than what they normally take. … And then a part of me worries that they'll say, well, 'We're not going to have money,' or something, and 'You're going to have to figure something out.' … ultimately if something really drastic happened, then I couldn't get my financial aid because of some major ... problem, then I guess I would have to work. And ... suspend my study for a while. What else would I do?

In the last case, Juanita described how her budget situation could influence her decisions to leave school. Six interviewees perceived no influence or no influence yet on their transfer-related experiences due to the campus budget.

Perceived Influence of Campus Technology Capabilities

The most common perceptions among the participants about the influence of the technology capabilities of a two-year or four-year campus were that the availability of computers and Internet connectivity, both wired and wireless, made transfer-related tasks easier. Those students who had attended more than one institution were able to compare the technology capabilities of the different campuses. Jennifer and Juanita felt that the Internet connectivity at San Jose State University (SJSU) was inferior to the connectivity

they had experienced at previous campuses. By the same token, another participant from SJSU, Julia, found that the four-year institution offered more technology options, such as a web-based campus portal and laptop checkout for students, than her community college had offered.

Research Question 5 – Relationships Among Responses Addressing Research Questions 1 Through 4

This section describes findings related to Research Question 5: *When analyzing the qualitative data collected during the study, what are the relationships among the responses addressing the four research questions related to higher education transfer students' perceptions of the transfer process, their social networks, the use of technology, and organizational context?*

When describing the transfer process and the perception of institutional support across multiple research questions, the students at four-year institutions felt on their own more often, but when asked to identify sources of support or information most had made connections to individuals within the campus network. When describing the community college portion(s) of the transfer experience, the majority perceived better relations at the human level, including interactions with staff members working at counters to provide information or services.

In responses to questions related to three of the first four research questions—regarding perceptions of the transfer process, the influence of social networks, and contextual influences—the higher education transfer students who were parents described experiencing additional difficulties or having additional trouble making transfer-related decisions. Several left school or waited to attend in order to have or raise children. Some

made decisions based on and felt stress related to how their children were affected by their going to school. Budget stresses related to raising children, such as paying for child care or having a home, were augmented during shortages or relieved with scholarships.

In responses to questions related to three of the first four research questions—regarding the influence of social networks, the influence of technology use, and contextual influences—participants often sought in person connections despite seeing the value in using technology. For example, peer mentors found technology useful for finding and providing information, but enjoyed the face-to-face interactions with other students. Jerry sometimes saw social network sites as a distraction and at other times needed them to connect to pre-college friends over distance. Some participants valued social network sites for social integration purposes, but the groups they had joined or wanted to create online also met or would meet in person, such as the Latino Business Student Association was asked to join as part of a program or the snowboarding club that Jennifer wanted to create.

For several of the research questions, the participants perceived differences in the roles played by different actors in the participants' networks, ranging from acquaintances and professionals to family and friends. While no one group exclusively served in a specific capacity—academic, social, or other types of support—there were clear delineations according to the people the participants sought for the separate types of support. Participants more often sought academic information and support from weak tie connections, but more often perceived influence from strong tie connections on their decisions to stay in higher education. Jamal summarized a common perception about the

general role of other people and increasing network size that began for him at the two-

year institution and continued at the four-year institution:

> Jamal: It's, like, not just for Mission, but also at San Jose State, really something that really helped the transfer process go along smoothly was just, you know, meeting new people.

Through the use of technology, distance played less of a factor with respect to which

person each participant sought for support, but several perceived the need for face-to-face

connections regardless of the type of support.

In responses to questions for all of the first four research questions, patterns

emerged related to influences from their own family's educational background. At times,

the participants themselves recognized these patterns as well. They discussed the

importance that their parents placed on getting a higher education degree, even if they

had not gotten one. Others, like Juanita, felt that her parents would have done things

differently had her parents recognized the importance of higher education and fought to

become the first in her family to seek a degree. Moreover, the participants who were

parents and even one who was not addressed the need to get a degree as a way to model

the importance for their children or future children. They also expressed interest in

influencing other family members, such as cousins, nephews, nieces, and grandchildren,

to enter and succeed in higher education.

Regardless of personal background, participants perceived limitations of not

getting a degree as they addressed different research questions. Participants from

historically underrepresented ethnicity populations perceived a need for greater ethnic

diversity within the institutions themselves, such as a more ethnically diverse faculty and

staff. Further, encouragement emerged as a common term used in responses to the first

three sets of interview questions and discouragement was mentioned in response to the

last set of interview questions. These concept and additional connections between the

first four research questions were discussed in depth in Chapter V.

Additional Findings

Two additional elements emerged that were not part of the original set of selected

elements related to student departure, social network, and complexity theories: diversity

and encouragement. This study included higher education transfer students from

historically underrepresented ethnicity populations to further investigate how they

perceive the transfer process and if their perceptions differ from students outside these

populations. Two participants from this group perceived that the four-year institution did

not reflect the diversity necessary for these populations to succeed, nor sufficient

understanding of historically underrepresented ethnicity populations for other populations

to better understand them through coursework:

> Jamal: …for the student population, it's [diversity is] decent, but for the faculty and staff population here, I feel that diversity is very poor. And it's hard for students who, you know, learn the values and lessons of diversity if it's not reflected at the upper echelons of this institution.

> * * *

> Juanita: …they talk about diversity, but it's just talk. Because when it comes down to it they don't have diversity in faculty, at least not in the nursing program. They don't have diversity in the students as much as representative to the population. I live in San Jose, I'm in San Jose State, and then the program, there are about 90 people that got accepted, 3 are Hispanic, 1 is African-American, and 1 is mixed. And the rest are Asian and Caucasian. And faculty, most of them are, are Caucasian. So, even sometimes when they're teaching, sometimes they say things that don't sound appropriate to me. And, like one time one of the instructors in the class said, she was talking about the third world, and she said, in a third world blah, blah, blah, and in the civilized world this is what we do. … I thought it was a comment that was not something she should have said. And maybe… she didn't mean it like that. But to me it didn't sound right, that she said

"in the civilized world", implying that people in the third world countries are not civilized.

Jamal recognized additional difficulties for all students to value diversity, while Juanita perceived that the lack of diversity influenced the quality of her education. Almost half of the participants discussed some form of encouragement—being encouraged, wanting to be encouraged more, encouraging others, wanting to encourage others, or not feeling encouraged by specific individuals or groups—as an influence on their transfer-related decisions or experiences. Juanita discussed encouragement the most often and did so several times within the context of being part of a historically underrepresented ethnicity population.

Summary

Perceptions of institutional support ranged from positive perceptions at two-year institutions to mixed perceptions at four-year institutions. Participants described a balance between student responsibility and assistance from the institutions, especially when transfer students do not know where to start to seek help. Interviewees perceived the need for better communication between different two-year and four-year institutions, between different campus units, and between the campus and the students.

With respect to perceptions of the influences from elements of their personal backgrounds, several of the participants at the four-year institution were conscious of the difficulties for historically underrepresented minority populations in achieving their educational goals and the need for these populations to succeed. Interviewees referenced being encouraged by different people in their social networks, such as family members and counselors, as well as discouraged by people in their networks, such as family members and friends who had not pursued the same educational goals. The participants

described a number of external factors that influenced their decisions to transfer in the past, take classes at multiple institutions in the same term, drop classes, or leave higher education and returning. Over half of the participants perceived that they had the greatest influence on their decisions to remain in higher education. Additional influences came from family members, such as through parental encouragement or modeling or from the desire to be models for children.

A set of questions was devoted to the topic of the influence and value of the participants' personal networks during the transfer process. Most participants had sought academic support and information from counselors and perceived their influence on their decision-making in those experiences. Related to the ultimate decision to stay in school, nine of the thirteen participants listed particular family members, six of the thirteen participants listed counselors, and three of the participants listed themselves as having influence on them.

The interviewees approached different types of people in their social networks for different purposes. All thirteen participants approached people who would be considered actors with weak tie connections, such as acquaintances or people working in some professional capacity, more than actors with strong tie connections, such as friends and family, for academic support. Conversely, twelve of the thirteen participants approached actors with strong tie connections more than actors with weak tie connections for social integration support. When asked about whom they approached for both academic and social reasons, over one-third of the participants identified actors whose connections had changed from weak to strong over time.

The third set of questions pertained to the use of technology and its influence on their transfer-related experiences. All participants used Internet-related resources to support themselves throughout the process. Internet uses included finding transfer-related information, completing transfer-related forms, getting class-related information, and completing class-related tasks. Almost three-quarters of the participants described using computer-based technology that did not include use of the Internet as well. Communication technologies, such as e-mail, phone, and cell phone, were described by the majority of participants as important parts of the transfer process. At the same time, several participants noted that the communication technologies often presented time-related barriers such as length of response time or lack of access at certain times of day. To share information with others, participants perceived value in electronic portfolios for multiple transfer-related purposes. However, none of the participants had had direct experience creating an electronic portfolio. Non-technology resources were also discussed, with student educational plans emerging as a highly valued tool at some point in the participants' transfer processes.

The participants used technology in a variety of ways to create and maintain their social networks at and outside each higher education institution. Over half of the thirteen participants used phones and phone applications like texting for social network purposes. Eleven of the thirteen participants, ranging in age from nineteen to fifty-one years old, had accounts on one or more social network websites. Three participants raised questions about safety when discussing the possibility of meeting previously unknown social network contacts in person for the first time.

The fourth set of questions covered the topic of contextual influences at the organizational level, such as enrollment limits, campus budget, and campus technology capabilities. The participants interpreted the concept of enrollment limits in several ways, at the institutional level, at the program level, and at the class level. Participants perceived that institutional enrollment limits had less influence on their transfer-related experiences than did class enrollment limits. Those that mentioned enrollment limits at the program level had already been accepted, so perceived only that it would influence the experience of other transfer students in the future.

Similarly, the participants interpreted the concept of campus budget at several levels, ranging from the state level to the individual level. In all cases, the participants perceived that financial shortfalls had a negative influence on their transfer-related decisions and experiences. Almost half of the participants, six out of thirteen, perceived that the campus-level budget did not have an influence on their transfer-related experiences.

The participants perceived the influence of technology capacity at the campus level were primarily related to availability of computers and Internet connectivity. Several students had purchased their own computers to have greater freedom and availability. One-third of the participants at the four-year institution noted that the Internet connectivity was not as good as what they had experienced at previous institutions.

CHAPTER V. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Discussion

During the data analysis phase the participants' responses were sorted and reviewed in various orientations and combinations to identify patterns. Additionally, the individual and collective responses were viewed through different lenses. Namely, there was an effort to identify a relationship between the responses and specific elements from student departure theory, social network theory, and complexity theory to describe the results in a way that would shed new light on their meaning. The specific student departure elements that were chosen for this study were student background, student commitment, interactions with the campus social system, social integration, and each student's decision to persist or depart. The specific social network elements that were chosen for this study were actors (nodes), connectedness, strong ties, weak ties, centrality, and network size. The complexity elements that were chosen for this study were sensitive dependence on initial conditions, phase transition, different types of attractors, and fractals. This section has been devoted to a discussion of the analysis of participant responses through each of these sets of elements and organized according to the theory used for analysis.

Student Departure Elements

When reviewing the participants' responses through the lens of student departure theory, relationships were found with each of the student departure elements chosen for this study—student background, student commitment, interactions with the campus social system, social integration, and each student's decision to persist or depart. Each higher education transfer student was asked about his or her background and how he or she

perceived that it might influence his or her decisions about transfer or transfer-related

experiences. Each participant described one or more of the following aspects from his or

her background, some of which correlate directly to Tinto's (1993) longitudinal model of

institutional departure: age, gender, ethnicity, all educational experiences prior to the

interviews, parental level of education, and level of support from family and friends for

him or her to seek a higher education degree. With respect to interactions with the

campus social system and social integration, the participants answered questions related

to how they used their personal social networks for support or information while

attending a two-year or four-year institution, and how integrated they felt with each

campus they had attended. Regarding each student's decision to persist or depart, he or

she was asked about his or previous departure experiences as well as social,

technological, and organizational factors that might influence him or her to stay or leave.

The emergence of these student departure elements has been organized according to the

responses to questions related to each research question for this study.

When asked about their academic goals, Tinto's (1993) goal commitment, all

thirteen stated they wanted a Bachelor's degree. Over half stated they also wanted one or

more graduate degrees or a law degree as well. The goal of a graduate degree was

especially significant for Juanita, even though she anticipated that her Bachelor's degree

would take her a total of eleven years to complete.

When analyzing responses to questions related to Research Question 1—

questions about student perceptions of the transfer process itself—the student departure

elements of student background and student decision to depart emerged. In his

longitudinal model of institutional departure, Tinto (1993, p. 115) looked first at pre-

entry attributes such as family background, skills and abilities, and prior schooling:

> Each attribute is posited as having a direct impact upon departure from college as
> suggested, for instance, by its well-documented effect upon levels of academic
> performance in college. More importantly, each affects departure indirectly
> through its effect upon the continuing formulation of individual intentions and
> commitments regarding future educational activities.

His model depicted the longitudinal process as a single, linear path, but this statement by

Tinto and the data from this study suggest otherwise. The continual reformulation of

intentions and commitments depict the process as one that restarts over and over as initial

conditions keep changing. This concept is explained further in the discussion of the

complexity elements below.

Interview questions related to Research Question 1 included questions about

family background and prior schooling to study how initial conditions such as Tinto's

pre-entry attributes related to students' decisions to stay or leave. Fayola, Michael, Mary,

Julia, and Juanita—representing every ethnicity included in this study—all had the

potential to be the first in their family to complete a higher education degree. Participant

responses about family background showed they perceived an influence by parents' level

of education on their decisions to stay in higher education. Several participants who were

parents—Jada, Farideh, Fayola, and Mary—perceived this influence to stay in higher

education even more strongly when viewing their own influence on their children's

educational decisions. Some participants' backgrounds also played a role in their

decisions to depart, to return, and to stay. For example, Julia left higher education to raise

six children. When asked about her decision to return, she talked about it being a life-

long goal instilled in her by her father, who himself was two weeks short of finishing eighth grade.

Several participants, such as Jada, Jamal, and Juanita, perceived an ethnicity-related background influence on their transfer-related experiences or their decision to stay in higher education. They had recognized the additional difficulties for people from historically underrepresented ethnicity populations and some wanted to be models for their specific populations. While Tinto's revised model (1993) went beyond his original model (Tinto, 1975) in several ways, Braxton, Sullivan, and Johnson (1997) identified limitations in applying the model to minority student populations. Moreover, after conducting an anthropological analysis of Tinto's model, Tierney (1992) took issue with how Tinto interpreted concepts related to ritual and rites of passage when applied to people from non-majority cultures going through higher education integration processes. Since several studies (California Community College Chancellor's Office, 2002; Shulock & Moore, 2004, 2007) have showed that historically underrepresented ethnicity populations have the lowest transfer rates, this study specifically included participants from these populations. Juanita described a conversation with a counselor at the four-year institution that corroborated these recent studies, wherein she was told that many students from historically underrepresented ethnicity populations do not graduate. Jamal and Juanita also perceived a dearth of diversity amongst certain student populations, such as Juanita's Nursing program, and within the four-year institution's faculty in general. Based on results from her analytical study of survey data from over 16,000 faculty members and approximately 4,250 students, Hurtado (2001, p. 199) suggested that "the diversity of the faculty and student body has an impact on classroom environment and student

development during college." More discussion about diversity can be found in the Additional Findings section, in Chapter IV above.

When analyzing responses to questions related to Research Question 2— questions about students' personal network influences on decisions during the transfer process—the student departure elements of student commitment, interactions with campus social systems, social integration, and decisions to stay or depart emerged. Bean and Metzner (1985) created a model of nontraditional student attrition that considered outside encouragement as a variable in a student's departure decision. Results from this study both echo and go beyond Bean and Metzner's contention that outside encouragement from family and friends is a key element in students' decision to stay in higher education. The majority of the participants found that their strongest support came from outside the institution, such as family and pre-college friends. This support allowed them to maintain their goal commitment, but did not contribute to feelings of social integration at the institutions of higher education. As an exception, Julia's children supported her goals to finish her degree in a unique way. Since all three were accepted at San Jose State University, she attended both her daughter's transfer orientation and her son's freshman orientation before her own transfer orientation, giving Julia a heightened sense of social integration.

Despite the strength and extent of support from outside the institutions, participants like Jada and Jamal referenced people from within the institution who also provided critical support that helped them stay. When asked to rank people whose influence he felt had on his decisions to stay in school, Jamal ranked a social justice group he had joined, the Gulf Coast Civic Works Project (GCCWP), as well as particular

friends within that group, as being his primary support network. Tinto (1993, p. 118) posited that "Interactions among students…are viewed as central to the development of the important social bonds that serve to integrate the individual into the social communities of the college." Jamal, himself, described his social integration through his interactions with GCCWP and other student groups as integral to his personal development and his progress toward his academic goals. Tinto (p. 117) also covered social integration through interactions with campus employees as well: "Contact with faculty and staff…may influence individuals' judgments about the degree to which the institution, as reflected in the actions of its representatives, is committed to student welfare." Jada corroborated this concept when she told a story about how stress and her children influence her to leave school and how instructors at the four-year institution helped her by allowing her children to attend class with her. In both cases, these participants' network connections at the institution provided support that they perceived had allowed them to stay in school and to achieve a certain level of social integration.

When analyzing responses to questions related to Research Question 3—questions about influences of technology use on decisions during the transfer process—the student departure elements of social integration, interactions with the campus social system, and student background emerged. Certain types of technology, even video games, held the possibility of influencing transfer students' perceptions of social integration or lack thereof. Another technology, social network sites, provided more obvious opportunities for participants to increase their social integration through the number of interactions with the campus social system. As Wellman et al. (1996) had determined in their research, the participants in this study also used computer-supported

social networks to create a sense of community at the institutions they attended, to work cooperatively with others around class-related and transfer-related tasks, and to manage complex work tasks related to transfer.

Tinto described students creating affiliations with smaller communities or subcultures on a campus as a way to achieve some level of social integration, even if a given student had not integrated with the campus community as a whole. He discussed the potential need for students to break a campus into "knowable smaller parts or niches that help anchor them," and to "seek out knowledgeable peers or mentors on campus" (Tinto, 1993, p. 125). The participants used technology on several occasions to increase their level of social integration through those smaller communities. For example, Julia was required to open a Facebook account when she joined the Latino Business Student Association. To create a sense of community, Jada proactively found people through MySpace whom she had met in person at convocation. While that "fell off" after a while, she perceived its value for interactions with the campus social system from a distance. Similarly, Jennifer anticipated creating a new campus community by creating a snowboarding club within a social network site. This online affiliation group would then become an avenue for others to achieve social integration along with her.

In certain cases, attempts to increase social integration on campus also led to greater connectivity off campus. Not only did creating a Facebook account increase Julia's connectedness, or membership in social systems on campus, but also reintroduced friends from previous schools in her educational background—both high school and elementary school—when they found her via the social network site. Martín also described using MySpace often to connect with friends from his background that

included living in London, Mexico, and Spain. MySpace was his favorite, in part because he could connect with people whom he hadn't talked in a long time.

When analyzing responses to questions related to Research Question 4— questions about organizational or contextual influences on decisions during the transfer process—two students' decisions to persist or depart emerged. While questions about campus enrollment sizes and technology capabilities were not very influential in students' transfer-related experiences and decisions, campus budgets and budget related issues had some level of influence on students' experiences and decisions. Before Academic Year 2008-2009, the State of California was late in passing its annual budget. In early 2009, the lawmakers worked on an additional mid-year fix to bridge a $42 billion budget gap (http://www.pantagraph.com/articles/2009/02/17/news/doc499a3334b09b5289072473. txt). These actions, in turn, delayed funds from getting to state agencies such as public institutions of higher education, and required some institutions to make mid-year cuts and readjust their own budgets. The resultant delay in financial aid disbursement was so significant for Martín that he had to take an additional job. This, in turn, jeopardized his success in one class required to transfer, even after he had already been accepted at a four-year institution. Juanita went through a similar situation, wherein she strongly considered leaving school to go back to work if her financial aid would have stopped. Table F1 (see Appendix F) summarizes participant responses related to student departure elements. Organized by responses to questions related to each research question, participant perceptions have been included as positive (+), negative (-), or neutral (0).

Social Network Elements

When reviewing the participants' responses through the lens of social network theory, relationships were found with each of the social network elements chosen for this study—actors or nodes, connectedness, strong ties, weak ties, centrality, and network size. In the higher education context, an actor or node could be any person with whom the participant had an interaction throughout the transfer process. Regarding relationships between the participants' responses and their connectedness, their responses were analyzed to determine the relative number of connections or ties to other people that they described. The level of each participant's connectedness may go beyond what he or she described in the interview, but only his or her own interview responses were analyzed. The strength of these ties, strong or weak, was determined by how the participants described their relationships with each person, or actor, in their networks. In the data analysis, the status of weak tie was assigned to people somehow described as acquaintances, while the status of strong tie was assigned to people that were somehow described as friends or family. When seeking relationships between the participants' responses and the concept of centrality, the data was analyzed to determine how much influence they perceived they had on other people in their networks. Lastly, each participant's network size, the number of people or connections in his or her network, was approximated only from the data collected during his or her interview. The emergence of these social network elements has been organized according to the responses to questions related to each research question for this study.

When analyzing responses to questions related to Research Question 1— questions about student perceptions of the transfer process itself—the social network

elements of weak ties, strong ties, and actors emerged. Several students interviewed for this study actively selected classes based on advice submitted by strangers on websites such as RateMyProfessor.com or the MySpace equivalent of Rate My Professor, even if those classes were necessary to reach academic goals. This speaks to the power of social networking and the participants' willingness to trust the judgment of people who would qualify as extremely weak ties—people whom they did not know, but with whom they had something in common. Granovetter (1973, p. 1372) stated that "It is remarkable that people receive crucial information from individuals whose very existence they have forgotten." Based on the results of this study, this statement should be revised to read: "It is remarkable that people receive crucial information from individuals whose very existence they have forgotten *or whose existence they have never known*" (emphasis added).

Further, the participants did not describe discerning between online advice from friends, acquaintances, or strangers. To create what they called an augmented social network, Jordan, Hauser, and Foster (2003) advocated verifying reputations, which would counteract instructor ratings posted by students after receiving midterm exams or final grade reviews. This functionality should be added to both RateMyProfessor.com and the MySpace analog of this site—that is, students' grades (or GPA) and participation levels should accompany their ratings of professors. This could be done anonymously and would allow people reviewing the site to determine whether or not the ratings were high due to grade inflation or low due to lack of effort or poor performance.

Participants identified a wide variety of actors who they felt influenced them to stay and complete their academic goals. Over half felt they themselves had the most

influence on this decision, but participants also listed strong tie connections of family—children, husband, parents, uncle—and friends or boyfriends. Only two mentioned acquaintances, such as co-workers or counselors. These responses echoed the findings of Culbert, Good, and Lachenmeyer (1988), who found that transfer students had fewer friends on campus and a greater number of friends off campus. This study did not acquire GPA data, so that portion of Culbert, Good, and Lachenmeyer's research cannot be confirmed. One participant, Frank, followed his cousin by transferring to a new high school where he improved his performance and graduated on time, and sought to follow his friends to Tuskegee University or his cousin to San Jose State University. He and other participants corroborated Watts' (2003) belief that humans look to other humans as models or for information, even if they believe they have the answers.

When analyzing responses to questions related to Research Question 2—questions about students' personal network influences on decisions during the transfer process—the social network elements of centrality, connectedness, network size, and the importance of network ties emerged. Jennifer perceived that she held a greater level of centrality due to her desire to help a friend stay in higher education and transfer successfully. Jamal observed that his first semesters at both the two-year and four-year institutions were difficult due to a lack of connections. Conversely, he found that "life got better" at both locations when he started making friends in each new environment, increasing his network size as well. In his advice for other higher education transfer students, he provided his version of the oft-quoted bromide: It's not what you know, it's who you know. Flaga (2002) suggested that, to better serve higher education transfer students, counselors at two-year institutions should also become better connected—

specifically with people at four-year institutions—and better acquainted with information. Describing her experience with an unhelpful counselor at Cal Poly Farideh mirrored Flaga's advice by recommending "more connections with other colleges." Jennifer added that people on a campus should develop intra-organizational connections as well. Staff members at disparate units within the four-year institution—e.g., housing, parking, and financial aid—had provided conflicting information or did not know certain information that would have helped her during her transfer experience.

When approaching people for both social and academic integration, the participants most often listed actors with whom they had intermediate or strong tie connections. In several cases, the person had started as a weak tie connection and had increased the strength of that tie over time. In research about tie strengths in mobile communication networks, Onnela et al. (2007, p. 7336) describe a possible reason for this:

> Taken together, weak ties appear to be crucial for maintaining the network's structural integrity, but strong ties play an important role in maintaining local communities. Both weak and strong ties are ineffective, however, when it comes to information transfer, given that most news in the real simulations reaches an individual for the first time through ties of intermediate strength.

Their findings (Onnela et al., p. 7336) also countered previously existing knowledge about networks—that networks could withstand the random loss of a weak tie connection, but not an actor who acts as a connector or hub:

> The removal of the weak ties results in a phase transition-like network collapse, although the removal of strong ties has little impact on the network's overall integrity. Furthermore, we find that the observed coupling between the network structure and tie strengths significantly slows information flow, trapping it in communities, explaining why successful searches in social networks are conducted primarily through intermediate- to weak-strength ties.

The participants corroborated these findings by reporting that they went to weak tie connections for information about transfer and, in some cases like Michael's call for more counselors during peak periods, reported difficulties when access to specific weak ties was limited.

When analyzing responses to questions related to Research Question 3— questions about influences of technology use on decisions during the transfer process— the social network elements of centrality and actors emerged. While several participants made statements about the benefits of using technology to get information, such as reduced time to complete a task, not waiting on others, or increased self-sufficiency, almost half of the participants preferred to get information in person. Two participants, Farideh and Jamal, described working with other students in person as peer mentors or within campus departments. They perceived that they had a higher degree of centrality than if they had not worked in this capacity. Through her job, Farideh got experience using an internal campus system which, in turn, led to a greater sense of centrality. Jamal discussed how he interacted with actors he did not know to help them with their own transfer-related decisions. In both cases, the participants' roles as a peer mentor meant that they had access to university staff members, counselors, and fellow peer mentors who could increase their abilities to provide valuable information to other students and transfer students. This gave them a greater level of centrality than some of the other participants in the study.

Despite technological proficiencies, some participants' lack of knowledge about how social networks work led to some misconceptions about how to use social network sites for transfer or the safety of doing so. In their responses, the participants often

perceived that they would be dealing with strangers, so they had concerns about actors'

motivations to help them after meeting via the social network site. This suggests that

these participants' experiences with social network sites had been superficial or that they

did not make the connection, literally or figuratively, between their personal networks of

family, friends, and acquaintances, and their use of social network sites like Facebook,

MySpace, or LinkedIn.

    In their research about networks, inter-organizational communication, and

boundary spanning, Manev and Stevenson (2001) posited some concepts that would

apply to higher education. They found that people could span organizational boundaries

equally well at any hierarchical level. For example, as president of a transfer club,

Michael was able to work with staff from the Transfer Center to schedule visitors from

other campuses to visit his institution, and to schedule tours of other campuses for

students who wished to transfer from his institution. This act of joining organizations and

networks also made Michael a connector (Barabási, 2002) and increased his centrality.

Other participants, like Mei Xiu and Martín, described transfer fairs as useful

opportunities for meeting important contacts from another institution. While transfer

club activities and transfer fairs do make it possible to span boundaries, they happen on a

limited basis. A technology-based connection between two-year and four-year

institutions, such as prospective transfer student groups in social network sites, would

allow higher education transfer students to make important boundary-spanning

connections when they needed them most.

    When analyzing responses to questions related to Research Question 4—

questions about organizational or contextual influences on decisions during the transfer

process—the social network element of connectedness emerged. Fayola perceived that classes with larger enrollments increased her connectedness and therefore her chances for success. Promoting an opposing view, Julia felt that large class sizes in rooms with fixed, theater-style seating decreased her connectedness. Martín found more value in connecting personally with existing and new actors in his network—human interactions—than through campus technology. Julia and Jamal pointed to a family-like connectedness in the community college setting that they did not find at the four-year institution. Table F2 (see Appendix F) summarizes participant responses related to social network elements. Organized by responses to questions related to each research question, participant perceptions have been included as positive (+), negative (-), or neutral (0).

Complexity Elements

When reviewing the participants' responses through the lens of complexity theory, relationships were found with each of the complexity elements chosen for this study— sensitive dependence on initial conditions, phase transition, different types of attractors, and fractals. This study primarily used these complexity elements during the qualitative data analysis process as metaphors in an attempt to better understand the transfer process holistically. With respect to evidence of relationships between the participants' responses and sensitive dependence on initial conditions, the data was analyzed for differences in conditions at the beginning of different timelines that could lead to different results. The participants' background data provided the beginning of some timelines, but it was later determined that new timelines might begin with each term at the institution of higher education or at an even more frequent rate.

For relationships between the participants' responses and the concept of a phase transition—a period of moving from a state of disorder to a state of order—the entire higher education transfer process was considered. Namely, data analysis related to phase transitions included information beginning when each participant began his or her higher education experiences. None of the participants had completed his or her four-year degree or had departed school at the time of their interviews, so none of them had completed his or her phase transition.

During the review of the participants' responses for relationships to attractors, or patterns of attraction that occur over time, several types of attractor patterns were considered. Point attractor patterns were defined by a participant describing one person, place, or thing that kept pulling them toward or away from achieving their educational goals. Pendulum attractor patterns were defined by a participant describing being pulled back and forth between two different people, places, things, or a combination of any two throughout their higher education transfer process. Torus attractor patterns, which look like a bagel or donut when drawn, were defined by a participant describing situations in which they seemed to be moving in different directions, but were always drawn back to the same point. Strange attractor patterns were defined by a participant describing situations in which they were able to break free of a linear pattern, such as a point attractor, pendulum attractor, or torus attractor, or to help someone else to do so.

With respect to the relationships between the participants' responses and fractals, the data was analyzed for evidence of self-similarity between people's actions or reactions in specific circumstances or over time, among actions or reactions at different levels of an institution, or objects or entities that bore similarity to one another. The

emergence of all these complexity elements has been organized according to the responses to questions related to each research question for this study.

When analyzing responses to questions related to Research Question 1—questions about student perceptions of the transfer process itself—the complexity elements of fractals, attractors, and phase transition emerged. Juanita transferred the most as a child as her family moved between Mexico and the United States for her parents' work, and also transferred the most as an adult to be close to her own work places. As she described this pendulum attractor pattern—the relationship between work and school—it became clear that the pattern was also fractal. As an adult, she was repeating a pattern that her parents had created when she was a child. During her interview, Jada discovered that her educational history also contained fractal qualities. First, she took community college classes while in high school. After that she took university classes while attending community college. Jamal described a self-similarity in getting through his transfer-related phase transition by meeting new people during his second semester at both institutions. Jennifer displayed a generational fractality when she described how she was influenced to get a degree by her parents' educational experiences.

When analyzing responses to questions related to Research Question 2—questions about students' personal network influences on decisions during the transfer process—the complexity elements of attractors, strange attractors, fractals, sensitive dependence on initial conditions, and phase transitions emerged. Juanita took her personal experiences to heart and described actions that implied she attempted to be a strange attractor for someone else. She did so by encouraging him to break from his linear, point attractor pattern of not verifying statements that prevented him from

reaching his educational goals. Responding to a question about feeling integrated, Juanita described a second experience of acting as a strange attractor. In this example, she tried to encourage someone and to help him break away from his linear, point attractor pattern of making excuses. Julia also described the influence of encouraging others to get a higher education degree. In her case the encouragement was between family members and was passed on in a fractal fashion. Her father had encouraged her and she did the same for her children. Mandelbrot and Hudson (2004, p. 128) wrote, "Every fractal is the logical expression of a few straightforward ideas." In the cases of both Juanita and Julia, the fractal pattern depicts them as people who have been encouraged (or wanted to be encouraged), as people who encouraged others, as people who wanted the recipients of their encouragement to encourage others, and so on.

Fayola demonstrated an understanding of sensitive dependence on initial conditions—differences in conditions at the beginning of a particular timeline that will lead to different and sometimes dramatic results—when she talked about approaching weak tie connections for academic purposes. Specifically, she recognized that small things can have a big difference, what Lorenz (1995, p. 206) defines as sensitive dependence, or the "butterfly effect." In active attempts to create a butterfly effect for herself, Fayola consistently sought the opinions of classmates to help her choose instructors or classes, of instructors to get help with homework, and of professionals to help her make career decisions. Her attempts to create and capitalize on small changes, align with Lorenz' (p. 24) definition of "a chaotic system as one that is sensitively dependent on *interior* changes in initial conditions" (emphasis by Lorenz). Fayola perceived that she could not rely on external changes to her transfer-related phase

transition to make a big difference. Most notably, Fayola's approach portrays the dynamics of initial conditions in a new way. Rather than seeing her initial conditions as conditions that were set from the beginning, she sought to change those conditions on a regular basis by seeking ideas and opinions from various people in an attempt to achieve dramatic results. The conditions had changed and a new timeline had begun for her in a fashion similar to how conditions change for a tournament chess player who has moved a piece on the board and has restarted the clock.

When analyzing responses to questions related to Research Question 3— questions about influences of technology use on decisions during the transfer process— the complexity elements of attractors, strange attractors, fractals, and sensitive dependence on initial conditions emerged. Juanita gave a third example of how she attempted to be a strange attractor by encouraging others and by showing them alternatives to their linear, point attractor patterns of making excuses. With respect to technology, she described encouraging strangers to visit websites to start their educational process, among other things. The example ended with her realization that her actions might inspire others to do the same thing in a fractal fashion. Juanita gave a fourth example of her encouraging someone, this time using Facebook to urge a friend to continue toward transfer. This example contained descriptions of fractals, in the concept of partnering with someone else who wants to transfer, and sensitive dependence on initial conditions, in the concept of identifying the background of the person with whom to partner. Bean and Metzner's (1985) model of nontraditional student attrition included outside encouragement as a variable in the student departure decision. However, results

from this study showed that encouragement from both inside and outside the higher education institution were perceived as important and desired by the participants.

When analyzing responses to questions related to Research Question 4— questions about organizational or contextual influences on decisions during the transfer process—the complexity elements of fractality and phase transitions emerged. With respect to student perceptions of the technology capacity of each campus, students described a fractal pattern in that they prioritized the availability of computers and Internet connectivity highest at both the campus and personal levels. While another question focused on the influence of campus budget on their experiences, the participants' collective discussions covered budgets at several different levels.

There was a self-similarity or fractality in how they perceived the influence of budget at those different levels on their transfer-related decisions and experiences. First, at the highest level, Farideh described the influence of the budget of the United States as a country on her decision to stay in school. Second, Jamal described how the state budget influenced some of his decisions at the four-year institution. Third, Juanita described her perceptions of how the four-year institution's budget influenced transfer students' ability to get accepted. Fourth, three students identified how program budgets within the institutions themselves influenced their experiences or the experiences of those they knew. Fifth and finally, three students identified how the campus budget influenced their individual budget situations. In the last case, Juanita described how her budget situation could influence her decisions to leave school. At the end of her discussion, she described feeling of moving from disorder, or chaos, towards order during her transfer-related phase transition: "I try not to [worry] because it's out of my control." Mandelbrot and

Hudson (2004, p. 125) described a fractal as having "a special kind of invariance or symmetry that relates a whole to its parts: The whole can be broken into smaller parts, each an echo of the whole." In the case of fractal patterns related to the influence of budget on their decisions and experiences, the participants perceived this to be true, from the budget of the country to their personal financial circumstances.

With respect to Research Question 5—patterns among the responses—information about phase transitions emerged. Fayola's attempts to use sensitive dependence to her advantage showed that a new timeline could start at any time during a transfer-related phase transition. In other words, sensitive dependence on initial conditions—the concept that small changes in conditions at the beginning can have a big effect over the long term—was not constrained to the pre-entry attributes phase of Tinto's (1993) model, as portrayed in Figure 2. Instead, it is possible to recur throughout the phase transition, since it is a dynamic system that keeps changing. However, Salem (2002) and Lorenz (1995) might advise Fayola that just knowing small things can make a big difference would not dictate what that difference would be. Salem (p. 445) stated that "Knowledge of the rules and the initial conditions (i.e., parameters) might help explain an outcome, but knowledge of the rules and parameters is not enough to predict an outcome." Lorenz (p. 10-11) described sensitive dependence most accurately when discussing his pinball experiments: "[a]n immediate consequence of sensitive dependence in any system is the impossibility of making perfect predictions, or even mediocre predictions." Table F3 (see Appendix F) summarizes participant responses related to complexity elements.

Conclusions

The participants' experiences were influenced in part by many aspects of their own educational background. Tinto's (1993) model should be amended to emphasize the influence of educational background of their family and friends, such as what had been modeled or not modeled by parents. Due to the fractal relationship between the respective backgrounds of the participants and their families, it took additional effort and potentially interactions with strange attractors to make the leap to succeed. Juanita, the participant who transferred a lot as a child for parents' work as they moved between Mexico and the United States, also transferred the most as an adult to be close to work. Ultimately, it required extra effort for her to reach the four-year institution. There was an additional self-similarity to the way that she sought strange attractors, such as wanting to meet Mexican-Americans who have gone on to get graduate or law degrees, and sought to be a strange attractor for other Mexican-Americans who are not in higher education yet. She described talking to a counselor for students who were the first in their family to seek a higher education degree, which demonstrated that the four-year institution already had some additional structures in place to support these students. However, it was not clear that this support was replicated at the two-year institutions, nor was it clear that this was enough to support success on its own. The participants perceived that additional support structures like specialized counselors or classes specifically for transfer students should be easier to find. Further, participants perceived that there was a dearth of faculty, staff, and fellow students from historically underrepresented ethnicity populations, as well as a lack of understanding about these populations on the part of some instructors.

Participants who did not come from historically underrepresented ethnicity populations also perceived the need for support, but at different levels. Jennifer, whose parents both received undergraduate or graduate degrees, felt it was "obvious" she had to go to college. Her responses to the interview questions showed that she was very proactive and capable of supporting herself in most instances throughout the transfer process. However, at crucial times during the phase transition, such as preparing for and going through the actual move from the two-year institution to the four-year institution, the four-year institution had increased her work and stress, rather than decrease it. The increased work and stress manifested itself in multiple ways, including having to ask four people before learning how to get parking when living in campus housing, resolving financial aid issues, dealing with a class that she was told would not transfer, having to remove a mistaken advising hold, and being told to resolve issues in person when she was still living hundreds of miles away in Southern California. She perceived that technology could have been used to prevent or more quickly resolve most or all of these issues.

The size of the institution was not a limiting factor for the participants of this study. Participants perceived higher levels of human or personal interaction at City College of San Francisco, which admits over three times as many students as the four-year institution in this study, San Jose State University. The interviewees at the four-year institution acknowledged participating in or knowing about classes and programs designed for transfer students, but several still felt like "numbers" at the campus, even after creating one or more personal support relationships with someone like a counselor or professor. This perception did not change for students who had been at the institution for a longer period of time. The feeling was reflected in statements made by participants

who had been at the four-year institution for only one semester as well as the participant who was preparing to graduate in the same semester as the interview, after six semesters at the university.

It was clear from the interview data that the participants perceived counselors and advisors as important actors within their networks for support in achieving their academic goals. This importance was relative to each participant's needs. For example, Michael went to a counselor each semester, even after he had become self-sufficient, because having the counselor sign the student educational plan would grant him priority registration status. However, he also pointed out that during critical times, there were often not enough counselors to meet the demand. At the other end of the spectrum, Martín and Jamal had developed more personal relationships with specific counselors. Martín's counselor showed an interest in him as a person, such as when he had to go to the hospital due to an illness, while Jamal was hired by his counselor to be a peer advisor for other students. Seeing a counselor was not compulsory in all cases, however, so not every higher education transfer student may have had or have needed the same level of counselor support.

In addition to the specific importance of counselors, the participants identified both strong tie connections and weak tie connections as influential and important during the transfer-related phase transition. Strong tie connections more often influenced participants' goal-oriented decisions to stay in higher education, while weak tie connections more often influenced their process-oriented decisions necessary to succeed. This finding combines elements of Tinto's (1993) longitudinal model of institutional departure and Bean and Metzner's (1995) model of nontraditional student attrition.

The interviewees perceived that all actors in their networks, as well as some actors not yet in their networks and some who may remain strangers indefinitely, have the potential to be strange attractors. Participants described being influenced by various actors—ranging from family members to complete strangers—to break free of linear patterns. A small number of participants showed evidence of trying to be strange attractors themselves, by providing extra support to friends who might not break a linear pattern when trying to complete the two-year degree or transfer requirements, as well as to strangers who belonged to the same historically underrepresented ethnicity population. The act of being a strange attractor in and of itself formed a fractal pattern in several instances, wherein the participant helped someone break from a linear pattern after being helped him or herself, or the expressed desire about the person helped by the participant as similarly helping another person.

Figure 4 offers a revision to Figure 2 after collecting and analyzing interview data for this study. It still reconceptualizes Tinto's (1993) model by overlaying complexity and network theory concepts on top of it, but doing so in a way that begins to reflect the fractal nature of the transfer-related phase transition. Tinto's model has still been depicted by rectangular shapes and connecting lines that use ninety-degree angles. His column titles have been removed to reflect that the transfer-related phase transition does not happen in linear stages, but constantly evolves through a transfer student's interplay with their own actions and commitments, people inside and outside the institution, and other influences. Complexity and network theory concepts have still been depicted by oval shapes and connecting lines that do not use ninety-degree angles.

External Forces Influence Goals, Institutional Experiences, Integration, and Outcomes
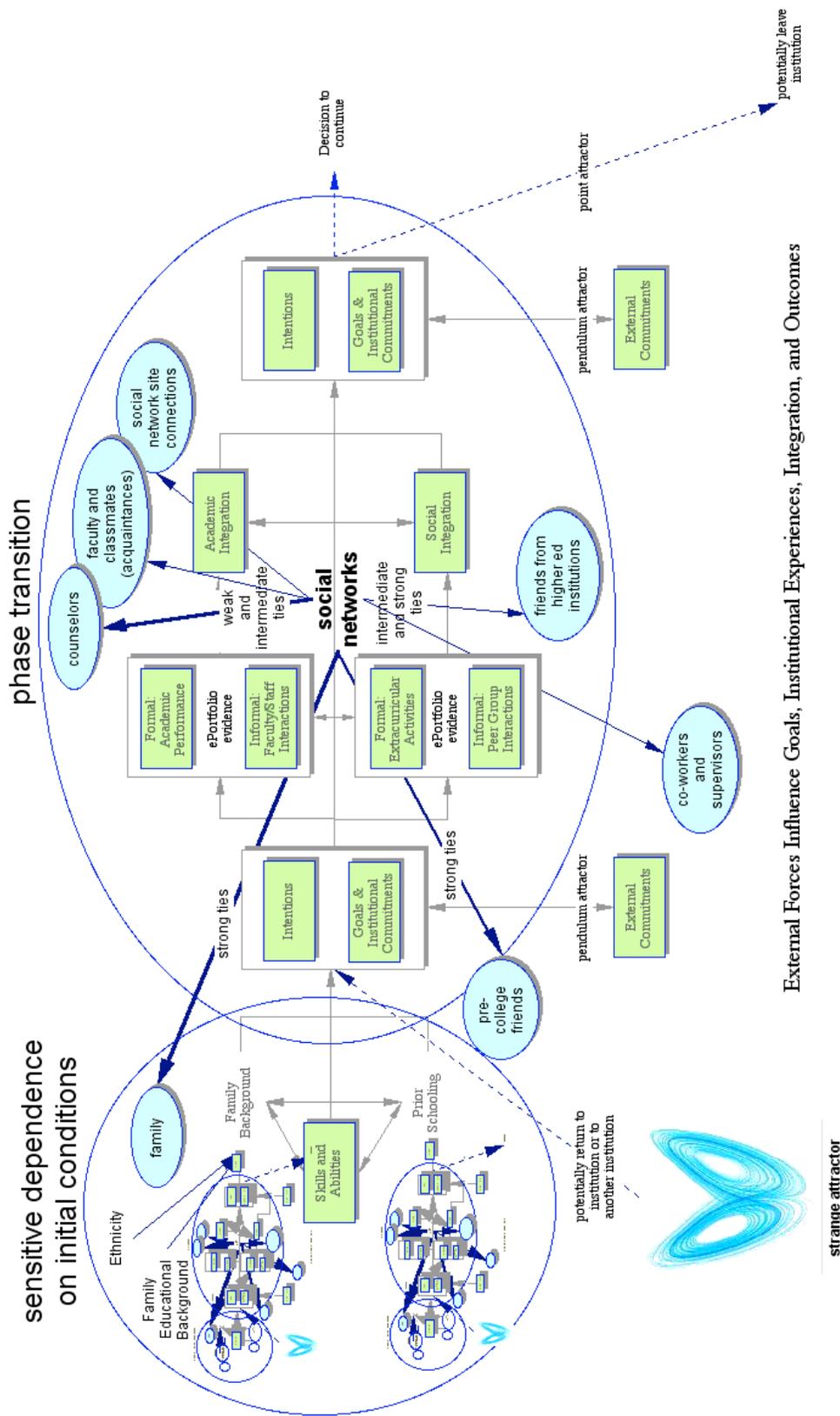
Figure 4: Revision of complexity and network theory layers combined with Tinto's longitudinal model of institutional departure.

Note. From *Leaving College* (p. 114), by V. Tinto, 1993, Chicago: University of Chicago Press. Copyright 1993 by the University of Chicago. Adapted with permission.

Starting at the left side, Figure 4 illustrates how Tinto's Pre-Entry Attributes have been enclosed in an oval to show they are a subset of the complexity concept of initial conditions required for sensitive dependence. Between the first and second column, a picture of a strange attractor signifies the possible influence of strange attractors on a transfer student's decision to return to higher education. Tinto's second, third, fourth, and fifth columns are enclosed in an oval to show that they are all considered part of a student's transfer-related phase transition. Individually, the second column, Goals and Commitments, still addresses the student's level of commitment to personal goals, the educational institution, and external influences before going through his or her institutional experiences, but includes social network influences. The third column, Institutional Experiences, divides a student's experiences between academic and social systems and shows the significance of social networks during those experiences. Between the third and fourth columns, ovals depict the role that social network components at the institution play in a student's integration. The fourth column, Integration, addresses a student's level of academic and social integration after his or her institutional experiences. The fifth column, Goals and Commitments, again addresses the student's level of commitment to personal goals, the educational institution, and external influences after going through his or her institutional experiences. The sixth and last column identifies the student's decision to stay or leave the institution of higher education. Overall, Figure 4 uses Tinto's student departure theory as well as complexity and social network theories to describe the factors that might influence each student's departure decisions before, during and after interacting with the institution on different levels.

Beginning at the left side of Figure 4, an oval surrounds the transfer student's pre-entry attributes. This revision does not assume that Tinto's three factors—family background, skills and abilities, and prior schooling—are static elements. Instead family background draws elements from the student's ethnicity and family educational background to reflect the responses given by the participants in the study. The family's educational background, as well as the transfer student's prior schooling, have been depicted as their own phase transitions, since parents, siblings, cousins, and past selves all go through or have gone through the phase transition. If these phase transitions have ended, they may have ended by the past self or family member attaining a degree or departing.

Olson and Eoyang (2001, p. 101) stated that when reviewing a fractal or self-similar pattern, "a change agent who learns the simple rules that govern the behavior of a system on one level will have information to support decision making at other levels." Applying this to a higher education transfer student's family educational background, this concept describes what Jada remembered from her sociology class. Namely, children often start from where their parents finish educationally. In some circumstances, the family educational background or a student's prior schooling could act as a linear attractor, requiring additional assistance or a strange attractor to break that pattern. At the same time, the background characteristics can and do change, just as Frank's family educational background changed when his mother graduated from a four-year institution while he was at the two-year institution. Similarly, Julia's family educational background changed when her youngest of six children started at a four-year institution, influencing her to renew her studies at the community college to get her AA degree and to prepare for

transfer. Her son's graduation from the four-year institution was yet another change for her family educational background.

Still looking at the oval on the far left of Figure 4, it is possible to see how these characteristics define a higher education transfer student's sensitive dependence on initial conditions. The initial conditions for two pinballs—even if the second pinball moves at the same approximate initial velocity—approximate the same differences in results for different transfer students, or even the same transfer student at two different points in time. Tinto (1975) listed family background, individual attributes and pre-college schooling as three key characteristics of a student's background. After this study, these characteristics have been slightly redefined to include all prior schooling, including prior work done at two-year or four-year institutions. This is largely due to the fact that the phase transition itself has been redepicted in Figures 4 and 5 as a fractal pattern, which implies that new initial conditions exist every time the pattern repeats at a smaller scale (e.g., every year, every term, every decision). Therefore, initial conditions for a higher education transfer student have been redefined to mean the conditions that exist at any time when that student has entered, re-entered, or chosen to continue at a two-year or four-year institution, including but not limited to when he or she has transferred to a four-year institution.

Moving to the right from the second to fifth columns, Figure 4 portrays the transfer process overall as a phase transition, as higher education transfer students try to move from a state of disorder to a state of order (Barabási, 2002). This transition can last longer when transfer students do not receive appropriate support (Julian, 2001; Monroe, 2006; Flaga, 2002). Overlapping Tinto's (1993) longitudinal model, the phase transition

happens through the middle four of his six stages. The phase transition begins with students checking their commitment to their own goals, the higher education institution, and any external entities. After this, students go through various institutional experiences, both academic and social. The set of academic experiences includes formal academic experiences, such as taking classes or completing programs, and informal academic experiences, such as interacting with faculty and staff to get academic support. The set of social experiences includes formal social experiences, such as planned extracurricular activities through student organizations or for specific purposes, and informal social experiences, such as study groups or self-organizing athletic interactions (e.g., pickup games of basketball between two groups that want to use the same court). These sets of academic and social experiences can lead to academic integration, social integration, or both. Figure 4 has been revised to show that transfer students can collect, select, and reflect upon evidence of all academic and social experiences, and can use this evidence to build an electronic portfolio. The phase transition ends with students rechecking their commitment to their own goals, the higher education institution, and any external entities. At this point in Tinto's model, students decide to stay or leave.

Throughout the phase transition depicted in Figure 4, higher education transfer students rely on personal network connections. While Tinto looked primarily at the formality of social interactions, social network theorists like Granovetter (1973, 1982) looked at the influence of the strength or weakness of someone's connection to other individuals. Thomas (2000) found that weak ties, or acquaintances, help students persist, especially in broad networks. Emanating from the center of the large phase transition oval in Figure 4, a student's social network includes a number of strong, intermediate, and

weak ties, regardless of the level of formality in the academic and social systems. Weak ties can include counselors and faculty within Tinto's formal academic system, and faculty and classmate acquaintances within the informal academic system. Strong ties that can help or hinder higher education transfer students include family and pre-college friends, and good friends in the college or university settings. These strong ties are depicted with a thicker connecting line to emphasize their importance in a transfer student's to stay in school. It is also important to note that the ties to family and pre-college friends flow away from the institution in most instances, unless the parent is attending the same community college or university. Similarly, the weak tie connections to counselors have also been made thicker due to their importance in helping transfer students succeed academically.

Along the bottom of Figure 4 there are a variety of attractors, or patterns that emerge from interactions between many connected entities over time (http://www.anecdote.com.au/archives/2005/02/what_is_ an_attr.html). The higher education transfer students bring various levels of intention and commitment with them to the institution. However, Tinto's roots of institutional departure—adjustment, difficulty, congruence, isolation, obligations, and finances—all involve interactions with each educational institution or the outside world. While Tinto's roots of departure are not attractors by themselves, they shape departure patterns. Linear attractors, such as the point attractor shown in Figure 4, are patterns that show how a higher education transfer student can be drawn repeatedly back to a specific person, place, or thing and away from their educational experience. Pendulum attractors draw students between two people, places, or things, such as Juanita and Martín were drawn between work and school.

Conversely, a nonlinear attractor such as a strange attractor makes it possible for higher education transfer students to break linear patterns when making the decision to leave, return to, or stay in a two-year or four-year institution. Figure 4 depicts the strange attractor as a potential cause for a transfer student to return to higher education.

Both complexity and network theories assume the interconnectedness or interdependence seen between transfer students, their social networks, the technology they use and elements of the campuses themselves. Watts (2003) studied networks' influences on decision-making processes, finding that as individuals humans look to others for almost all decisions. These concepts from both complexity and network theories can then be used to understand a student's decision to stay or depart (see far right of Figure 4), as well as the decisions the student makes throughout the transfer process. In Figure 4, this decision has been described as a decision to continue. Figure 4 will be also used as a repeating pattern in Figure 5 to show how the decisions to continue repeat over time, until the transfer student leaves or completes his or her academic goals.

Building on Figure 4, Figure 5 more fully depicts the entire process as a fractal pattern. Starting at the left side, Figure 5 illustrates how complexity and network concepts overlap Tinto's Pre-Entry Attributes by enclosing them in an oval to show they comprise a subset of initial conditions. Moving to the right, a large oval surrounds the fractal view of the transfer-related phase transition. Within the large oval are smaller versions of Figure 4, showing that the fractal pattern of the phase transition is made up of multiple, smaller phase transitions, which could represent the time spent at different institutions, individual academic years, individual semesters or quarters, and so on,
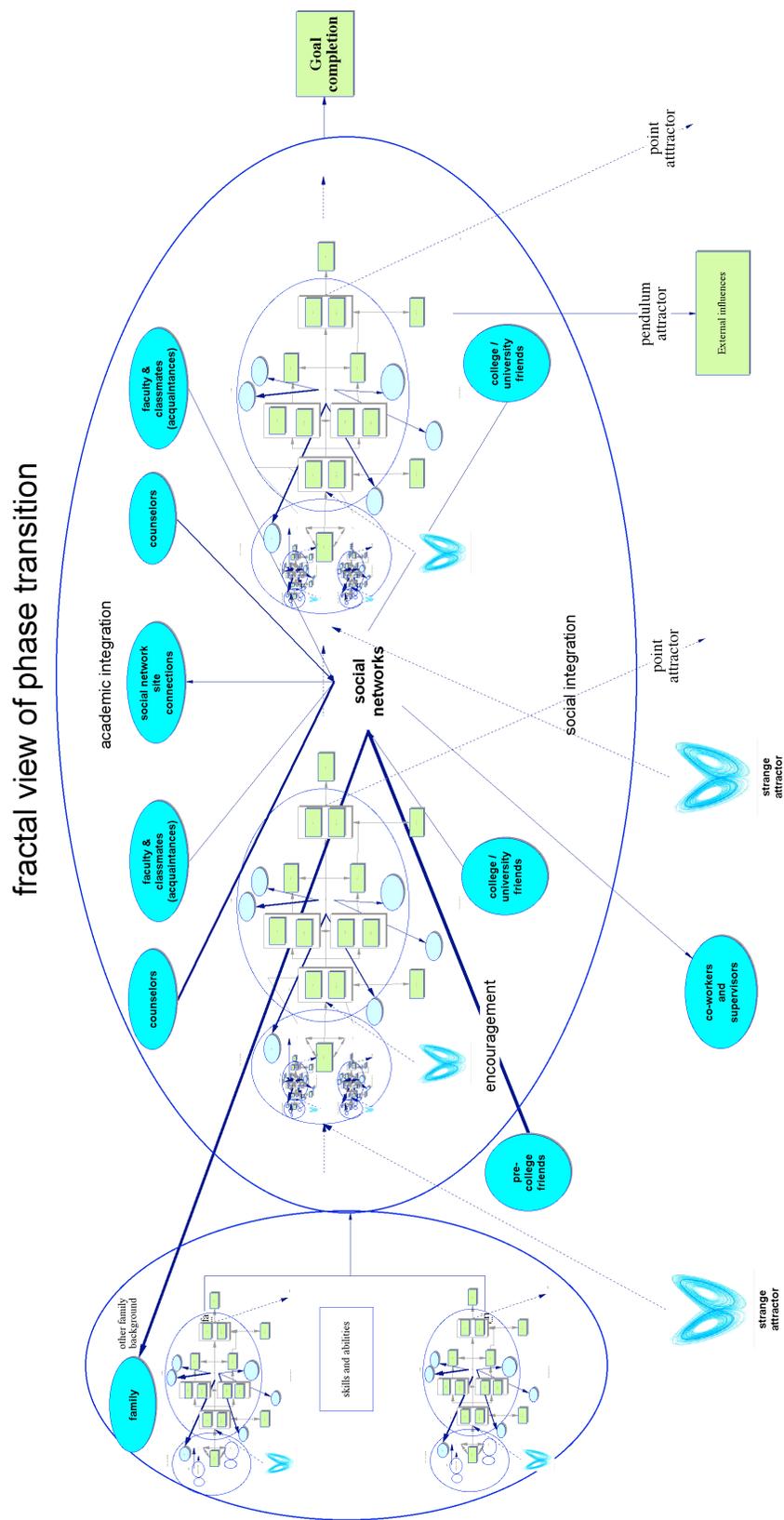
fractal view of phase transition

Figure 5: Fractal pattern of complexity and network theory layers combined with Tinto's longitudinal model of institutional departure.

Note. From *Leaving College* (p. 114), by V. Tinto, 1993, Chicago: University of Chicago. Copyright 1993 by the University of Chicago Press. Adapted with permission.

depending on the desired scale. These small scale versions of Figure 4 are preceded by and followed by dashed lines, showing that there could be more phase transitions than what the figure shows. Also within the large oval are social network connections that persist over time as the transfer student progresses through his or her transfer-related phase transition. These include connections to family and pre-college friends, with connecting lines marked "encouragement" to show its importance; and to counselors, instructors and acquaintances that the student makes during each phase transition and maintains afterward. Below the large oval, a group of attractors and other external forces continuously pull a student away from or direct a student back to higher education. At the far right of the large oval, the student reaches goal completion after going through all of the small scale phase transitions successfully. Ultimately, Figure 5 uses Tinto's student departure theory as well as complexity and social network theories to describe the factors that might influence each student's decisions to stay or leave before, during and after interacting with multiple institutions on different levels.

Final Analysis of the Integration of Three Theories

The higher education transfer students from this study began their transfer-related phase transitions with certain initial conditions. These included Tinto's (1993) pre-entry attributes—family background, skills and abilities, and prior schooling. Their family backgrounds included different family members' educational backgrounds, such as their parents' levels of education, which were themselves phase transitions. Each student's prior schooling, which may have occurred at one or more levels of education (high school, community college, or four-year university), and which may have stopped or restarted, was also a phase transition. Differences in these initial conditions led to

differences in their decisions, intentions, commitments, and experiences. These differences existed between the participants and even for each participant over time.

The participants' social networks played a central role during their phase transitions. Their strong tie connections—family and pre-college friends—more often influenced the participants' goal-oriented decisions to stay in higher education. Their weak tie connections—counselors, classmates, and acquaintances—more often influenced their process-oriented decisions necessary to reach their academic goals. The participants sometimes even relied on strangers for information used to make process-oriented decisions. A combination of strong tie, intermediate tie, and weak tie connections helped them achieve sufficient levels of academic and social integration to maintain their goals and commitments or to decide to achieve those goals at a different time or different place. The participants perceived high value—convenience and flexibility—in using technology to make connections in their social networks and did so often, but sometimes preferred person-to-person interactions.

Throughout the phase transitions, linear attractors—i.e., patterns repeated over time; non-linear attractors, such as strange attractors; or both influenced the participants' decisions. Linear attractors such as the need to take care of children, unsupportive spouses or family members, or jobs drew participants away from their academic goals. Strange attractors such as family, friends, or bosses encouraged them to return to higher education if they had left or had not entered yet.

The higher education transfer students repeated the phase transitions over different periods of time that were nested within one another in a fractal pattern. These time periods ranged from days, weeks, or months; to academic terms (quarters,

semesters), academic years, or the duration at a particular institution of higher education; and ended with the total time projected for each participant to complete his or her academic goals. Participants perceived that technology such as electronic portfolios would allow them to collect, reflect upon, and share curricular and co-curricular accomplishments throughout the phase transitions and across multiple institutions. Throughout the fractal pattern of phase transitions, the same cast of characters within each participants' social networks influenced his or her levels of academic and social integration. Some of these connections lasted only for one phase transition, such as a classmate that one knows for just one class, while other network connections lasted over multiple phase transitions, such as on-campus friends or the people one would invite to, or with whom one would sit at a graduation ceremony.

Tinto's (1993) revised longitudinal model of student departure finished with the student's decision to depart. His 1997 version of the model finished with the student's decision to persist. The model proposed in this study (see Figures 4 and 5) integrating three theories does not finish until the end of the transfer-related phase transition, wherein the higher education transfer student has completed his or her academic goals.

Implications

The California Community College Transfer Centers that began in 1988 were only one part of a much larger and as yet incomplete support structure to assist higher education transfer students from historically underrepresented ethnicity populations and other populations alike. The state and its institutions must look at improving and making more consistent inter-institutional communication, web-based informational sites, and other elements required to support transfer students. The implications from this study go

beyond California to the education of leaders, changes in transfer assistance practices, and training for counselors, instructors, support staff, and transfer student peer mentors at higher education institutions.

A key implication from this study is that strong ties, traditionally friends and family, had more influence on these transfer students' decisions to stay in school, while weak ties, traditionally acquaintances such as classmates or counselors, had more influence on their academic success and reaching academic goals. The participants collectively described approaching weak tie connections for academic support more than approaching strong tie connections for the same reason. The majority made references to approaching strong ties for social support, while only a third made references to doing the same with weak tie connections. Further, the participants' strong ties were primarily outside their institutions, while several participants perceived a lack of human connection in the local environment—primarily at the four-year institution. Therefore, students may need technological and non-technological ways to stay better connected to their primary sources of support as well as to create greater numbers of strong tie connections to local actors to increase the likelihood of their staying in school.

Campuses need to provide additional support for students who are trying to break from specific patterns of attraction, such as point attractor (e.g., parents' education level), pendulum attractor (e.g., school-work, school-family), or torus attractor. As campus enrollments and class sizes continue to grow, students may have difficulties connecting to classmates, as described by Julia in Chapter IV. This points to a need for creating technological and non-technological ways for students to connect to one another for academic support. Some types of support that institutions could provide are listed in the

Recommendations section, below, but should include support for students who are the first in a family to enter higher education, students who are also parents, and students who are from historically underrepresented ethnicity populations.

Counselors, faculty, staff, and administrators at both two-year and four-year institutions need to agree upon web-based locations for transfer-related information that is up to date and easy to access. Farideh mentioned that the ASSIST website needed to be updated from 2005, so institution-specific information on these websites must be regularly updated by each campus, each semester or each year at the very least. Similarly, staff from different campus units should survey transfer students annually to determine what information they have sought, agree on a common location for links to this information, update the information regularly, and make it easy to find from other websites and search engines. Beginning community college students and transfer students accepted to four-year institutions should receive a package of information, electronically or on paper, that they go through with support from a counselor in person, a counselor over distance, or even a self-paced, online tutorial. This would also make it possible to better advertise transfer-related support structures, such as San Jose State University's Transfers as Success class or College of San Mateo's Transfer Club activities.

Based on their experience as organization development specialists and study of complexity literature, Olson and Eoyang (2001) determined that by learning the rules that govern a fractal or self-similar pattern at one scale, anyone could use that information to make decisions about the fractal at a different scale. Orientations for higher education administrators should emphasize the need to include encouragement methods as a tangible element of retention programs. Similarly, training for K-12 administrators should

include the development and maintenance of programs to encourage students from all backgrounds to seek higher education degrees. In both cases, encouragement would just be one part of the picture. Next, these leaders need to set up ways to help students identify and break free from linear patterns of attraction, whether they be internal, such as making excuses, or external, such as parents' level of education. Finally, these leaders must make sure that the proper levels of support are in place in the K-12 environment or partner with external organizations to provide the additional support needed to prepare for higher education.

A final implication from this study is that everyone at a higher education institution shares a responsibility in trying to humanize transfer-related experiences and interactions with transfer students. As the participants noted, encouragement and personal interactions were highly important in their continuation and success in higher education. As Tinto (1993) noted in his model, this could be done in both formal and informal ways. Formally, institutions should find ways to connect students to other students through positive experiences where they can support each other and be supported academically and socially. Requiring some sort of interaction with an advisor or counselor, in person or through technology, even on an annual basis, would make sure that some transfer students do not fall through the cracks and as Jamal stated:

Jamal: It shows them that they actually care about transfer students.

Recommendations

As a more open-ended way to end the interview process, each participant was encouraged to provide recommendations for higher education transfer students and higher education administrators if they wished. The recommendations below include some from

this portion of the interview, as well as others that emerged from answers to specific questions. Additional recommendations stem from the data analysis itself.

Recommendations for Higher Education Transfer Students

Most recommendations made for other higher education transfer students involved improving or increasing their level of social integration. These recommendations included simple acts, like encouraging others, and acts that would require a little time or experience, such as mentoring another transfer student. The latter recommendation resembles the one made by Flaga (2002), who called for peer mentorship programs after conducting her study with higher education transfer students in their first and second years at a four-year institution. Other social integration recommendations included higher education transfer students finding ways to integrate socially, even if they are small, such as attending campus events or participating in study groups. One student who had not participated in these activities, Martín, recognized their value and lamented not being able to participate due to external, work-related commitments.

Even when they are just considering transfer down the road, it is recommended for higher education transfer students to use social network sites to find people they already know at other institutions. While preparing to conduct the research for this dissertation, the researcher spoke with a student who described using Facebook to contact old high school friends, to set up a place to stay during site visits with friends of those old high school friends, to find a job at the four-year institution, and to find good places to snowboard. She did all of this on her own without direction from a counselor or fellow student. If more higher education transfer students were informed about how to use

technology in combination with their personal connections, they might have higher success rates when seeking to make connections at new locations. For example, Jamal would not have had to go an entire semester at the community college or the university to make new friends.

Recommendations for Administrators

Recommendations for campus administrators are related to social, technological and organizational support structures. Higher education transfer students from this study relied more heavily on encouragement from external social network connections and noted the absence of similar encouragement at the institution itself. Socially, the biggest recommendation was for campus administrators, faculty, and staff to engage students, to be engaged in students' success at a more personal level, and to invest more money in programs that help students. The participants also recognized that it would be more difficult to increase one-on-one time with advisors or counselors. In light of these different recommendations and challenges, it is recommended that higher education institutions investigate and pilot different programs to support and encourage transfer students at all levels.

First, campus administrators should begin regularly scheduled, face-to-face, group counseling sessions. Group counseling sessions have been introduced for people afflicted with cancer and other serious illnesses to address the fact that specialized doctors do not have enough time to meet individually with each patient to answer all their questions. Since many of the questions are common, a doctor joins with counselors to answer questions in a communal setting. This model should be attempted in higher education settings with academic and financial counselors, veteran transfer students or transfer

student peer mentors, and perhaps other staff members, to address common questions on a regular basis (e.g., daily during peak times, once or twice monthly during non-peak times). Counseling departments can use Internet-based methods to allow transfer students to find and join specific sessions based on their questions. This would ensure that the correct members of the campus community are present to provide necessary information. Sessions like these hold the potential to reduce the number of common questions for counselors, providing them with more time to address more complicated issues. These sessions would also provide higher education transfer students to meet their peers and to increase the size of their networks.

Second, each community college and university should assign a staff member or student peer mentor to create or join existing transfer student groups in one or more social network sites. Several participants felt that having an online location to ask questions and seek support would have helped them a great deal.

Third, campus administrators should investigate ways to use electronic portfolios to facilitate the transfer process, starting with specific programs like Nursing. It was also recommended to make them more widely available to students and to provide support for starting to create one. One student also recognized the need to address the organizational change that this would cause, specifically related to the time required to review ePortfolio elements for many students. It is further recommended to create training and support around reviewing only the appropriate portions of an ePortfolio for the purposes of assisting students with specific needs, as reviewing entire ePortfolios would take much longer and would not be necessary in many cases.

Organizationally, Michael's suggestion for making more counselors physically available at peak times can be combined with Jamal's recommendation to get faculty and staff into social network site environments for the purpose of providing support over distance. After analyzing the data, it is further recommended that this environment also include student peer mentors who could address simpler, more common, informational questions, freeing the faculty and staff to handle larger or administrative issues. Other organizational recommendations included improving inter-institutional communication, such as updating and sharing transfer requirements so that each institution's staff members give the same information to students, and intra-institutional communication between separate campus units.

Until a perceptible balance has been achieved, each campus must hire more people from historically underrepresented ethnicity populations to be counselors or instructors of classes for transfer students, assign existing instructors from these populations to classes for transfer students, and train counselors and instructors from other ethnicities in meeting the needs of students from these populations.

Recommendations for Future Study

This study unintentionally looked at some of the future research ideas proposed by Flaga (2002)—interviewing students before, as well as very soon after, transfer; interviewing students beyond their second semester at the four-year institution; interviewing non-traditional aged students; and looking for similarities or differences of experience based on ethnicity. Some of these topics should be researched intentionally to capture additional data with questions specific to those research goals.

Recalling a figure from the Statement of the Problem, forty-five percent (45%) of first-time students who began in California community colleges in 1999-2000 had a degree goal, but did not get a two-year degree or transfer within six years (Shulock and Moore, 2007). Using a population similar to the one from this study, it will also be important to interview higher education transfer students who have dropped out and who have not yet returned to either a two-year or four-year institution. The purpose of such a study would be to identify patterns that depict more clearly why these students leave without achieving their stated goals, particularly those who come from historically underrepresented ethnicity populations.

The State of California attempted to address transfer-related inequities back in 1988 with the inception and implementation of the Transfer Centers. It would be worth investigating whether or not transfer students from historically underrepresented ethnicity populations perceive having a harder time integrating socially in the absence of faculty role models from similar backgrounds at both two-year and four-year institutions.

Based on the participants' perceptions of the value of electronic portfolios to facilitate the transfer process or parts of the process, inter-institutional research should be conducted to determine how individual institutions or systems could use a common process, tool, or both for these purposes. There are efforts moving in this direction in California, such as the ePortfolio California Project, that might provide sources for investigation. At a smaller level, new or existing inter-institutional programs such as the grant-funded Metropolitan Health Leadership Academy project between City College of San Francisco and San Francisco State University would provide rich opportunities for such a study.

Final Statement

My goal in conducting this study was to include students' perspectives in the growing base of research about the transfer process, which is often conducted through quantitative studies and written only for administrators. In the process I learned a great deal from them and appreciate their time and their struggles. I hope that other transfer students, as well as campus staff, faculty, and administrators, will benefit from the thoughts that they shared.

My experience in conducting this study has itself been a fractal pattern, mirroring some of the study's results. As I analyzed the participants' responses, I realized that my doctoral student experience was similar to the transfer-related phase transition (see Figures 4 and 5) in many ways. Using technological and personal interactions, I went through weak and intermediate tie connections in my own social networks to find good research articles and model dissertations close to this topic, to find and schedule interview locations, and to find transcription software applications. As I have approached the end of the journey, strong tie friends and family have provided additional support to encourage me to complete the degree and this dissertation while working full time. This encouragement includes a great metaphor from a cyclist friend who told me that I was going beneath the banner marking one kilometer left before the finish line.

This study remains important because transfer rates have not improved over the last twenty years, the national and state budgets will force higher education institutions to curtail admissions and cut classes necessary for higher education transfer students to succeed, and the peak of Tidal Wave II enrollment is only two or three years away. Roughly 2.7 million full-time and part-time students attended California community

colleges during academic year 2008-09 (EdSource, 2009), and will increase over the next several years. As these numbers increase, it is imperative that the problem explored in this study—students' difficulties in transferring from two- to four-year institutions—be improved or resolved.

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APPENDIX A

Student Interview Questions

This set of preliminary questions relates to you and your goals.

0a1. How many semesters have you been at this campus?

0a2. What are your academic goals?

0a3. What are your life goals?

This first set of questions relates to the transfer process.

1a. Campus support

1a1. To what extent has the campus support met your transfer-related needs to this point? Please describe.

1a2. Should the campus be doing something that it is not doing now? If so, describe what that action / those actions should be.

1b. Background influences

Please describe how your background has influenced decisions you have made during any part of the transfer process, if at all.

Interviewer note: You may need to prompt participants for information about their perceptions about specific background influences: age, gender, ethnicity, high school GPA, parents' level(s) of education, and family and friends' support for your decision to get a degree

1c. Educational history

1c1. Did you ever transfer from one elementary school, high school, or community college to another? Why?

1c2. In elementary school, high school, or community college did you ever drop or change a class? Why?

1c3. At any high school, community college or university, did you take any classes from another high school, community college, or university? Why?

1c4. Did you ever leave high school or community college, even for a short time? Why? Did you return? If so, what or who influenced you to return?

1d. Internal and external influences

1d1. What or who, if anything, influences you to stay and complete your academic goals? How? From the community college or university? From outside the campus(es), such as work, family, life in general?

1d2. What or who, if anything, influences you to consider leaving and not completing your academic goals? How? From the community college or university? From outside the campus(es), such as work, family, life in general?

This second set of questions relates to your social network(s), both on and off campus.

2a. Social network influences on decision-making

To which people have you turned for support or information throughout the transfer process? Please state how well you know each person and how you ask them to support you.

Interviewer note: You may need to prompt participants for information about their friends, family members, classmates, faculty, undergraduate advisors / counselors, coaches, other

2b. Social network influences on persistence

2b1. Of all the people in your network, please rank them according to how much influence you feel they have on your decisions to stay in school.

2c. Social network value for academic and social integration

2c1. To which people in your network do you go primarily for academic reasons?

2c2. Primarily for social reasons?

2c3. Are there any that you approach for both?

2c4. Are there any that you approach for neither?

This third set of questions relates to the use of technology during the transfer process.

3a. Technology use during the transfer process

3a1. How are you using / have you used technology to support yourself in the transfer process?

> *Interviewer note*: You may need to prompt participants for information about: To find information? To share information? To communicate? To complete transfer-related tasks? To complete class-related tasks?

3a2. What resources do / did you use to prepare for transfer? Include both technological items (e.g., web sites) and non-technological items (e.g., handouts).

3a3. How did you learn about or find each resource?

3a4. How do people within your social network use technology to support you in the transfer process?

>   *Interviewer note*: You may need to prompt participants for information about their friends, faculty, advisors, classmantes, family

3a5. What would you change about how any of these people use technology to support you in the transfer process? What would be ideal?

3b. Technology for acquiring and sharing information

3b1. What is your preferred method to get information or share information with others?

3b2. Have you used any websites to get information about transfer? Which ones? Were they helpful?

3b3. With whom do you share transfer information the most? How do you share it?

3b4. To what extent has your access to information influenced your feeling of integration with each campus?

3b5. Electronic portfolios are web-based collections of evidence for students to demonstrate their skills and competencies (e.g., writing, critical thinking, quantitative reasoning). Describe how you think electronic portfolios could be used during the transfer process.

3c. Technology for social networking

3c1. How do you use / have you used technology to create or maintain social networks on campus? Off campus?

3c2. Social network sites (e.g., Facebook, Myspace) allow people to connect formally and informally to exchange information and to interact socially. Describe how you think social network sites could be used during the transfer process.

This fourth set of questions relates to contextual factors

4a1. As far as you know, to what extent have your experiences throughout the transfer process been influenced by enrollment size or limits?

4a2. As far as you know, to what extent have your experiences throughout the transfer process been influenced by each campus' budget?

4a3. As far as you know, to what extent have your experiences throughout the transfer process been influenced by each campus' technology capabilities?

APPENDIX B

Document and Technology-Based Artifact Analysis

Using Miles and Huberman's (1994) qualitative data analysis (see Chapter III,

Methodology, Data Analysis), the following checklist provided a common set of concepts

to use for reducing and displaying data, and later for drawing conclusions and verifying

results.

Document and Technology-Based Artifact Analysis Checklist

Content

Researcher will describe the extent to which the document or technology-based artifact:

- provides value for students going through the transfer process between two-year and four-year institutions
- demonstrates evidence of a student's social network influencing decisions throughout the transfer-related phase transition, including departure and persistence decisions
- demonstrates evidence of technology use to support a student during a transfer-related phase transition
- demonstrates evidence of organizational policies or practices that might influence or has clearly influenced students' decisions during their transfer-related phase transition

Format

Researcher will describe the extent to which the document or technology-based artifact:

- organizes information for the intended audience
- where appropriate, provides instructions for the intended audience
- provides sufficient context and description to be used on its own—i.e., without assistance—for its intended purpose
- provides links or references to any additional or complimentary information, such as contact information for key people, needed to complete a task related to academic or social integration

Table B1.

Summary of Document Analysis

Source	CCSF	CCSF	CCSF	CSM	CSM	CSM
Document	AA req's	IGETC (UC req's)	CSU req's	IGETC (UC/CSU req's)	CSU req's	Student Educ. Plan
Content						
Provides value for transfer students	3 (high)	3 (high)	3 (high)	3 (high)	3 (high)	3 (high)
Demonstrates evidence of social network influences	0 (none)	0 (none)	0 (none)	1 (low)	1 (low)	2 (med)
Demonstrates evidence of technology use to support transfer	0 (none)	1 (low)	0 (none)	0 (none)	0 (none)	1 (low)
Demonstrates evidence of organizational influences	0 (none)	0 (none)	0 (none)	0 (none)	0 (none)	0 (none)
Format						
Organizes information for intended audience	2 (med)	3 (high)	3 (high)	3 (high)	3 (high)	3 (high)
Provides instructions for intended audience	0 (none)	3 (high) has FAQ	2 (med)	1 (low)	1 (low)	2 (med)
Can be used without assistance, as intended	1 (low)	2 (med)	2 (med)	1 (low)	1 (low)	2 (med) – sign. req'd
Provides links to info needed to complete integration tasks	2 (med) – academic, not social	2 (med) two links	0 (none)	0 (none)	0 (none)	1 (low)
Format subtotal	5	10	7	5	5	9

Source	CSM	CSM	CSM	CSM/SFSU	CSM
Document	10 Transfer Tips	Transfer Sites	Transcript Evaluation Petition	Estimated College Costs	Trsfr Club Scholarship Criteria
Content					
Provides value for transfer students	3 (high)	3 (high)	3 (high)	3 (high)	3 (high)
Demonstrates evidence of social network influences	2 (med)	0 (none)	0 (none)	0 (none)	2 (med)
Demonstrates evidence of technology use to support transfer	2 (med)	3 (high)	0 (none)	1 (low)	1 (low)
Demonstrates evidence of organizational influences	1 (low)	0 (none)	0 (none)	1 (low)	1 (low)
Format					
Organizes information for intended audience	2 (med)	3 (high)	3 (high)	3 (high)	2 (med)
Provides instructions for intended audience	3 (high)	3 (high)	3 (high)	1 (low)	2 (med)
Can be used without assistance, as intended	3 (high)	3 (high)	3 (high)	2 (med)	3 (high)
Provides links to info needed to complete integration tasks	1 (low)	3 (high)	0 (none)	1 (low)	2 (med)
Format subtotal	9	12	9	9	9

Source	CSM	CSM	CSM	CSM
Document	Transfer eNews flyer	Transfer Club Event flyer	Transfer Opportunities	Transfer Questions
Content				
Provides value for transfer students	2 (med)	2 (med)	2 (med)	3 (high)
Demonstrates evidence of social network influences	2 (med)	2 (med)	0 (none)	2 (med)
Demonstrates evidence of technology use to support transfer	1 (low)	1 (low)	1 (low)	1 (low)
Demonstrates evidence of organizational influences	0 (none)	0 (none)	0 (none)	1 (low)
Format				
Organizes information for intended audience	n/a	2 (med)	3 (high)	3 (high)
Provides instructions for intended audience	3 (high)	2 (med)	n/a	3 (high)
Can be used without assistance, as intended	3 (high)	2 (med)	3 (high)	3 (high)
Provides links to info needed to complete integration tasks	2 (med)	2 (med)	2 (med)	1 (low)
Format subtotal	8	8	8	10

Table B2.

Summary of Technology-Based Artifact Analysis

Source	ASSIST	CSU Mentor	SJSU Stdnt Involvement	SJSU Stdnt Advising
Technology Artifact	assist. org	csumentor. org	sjsu.edu/getinvolved/orientation/new/transfer/	sjsu.edu/sac/advising/transfers/
Content				
Provides value for transfer students	3 (high)	3 (high)	2 (med)	3 (high)
Demonstrates evidence of social network influences	1 (low)	2 (med)	2 (med)	2 (med)
Demonstrates evidence of technology use to support transfer	3 (high)	3 (high)	1 (low)	3 (high)
Demonstrates evidence of organizational influences	2 (med)	1 (low)	1 (low)	1 (low)
Format				
Organizes information for intended audience	3 (high)	3 (high)	2 (med)	3 (high)
Provides instructions for intended audience	3 (high)	3 (high)	2 (med)	3 (high)
Can be used without assistance, as intended	3 (high)	2 (med)	2 (med)	3 (high)
Provides links to info needed to complete integration tasks	3 (high)	3 (high)	1 (low)	3 (high)
Format subtotal	12	11	7	12

Source	CCSF EOP	CCSF Int'l Student Programs	CSM Transfer Center
Technology Artifact	http://www.ccsf.edu/ Services/EOPS	www.ccsf.edu/Internati onal/studentres/transfer _center.html	collegeofsanmat eo.edu/ transfer/
Content			
Provides value for transfer students	1 (low)	3 (high)	3 (high)
Demonstrates evidence of social network influences	2 (med)	2 (med)	2 (med)
Demonstrates evidence of technology use to support transfer	2 (med)	2 (med)	3 (high)
Demonstrates evidence of organizational influences	0 (none)	1 (low)	1 (low)
Format			
Organizes information for intended audience	1 (low)	2 (med)	3 (high)
Provides instructions for intended audience	1 (low)	2 (med)	2 (med)
Can be used without assistance, as intended	1 (low)	2 (med)	2 (med)
Provides links to info needed to complete integration tasks	2 (med)	1 (low)	3 (high)
Format subtotal	5	7	10

APPENDIX C

Recruitment Materials

Dear transfer student or future transfer student,

My name is Kevin Kelly. I am a doctoral student in the University of San Francisco Organization and Leadership Program.

I am writing to see whether you will participate in a study that I am conducting for my dissertation on transfer student experiences. Specifically, I am trying to capture the personal and academic stories of up to eight community college students and eight university students through a series of individual interviews. I am looking for students pursuing a variety of majors. Building pathways for students moving from community colleges to universities has been a long-standing goal for faculty, administrators, and enrollment management specialists.

Your voluntary participation in this study would include participating in one, individual, face-to-face interview about your academic and social experiences as a transfer student. The interview would last between 60 and 90 minutes. Participation is limited to higher education transfer students who have completed at least one year of course work at a two-year college and are over 18 years of age.

Participation is voluntary in the study and participants can end their involvement at any time. Participation or non-participation will have no effect on your relationship with your campus or academic standing.

If you are interested in voluntarily participating in this research study, please contact me at kmkelly@usfca.edu or 415.794.5327. After confirming your interest, I will send you two copies of an informed consent document explaining the procedures for the study. This document describes the research study in writing. After reviewing the Informed Consent Document, you should return a signed copy to me and retain a copy for your records.

Thank you for your time.

Kevin Kelly
Doctoral Candidate
USF School of Education

APPENDIX D

Letters of Permission

University of San Francisco

June 19, 2008

Dear Mr. Kelly:

The Institutional Review Board for the Protection of Human Subjects (IRBPHS) at the University of San Francisco (USF) has reviewed your request for human subjects approval regarding your study.

Your application has been approved by the committee (IRBPHS #08-054). Please note the following:

1. Approval expires twelve (12) months from the dated noted above. At that time, if you are still in collecting data from human subjects, you must file a renewal application.

2. Any modifications to the research protocol or changes in instrumentation (including wording of items) must be communicated to the IRBPHS. Re-submission of an application may be required at that time.

3. Any adverse reactions or complications on the part of participants must be reported (in writing) to the IRBPHS within ten (10) working days.

If you have any questions, please contact the IRBPHS at (415) 422-6091.

On behalf of the IRBPHS committee, I wish you much success in your research.

Sincerely,

Terence Patterson, EdD, ABPP
Chair, Institutional Review Board for the Protection of Human Subjects
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IRBPHS – University of San Francisco
Counseling Psychology Department
Education Building - 017
2130 Fulton Street
San Francisco, CA 94117-1080
(415) 422-6091 (Message)
(415) 422-5528 (Fax)
irbphs@usfca.edu

City College of San Francisco

Robert S. Gabriner
Vice Chancellor
Institutional Advancement
City College of San Francisco
50 Phelan Avenue
San Francisco, CA 94112

26 June 2008

Institutional Review Board for the Protection of Human Subjects
University of San Francisco
2130 Fulton Street
San Francisco, CA 94117

Dear Members of the Committee:

On behalf of the City College of San Francisco, I am writing to formally indicate our awareness of the research proposed by Mr. Kevin Kelly, a student at USF. We are aware that Mr. Kelly intends to conduct his research by conducting interviews with our students.

I am responsible for Student Development and am an administrator at the campus. I give Mr. Kelly permission to conduct his research at our campus.

If you have any questions or concerns, please feel free to contact my office at 415.239.3014.

Sincerely,

Robert S. Gabriner
Vice Chancellor

College of San Mateo

RE: Permission to conduct student interviews
Date: 05/13/08

Dear Mr. Kelly,

Mr. Tordesillas forwarded your inquiry to me. I believe we can accommodate your request. When would you like to schedule the interviews with students? Our semester ends on June 2. How would you like us to assist in identifying the transfer students for the interviews? We can certainly find four students planning to transfer. We may also know of CSM students who have transferred and would be willing to meet with you. If you could provide this information, we could get started.

Thank you for your interest in speaking with our students. Your research sounds very interesting.

Sincerely,

Jennifer Hughes
Vice President, Student Services
College of San Mateo

San Jose State University

To: Kevin Kelly

From: Pamela Stacks, Ph.D.
             Associate Vice President
             Graduate Studies and Research

Date: October 6, 2008

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

          "Student Perceptions of the Transfer Process"

This approval, which provides exempt status under Category 1, is contingent upon the subjects included in your research project being appropriately protected from risk. The approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Dr. Pamela Stacks, Ph.D. immediately. Injury includes but is not limited to bodily harm, psychological trauma, and release of potentially damaging personal information. This approval for the human subject's portion of your project is in effect for one year, and data collection beyond October 6, 2009 requires an extension request.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services that the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

Protocol # S0804045

APPENDIX E

Informed Consent Form

Project Title: Student Perceptions of the Transfer Process
Principal Investigator: Dr. Deborah Bloch, USF School of Education
Research Staff: Kevin Kelly, USF Graduate Student

PURPOSE
This is a research study. The purpose of this research study is to explore the experiences of students who have transferred or who intend to transfer between community college and university. As a result of this study, I hope to detail what it is like to be a transfer student, starting from enrollment at the community college. The results of this research study will be published as a doctoral dissertation as a requirement of my academic degree program and may be used for publication and presentations. The results may also be used to initiate further study at this and other similar institutions.

The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, what you will be asked to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or the form that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not. This process is called "informed consent". You will be given a copy of this form for your records.

We are inviting you to participate in this research study because you are currently or planning to be a transfer student, which enables you to provide information for this research project. It is anticipated that up to eight students who are enrolled as transfer students will be interviewed as a part of this study.

PROCEDURES
If you agree to participate, your involvement will consist of one individual, face-to-face interview for approximately 60 to 90 minutes. The interview will be scheduled between May 15, 2008 and February 28, 2008. The interview will accommodate your schedule and will take place at your campus. The interviews will be recorded and then transcribed by the researcher. All copies of the recordings and transcribed notes will be destroyed at the end of the study.

You may request at any time to stop an interview or refuse to answer any question. The following details the research questions of this study:

What are the experiences of students transferring between community colleges and universities? From this question, I hope to present a detailed depiction of what it is like being a transfer student. More specific research questions that will likely be addressed are: What are the social network experiences of transfer students? What are the personal, social, and student life experiences of dual enrollment students?

The participant can decline to answer any questions.

RISKS
The researcher anticipates no risks to the participants. Participation is voluntary in the study and participants can end their involvement at anytime. Participation or non-

participation will have no effect on the individual's relationship with University of San Francisco or academic standing at his or her home campus.

BENEFITS
There will be no direct benefits for the participants. Other students, colleges, universities, and policy makers may benefit from this in-depth research on higher education transfer student experiences.

COSTS AND COMPENSATION
You will not be compensated for participating in this research project.

CONFIDENTIALITY
Records of participation in this research project will be kept confidential to the extent permitted by law. However, federal government regulatory agencies and the University of San Francisco Institutional Review Board (a committee that reviews and approves research studies involving human subjects) may inspect and copy records pertaining to this research. It is possible that these records could contain information that personally identifies you.

AUDIO OR VISUAL RECORDING
By initialing in the space provided, you verify that you have been told that audio recordings may be generated during the course of this study. The audio recording may be made to assist the researcher in gathering data during the interview. The recordings will only be accessed by the researcher. The recordings will be stored until the research has been completed and will be destroyed after that time. The recordings may or may not be transcribed. If the recording is transcribed, the researcher will transcribe it manually or using voice recognition software.

_____ Participant's initials

VOLUNTARY PARTICIPATION
Taking part in this research study is voluntary. You may choose not to take part at all. If you agree to participate in this study, you may stop participating at any time. During the interview, you may stop answering questions at any time or skip questions that you prefer not to answer. If you decide not to take part, or if you stop participating at any time, your decision will not result in any penalty or loss of benefits to which you may otherwise be entitled.

QUESTIONS
Questions are encouraged. If you have any questions about this research project, please contact: Kevin Kelly, 415.794.5327, kmkelly@usfca.edu. If you have questions about your rights as a participant, please contact the University of San Francisco Institutional Review Board (IRB) Human Protections Administrator, at 415.422.6091 or by e-mail at irbphs@usfca.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.
Participant's Name (printed): _____

_____
(Signature of Participant)   (Date)

RESEARCHER STATEMENT
I have discussed the above points with the participant or, where appropriate, with the participant's legally authorized representative, using a translator when necessary. It is my opinion that the participant understands the risks, benefits, and procedures involved with participation in this research study.

_____   _____
(Signature of Researcher)   (Date)

APPENDIX F

Summaries of participant responses related to data analysis elements

Table F1.

Summary of participant responses related to student departure elements

Student departure element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Interactions with the campus social system		support from friends in campus groups (+)	video games alone (-), video games with others (+), join or start student org. on social network site (+)	
Social integration		support from friends in campus groups (+)	student org. on Facebook (+), contacting people from convocation on MySpace (+)	

(table continues)

Table F1 (continued).

Student departure element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Student background	first in family to get a degree (+), parents' level of education (+/-), children's future education (+), ethnicity (+)		use Facebook / MySpace to find or contact pre-college friends (+)	
Student commitment		goal support from family/pre-college friends (+)		

(table continues)

Table F1 (continued).

Student departure element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Student decision to stay or depart	having or raising children (-)	stress about children attending night classes with parent (-), teacher allowing children to stay in classroom (+)		budget cuts led to delays in financial aid (-)

Table F2.

Summary of participant responses related to social network elements

Social network element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Actors	self-influence on staying (+), family influence on staying (+), following family modeled behavior (+)	strong / intermed. ties sought for academic / social reasons (+)		
Centrality		Helping friends with transfer (+)	knowledge of computer system, work as peer mentor, leading transfer club increased centrality (+)	

(table continues)

Table F2 (continued).

Social network element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Connectedness		lack connections upon arrival at new campus (-), creating new connections after 1st term (+), poor info exchange between units (-)	role as peer mentor increased connectedness (+), organizing transfer club activities with other campuses (+)	large enrollment classes influence on connectedness (+/-), influence of large enrollment classes on learning effectiveness (+/-)
Network size		creating new connections after 1st term (+)		

Table F2 (continued).

Social network element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Strong ties	family influence on staying (+), family influence on decisions (+)	approach for both academic & social purposes (+)		
Weak ties	getting advice from strangers via RateMyProf (+)	weak ties became intermediate ties, increasing utility (+), not enough peak period access to counselors (-)	safety re: meeting unknown actors from social network sites (-)	

Table F3.

Summary of participant responses related to complexity elements

Complexity element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Fractals	multiple transfers due to parents work/ own work (-), taking classes from higher level institutions (+), meeting new people (+), following parents' example of getting degree (+)	parental encouragement to seek higher education degree (+)	trying to start a chain of people influencing others to enter higher education (+)	budget influence on students' decisions and experiences, from national to individual levels (-), level of access to computers and Internet (+/-)

(table continues)

Table F3 (continued).

Complexity element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Linear attractors	Pendulum attractor: Work/school (-)	Point attractors: making excuses & not verifying statements (-)	Point attractors: making excuses (-)	
Phase transition	making friends as strategy for getting through phase transition (+)			
Sensitive dependence on initial conditions		recognizing small things make a big difference (+), actively seeking to create or find small things (+)		

(table continues)

Table F3 (continued).

Complexity element	Research Question 1: perceptions of the transfer process	Research Question 2: influence of social networks	Research Question 3: influence of technology use	Research Question 4: contextual influences
Strange attractors		trying to help someone break free of point attractors (+)	using technology to help someone break free of point attractors (+)	