CHAPTER I

INTRODUCTION

> If a nation expects to be ignorant and free, in a state of
> civilization, it expects what never was and never will be.
> Thomas Jefferson, 1816

In 1996, 40 state governors and 49 corporate chief executives, led by IBM CEO Louis V. Gerstner, Jr., attending an IBM sponsored "summit" on education, issued a joint policy statement: "The quality of our schools is one of the issues fundamental to America's future and our quality of life" (National Education Summit, 1996, p. 13). The American educational system is a major business, claiming nearly one-half of all state and local taxes collected (Perelman, 1989, p. 101). In 1990, the first thirteen years of public education, grades K-12, cost taxpayers over $230 billion (Finn, 1991, p. 160), and, according to futurist Marvin Cetron, "another $125 billion for colleges and universities" in 1989 (1989, p. 55). Fairfax County in Northern Virginia experienced its first one billion dollar school budget in 1996 (O'Harrow, 1997, p. C6). Sperling and Tucker, advocating the Phoenix Adult-Centered University for-profit model of higher education, claim that the taxpayer underwrites about 80% of the operating expenses of public institutions of higher education (1997, front flap). A great deal of public money and energy go into the education of America's citizens and future workers.

Employers spend a significant amount of time and money compensating for what they see as deficiencies in the academic preparation of new employees. The U.S. educational system is seen as unresponsive to the needs of business at best, and is declared broken beyond repair at worst. The public schools perceive their primary purpose as the preparation of knowledgeable and responsible citizens of the American democracy; preparing the workforce is only mentioned in passing. In either case, expecting new graduates to come to the workplace equipped with basic knowledge, skills, and attitudes (KSAs) is reasonable. These KSAs include reading, writing, computation, regular attendance, working with people, basic work habits, knowing how to learn, communication, problem solving, and self-esteem (Carnevale, Gainer & Meltzer, 1989, pp. 17-36).

Criticism appearing in the advertising in <u>Education Week</u> states: "[t]he United States currently has the worst school-to-work transition in the industrialized world" (Wolk, 1997, p. 3).

Yet, American institutions of higher education enjoy world-wide acclaim as the post-secondary education provider of choice. Future knowledge workers specialize, often for the first time, in colleges and universities. Widely acknowledged management expert Peter Drucker recognized the importance of the knowledge worker in 1968, "[t]he productivity of knowledge has already become the key to productivity, competitive strength and economic achievement" (1968, p. 264). In chapter II the researcher focuses on the so-called "forgotten minority", the 75% or more of all students who enter the education system, but fail to earn a college diploma. The attention focused on this group is entirely appropriate both because of their numbers and because they are the backbone of the future labor force. College graduates tend to gravitate to positions of leadership in the innovation and management of the work place. The combination of additional academic preparation and lack of attention to this group in the press might lead one to conclude that their transition to the work place is well orchestrated and smooth. The data in this study indicate that the transition is not orchestrated and the pathway is largely undeveloped.

A substantial portion of the education literature focuses on the accomplishments and problems of the Public Schools grades K to 12. At one time the high school diploma defined the adequately educated worker. That diploma was sufficient qualification for the majority of employment opportunities in America. After World War II the push was to complete a college or university program, with the aim of earning a Bachelor's degree. This program gathered great impetus from the GI Bill which gave veterans of World War II money to cover tuition and living costs associated with a college education (Knowles, 1977, p. 85). The post-war experiences, with the motivated veteran returning to school, changed the nature of post secondary education and began to focus attention on the concept of continuing education for adults (Drucker, 1969, p. 324). Most parents tell their children that the route to a good economic future runs through college. The researcher's children received the same message. The Speaker of the House of Representatives, Dr. Newt Gingrich, tells us that the Budget Reconciliation Act of 1997, that balances the Federal budget in five years, has the greatest impact on families with children in college and on taxpayers participating in college degree programs (Gingrich, 1997). Society's major emphasis on completing college might lead one to conclude that this should be the area in which the school-to-work (college-to-work) transition process is at its best. College graduates with diplomas in technical specialties dominate the aerospace industries in which the researcher works. Leaders of industry

contend that the K to 12 program is not doing an adequate job of preparing high school graduates to enter the work force and colleges complain that students are not properly prepared for the rigors of college either. If the new employee has majored in a technical specialty that the employer needs, such as computer science, then that employee has acquired, at least, the specific job skills required for employment. What about the other KSA's, for example: attendance, interviewing, and communication? In other words, do the college and university level programs make up for the public school programs shortcomings in these areas as well?

In a survey of 2,306 graduates of the Virginia Tech class of 1990, Dr. Elwood Holton concluded "the transition to work is an absolutely critical part of achieving desired human resource outcomes for organizations" (1991, p. 137). Yet, Holton found a tremendous ignorance of the importance of the transition to work by both the new employee and the employer (p. 135). He found that 60% of organizations have no plan for individual socialization, 62% do not assign a mentor or sponsor, and 46% do not offer formal training (p. 135). With the effort management puts into hiring good people, training in job related tasks, evaluating performance, and ranking candidates for promotion, one would expect a reasonably good school-to-work transition process. Not so, "individuals are rarely trained in the special skills it takes to enter and adapt to a new organization" (p. 136). This strategy increases the risk that the new employee will not stay with the organization. An employer pays $9,000 to hire a new employee, making frequent turn over expensive. Finally, Holton recommends that more be done on college campuses to raise the awareness of college students to the importance of the school-to-work transition. Fully 70% of Holton's respondents felt that seniors should be taught more about how to make the transition (1991, p. 147).

Some experts argue that the education crisis is, at best, overstated, a "Manufactured Crisis" according to Berliner and Biddle (1995). If the public education system is doing its job, then what is all the fuss about? The business world uses a very solid measure of success: profit. In fact, without profit, business ceases to exist! If it affects the "bottom line," businessmen will do something about it. In this case, they are trying to change the system, as the 1996 Education Summit proposes.

Background of the Study

The education literature is replete with examples of problems in the public schools. Carnoy and Levin "argue that the relationship between education and work is dialectical, composed of a perpetual tension between two dynamics, the imperatives of capitalism and those of democracy in all its forms." (1985, p. 4). The business leaders at the National Education Summit said: "[w]e believe that schools must be more focused on the needs of students, parents, postsecondary education institutions, and employers." (1996, p. 13). As a primary customer of education, the business community has expectations regarding graduates of the public schools, both at the high school and college levels.

An Education Week commentary cites a recent Gallup Poll showing that while most Americans are disappointed with the education system in general, most parents of school-age children believe their child's school is doing reasonably well. Since the 19th century, control of public schools has become more centralized, moving from 120,000 local school districts in the early part of this century, to the present system of 15,000 school districts, and increased involvement of state and federal bureaucracies. One result has been the creation of super school districts with almost one-half of all American school children enrolled in one-percent of the school districts. Another result is the loss of the sense of identity and trust in the local school; "the crucial link between schools and their immediate clients (students, parents, and the local community) has been broken." (Hill, Guthrie, & Pierce, 1996, p. 56). The conclusion is that while the public education system is not quite a total loss, the schools are not preparing young adults for the 21st century. Business leaders proclaim, "we must help states or local school districts develop a consensus on what children should know and be able to do" (National Education Summit, 1996, p. 13). Attempts by liberal interests to centralize education policy at the Federal level are countered by conservative forces seeking to decentralize and give more autonomy to local school districts. One might assume that there is a logical compromise, somewhere between the extremes, where the system could effectively and comfortably operate.

The public schools have long been primarily responsible for transmitting democratic values, inculcating civic responsibility, and preparing students to prosper in the economy. "Organizational theory suggests that policymakers should make policy and administrators should do the managing." (Hill, Guthrie, & Pierce, 1996, p. 33). The management of public schools has evolved to local

control consistent with policy established at national, state, and local levels of government. How policy trickles down from national, state, and local governments to the individual public school is conditioned by its diffusion through the intervening levels of government and management.

National policy formulated in Washington, D.C., is reshaped by the biases and political realities of 50 states as they decide how they are going to respond to Federal policy statements, if indeed they are going to pay any heed at all. Education is not mentioned in the Constitution and remains under the control of the individual states. Virginia's refusal to accept Goals 2000 funds from the Federal Government in 1996, because of accompanying restrictions, is an example of this principle in practice. The interpretation of Federal policy promulgated by each state is viewed through the perceptual filters of county and city officials before each school district bureaucracy adds its spin. Each school makes its adjustments before the individual teacher implements the policy, conditioned by his or her filters. What comes out of this convoluted policy pipe will likely bear only passing resemblance to what national policy makers originally had in mind[1]. The education summit determined a need for "an external, independent, nongovernmental entity to facilitate our work together on these issues" (National Education Summit, 1996, p. 13).

The emphasis on post-secondary education took-off after World War II with the influx of millions of veterans using their GI Bill benefits to earn bachelor's degrees. This experience led universities to develop curricula that were uniquely oriented to the needs of adult learners (Knowles, 1977, p. 85). The further emphasis on college as the route to better jobs only served to increase the demand for post-secondary education. The influx of adult college students led to rapid growth of university extension services, with these adult education oriented offerings assuming a larger share of the university's total operating budget (Knowles, 1977, p. 87).

A search of doctoral level dissertation abstracts reveals no dissertations in this decade on school-to-work transition in the aerospace industry. The same result came of the search of industry and college (not high school) coupled with school-to-work. When the same search was completed with high school included, there were four abstracts listed, all of which were focused on high school students. A search of the ERIC database for "Education Work Relationships" and "Higher

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[1] Based on unpublished theory presented to the author by Dr. Franz Frisch at the Defense Systems Management College in 1995.

Education" produced 26 hits. Colleges and universities were not mentioned in the school-to-work discussions, but were limited to secondary school and Junior Colleges.

Statement of the Problem

The business world depends on the education system for a continuous supply of new workers. The readiness of new employees to adapt to the culture of the work place and the time required to emerge as productive members of the corporate work teams is of primary importance. The prior to employment preparation of new hires has significant impact on the businesses that employ them. Over the years, business leaders have experienced mixed success in their attempts to shape education to their needs. The process by which new employees (and those seeking employment) change their locus of principle attention from academia to the business world invites closer attention. The hearings on H.R. 2884, "School-to-work Opportunities Act of 1993" bear witness to this situation.

The goal of this study is to inform the school-to-work transition process by examining the ways that new employees acquire the knowledge, skills, and attitudes (KSAs) needed to be successful in the work place. College graduated employees in the Information Technology industry were the study subjects. What are the roles of education and business in this endeavor, and what adjustments in those roles might be appropriate?

Research Question

The guiding question: What process did these new hires follow to gain the knowledge, skills and attitudes (KSAs) necessary to succeed in the work place?

- What part of the KSA base is the result of formal education prior to employment?
- What part of the KSA base is the result of formal training and informal learning on the job?
- What are additional sources of KSAs?

Definitions and Abbreviations

Terms and definitions unique to the study are defined here for the reader.

- *Aerospace Industry*: that part of industry that produces high technology products for the Department of Defense and other customers.

- *Business*: includes industry and all other for-profit enterprises.

- *CTW (College-to-work)*: STW focused on college graduates.

- *Gofer*: Term describing a person in charge of menial tasks such as going for (gofer) coffee.

- *Industry*: that subset of business that includes all producers of commercial products.

- *Information Technology Industry*: that subset of the aerospace industry that specializes in organizing and processing information.

- *KSAs (Knowledge, Skills, and Attitudes)*: the acquired attributes required to be successful in the world-of-work. Defined as reading, writing, computation, regular attendance, conformance to work place culture and norms, working with people, basic work habits, how to learn, communication, and self-esteem (Carnevale, Gainer, & Meltzer, 1989, pp. 17-36)

- *New hire*: a person in his first full-time job.

- *Participant:* Volunteer new hire or other employee who supplied data via the interview and grounded theory analysis process.

- *STW (School-to-Work) Transition*: the process by which young adults move from the education system to the world-of-work and become new hires.

- SUPERVISOR: The new hire's immediate manager who could be the new hire's mentor.

- *Temp*: A temporary employee, normally acquired through a temporary employment service.

Assumptions

- The different basic work skills, knowledge, and attitudes (KSAs) required in the various categories of industry and business ventures do not materially affect the design and functioning of the school-to-work transition process.
- That such a process is waiting to be discovered.

Limitations

This research will focused on the information technology industry and was based on a case study of one company. Three study participants volunteered to participate in this research.

Organization of the Research Study

The research was conducted in four phases:

1. Organization Phase:
   - Prepared a plan for interviews (who and when).
   - Outlined the basic interview, recognizing that reality will lead to divergence from the plan.
   - Validated the interview questionnaire outline with the Director of Human Resources (HR).

2. Data Gathering Phase:
   - Each participant volunteer was contacted to establish an interview date and place.
   - The researcher conducted interviews at the participants' work places and recorded the interviews with the participants' permission.
   - The researcher coded the recordings and secured them to protect the identity and privacy of each of the participants.
   - The researcher transcribed the interviews.
   - Individual participants were invited to review and validate their interview transcripts.
   - The researcher documented each interview in a case study.

3. Data Analysis and Validation Phase:

- The researcher performed open coding on each interview using the commercially available data sorting software Ethnograph to produce codes that described the applicable parts of the data.

- The researcher performed axial coding to group categories devised in the open coding process.

- The researcher rearranged the axial codes in the selective coding process to reveal theoretical constructs in the data.

- The researcher conducted follow-up interviews with the participants to validate derived relationships and develop preliminary inferences.

- Preliminary theory was developed based on Selective Coding of the primary and follow-up interviews.

4. Theory Formation Phase:

- The researcher used cross case analysis to enrich and enhance preliminary theory developed during this phase.

The researcher met with Corporate Division President, and the Vice President/ Human Resources, on Friday, July 25, 1997. Both of them were very supportive and expressed no reservations about the study. They have granted the researcher free access to their employees and associated supervisors. The VP/Human Resources reviewed the Interview Outline which provided general form to the interviews (see Appendix A). He offered a few suggestions, which were incorporated in the revised version of the outline. He was satisfied that the questions as stated communicated the intended message.

The Interview Process

In each case, the researcher contacted the participant volunteer by telephone to set up an interview date and time. The participants were all gracious and enthusiastic about supporting the research. All expressed a desire to help inform the process to make the transition better for those who would follow.

In each case, a lobby guard provided access to the participant's work place. The participant came to the lobby and escorted the researcher to the participant's office where the interview was conducted. The researcher briefed the participant on the research purpose and process and answered

any questions the participant had. The researcher assured the participant's privacy would be absolutely protected and obtained the participant's permission to tape record the interview.

The interviews were freewheeling, flow of consciousness events. The researcher used a prepared list of topic questions to guide the interview. The intent was to get the participant to reminisce about experiences in the process of moving from the academic world to the world-of-work. The interview was allowed to follow the participants as they talked about their colleege-to-work transition experiences. Follow-up interviews were requested and granted to explore in greater depth the details of participant experiences at entry and in learning the corporate culture.

Insight into the college-to-work transition process beyond the list of KSA's required for success in the corporation is documented in Chapter IV of this dissertation. The model of the corporate culture in the Systems Engineering Division (SED), and the findings relative to the college-to-work transition for the participants in the interviews are also documented in Chapter IV. The researcher's conclusions and recommendations concerning the role of formal and informal learning in the work place in the college-to-work transition process are presented in Chapter V.

CHAPTER II
LITERATURE REVIEW

The transition from the classroom to the world-of-work is an important process in the life of practically every young adult. The ability of new employees to successfully complete this process impacts the competitive posture of every company looking to employ them. White House and Congressional attention to this process is encouraging. This study explores the relationship between education and business in America, focusing on the process whereby young adults effect the transition to the world-of-work. Over the last century, education and business have contested the control of public education, seeking to mold it to their individual perceptions of the economic and democratic needs of the developing American democracy.   We see the continuation of this contest in the dawning of the 21st century, as many claims and counter claims fly concerning the quality and capabilities of American schools.

The American public, left to ponder the merits of the positions, is characterized by Public Agenda as wanting public education to work. However, that support is said to be "fragile and disintegrates at the slightest probing" (Bradley, 1995, p. 1). The Public Agenda report (1995) highlights the following points:

- about 60% of parents would put their children in private schools if they could afford to;
- roughly half view the high school diploma as a legitimate indication of mastery of "the basics";
- of the teachers surveyed, 11% stated the belief that academics are most important in career success; 50% of teachers opted for "inner drive"; and 33% selected "knowing how to get along with others." (p. 13)

This spotty rating of public schools is an indicator of the wavering public confidence in the American education system. Still, most parents believe their children should go to college to have a chance for a better economic future.

Education in America has evolved from being the province of the privileged few of Colonial times to the present system that makes education, through college, available to all. During the American Revolution, education was a prerequisite for political leadership and facilitated the attainment of social rank. (Carnoy & Levin, 1985, p. 8). Educating the common people served to head-off their natural tendency to get into trouble and helped to mold them into "good" productive citizens. As the industrial revolution took hold in America, business leaders expected education to prepare and "civilize" the work force. Horace Mann established the Massachussetts Common

School in 1837, establishing a uniform pattern of schooling for all children under the direction of the state government (p. 9). Toward the end of the nineteenth century, business leaders began to influence school boards in the larger cities and to implement state-of-the-art business practices. The result was a system that prepared the children of workers to follow in their fathers' footsteps. (pp. 10 & 11). Modern parents hope that their children will do better than they did.

America's colleges and universities enjoy international acclaim as the post-secondary institutions of choice. Their role is evolving. Most young Americans grow up learning that education beyond high school is the key to economic success. For many, the area of study is not as important as the degree. Over the last fifty years, the high school diploma has become insufficient evidence of preparation for the world of work; now some college or a bachelor's degree is required.

The debate continues about the purposes, strengths, and weaknesses of the education system and what should be done to make that system more responsive to the needs of 21st century America. These needs include preparing responsible and law abiding citizens, as well as building national economic strength in the face of growing international competition. The business world argues that our ability to compete in the world marketplace depends largely on the knowledge, skills, attitudes (KSAs), and the flexibility of the American labor force.

At the beginning of the 20th century, the United States economy was largely resource based, with ten of the twelve largest companies dealing in natural resources (cotton oil, rubber, and sugar). In a recent Washington Post article, the author claims, today's industries are more "brainpower industries that could be located anywhere on the face of the earth" (Thurow, 1996, p. 1). This geographical flexibility has important implications for American education. Where the multinational companies will develop and keep "technological leadership" will determine the location of high-technology jobs. Currently, college graduates provide technological leadership and innovation (hence the target population in this study). Some debate continues about the necessity of a college diploma to fill the new high technology jobs that are projected to dominate the market in the future. Countries that offer the lowest cost of developing "technological leadership" are those that invest "in research and development, education, and infrastructure" (p. 4). According to futurist Marvin Cetron, "[t]he nation is not getting its money's worth" (1989, p. 55). We cannot afford to neglect education.

History

Before public schools emerged in America, education took place in the family, in the church, and through apprenticeship (Carnoy & Levin, 1985, p. 81). Apprenticeship provided the most reliable and effective work preparation for the youth of pre-industrial America. Carnoy and Levin say, "[t]he growth of schooling is intertwined with the changing work-place and with social demands for upward mobility and increased democracy." (p. 80). The underlying dynamic in the development of the public school system is expressed in the tension between education, as the transmitter of democratic processes, and its role, according to the authors, "as a reproducer of capitalist production" (p. 81). Some historians see the Massachusetts Common School Reform in 1837 as a response to industrialization in Massachusetts at that time (p. 85). The manufacturers of the 1840's depended on the schools to teach their students and future workers punctuality, reliability, and conformity, while encouraging increased cooperation during labor turmoil (p. 85). These early knowledge, skills, and attitudes (KSAs) were originally instilled via home, church, and apprenticeship teachings.

In Colonial America, the apprenticeship was normally established in an indenture or contract between apprentice and master craftsman where the terms were frequently strict and severe. Often the indenture to the master was in repayment for the cost of transport to the New World. The indentures served the dual purposes of providing the immigrant the opportunity to start over in the New World with marketable skills and the New World with sources of cheap labor. The modern version of apprenticeship is different, but the intent, to pass on the master's craft to successors, endures. The contract continues, formalized by the federal bureaucracy. How this system of education came to the New World and how it was transported to modern times is reviewed next.

Apprenticeship is defined in the Encyclopedia Britannica as "the learning of an art, trade or other calling by practical experience under the guidance of a master, perhaps also with some classroom study" (BCR, 1969, p. 144). An important feature that survives to this day is a contract, written or oral, between the apprentice and the master craftsman defining terms of the apprenticeship, covering duties of the apprentice, duration of the apprenticeship, wages (if any), schooling, and room and board (if applicable).

Apprenticeship appears to be as old as skilled trades themselves, with rules on the length of apprenticeship appearing in the Code of Hammurabi in Babylon around 2100 BC (Kiester, 1993, p.

45). References are found in ancient Greece, Rome, Egypt, and China (US Department of Labor, 1991, p. 1). Apprenticeship flourished during the 12th century in Europe and especially in England where the guilds established definite rules, including the number of apprentices a master could have under his tutelage at one time. The guilds established informal training standards, setting the period of apprenticeship at seven years and requiring the master to provide shelter and sustenance for the apprentice. The master was also held responsible for the moral and mental development of apprentices in his charge. Upon graduation the apprentice became a journeyman, working for pay, with the prospect of becoming a master craftsman with his own apprentices (Murphy, 1971, p. 233 & Miller, 1987, p. 5).

During the industrial revolution, machines took over many of the precision (skilled) aspects of manufacturing, capitalism took hold, and a laissez-faire philosophy allowed the guilds to ignore many of the rules of the apprenticeship system, and put apprenticeship into decline. Following World War II, apprenticeship made a comeback in England due in large part to cooperation between British industry and the labor unions and the shortage of skilled workers. Apprenticeship is a strong program in England today (BCR, p. 144). In fact, the British experience with youth apprenticeships and the transition of non-college bound youth to the work place may hold some important lessons for America. Like the US, Britain has had its problems managing the school-to-work transition process (Cappelli, 1996, p. 680). Given that Britain's labor market is similar to America's with employers hiring skilled workers away from one another, the most important lesson one might learn is the role of employers in this transition (p. 680). The success of the British Youth Training Scheme (YTS) was due to its potential to provide employers with a ready system for recruiting future workers (p. 680). The larger goal of YTS type systems is to "ease the introduction of new, more flexible, and more efficient systems of organizing work by raising the skill levels in the work force"(p. 681). The skills introduced are likely to have been acquired in the classroom as opposed to on the production floor (p. 681).

The U.S. apprenticeship system originated in the English system, and was imported by the English settlers who brought the system across the Atlantic with them. The early colonists could not spare the personnel resources to supply a teacher or the student time for education, so apprenticeship was the method of choice to transmit the many practical vocational skills required for survival on the frontier (Knowles, 1977, p. 5). Even with the introduction of formal education programs, provided by churches and private tutors, the colonial middle class still could not afford to

indulge in such "non-productive" activities. The Law of 1642 enacted by the Massachusetts Bay Colony required "prudent Men" to "take account" of the calling and employment needs of their children (FJT, 1979, p. 588). The system imitated that of England, providing for the indenturing of boys to master craftsmen in return for instruction in the trade, shelter, food, and clothing. In addition, the master was held responsible for the academic and moral tutoring of his charges. This system held sway through the seventeenth century (Miller, 1987, p. 5).

As in England, the industrial revolution in America undermined the entire concept of passing on skills from one craftsman to another; it took far too long to train new workers. The rapidly expanding factory network's demand for workers far outstripped the capability of the system to respond (Eurich, 1985, p. 26). The need for the skills perpetuated by apprenticeship began to fade, and the skilled master craftsmen went to work in the factories (Lazerson, 1974, p. 8). The new factories needed many workers performing low skilled tasks, allowing employers to train uneducated people to operate the engines of mass production. The worker lost sight of the end product as he labored at a given work station on the production line. The de-emphasis of apprenticeship left an educational void that vocational education began to address toward the end of the 19th century (Lazerson, p. 47). Machines replaced skilled workers in the execution of repetitive precision tasks. Craftsmen were relics of the past; the future was in industrial education (Eurich, p. 29).

By the mid-1800s, the mechanics institutes were a force in America. The Franklin Institute in 1824, the Ohio Mechanics Institute in 1828, and the Cooper Union in 1857 are examples (Miller, 1987, p. 8 & Eurich, p. 30). These institutes taught the mechanical arts, advanced the sciences, encouraged invention and discovery, and educated the public in the applied sciences (Knowles, 1977, p. 15). An 1870 Massachusetts law required towns of 10,000 or more to provide publicly funded instruction in mechanical drawing to youths over 15 years of age. In 1876, John D. Runkle, President of the Massachusetts Institute of Technology (MIT), met Victor Della Vos from the Moscow Institute at the Centennial Exposition in Philadelphia. There, Runkle learned how the Moscow Institute sub-divided industrial processes into component skills that were then taught in the institute's classrooms and shops. That same year Runkle established similar shops at MIT to allow engineering and mechanical arts students to experience manual practice to complement the scientific component of their education (Miller, p. 8 & Eurich, p. 32). In the 1890s, manual training high schools were created in the image of the Swedish Sloyd system, established in 1877, putting

emphasis on carpentry, turning, woodcarving, brush making, and book binding (FJT, 1979, p. 588-589). The debate over how vocational education should be implemented included disagreement over the governance of apprenticeship programs and how they might relate to vocational education. A major sticking point between labor and management concerned operational control of the education programs. Management often used vocational education to circumvent union control of the labor force (Eurich, p. 33).

As early as 1872, major industries had established their own apprenticeship programs in factory schools, which provided a steady supply of qualified workers independent of the labor unions. The schools covered a broad spectrum of subjects from spoken English to technical courses and management (Eurich, pp. 36-37). Labor opposed these programs because they were a threat to their control over the worker. A major element of labor's power lay in the control of who and how many were trained, which was critical to maintaining favorable wage rates for union members and to controlling the workers. In fact, in a 1905 report of the committee on industrial education, labor was charged with the "bitter and cruel opposition" that destroyed apprenticeship. Of course, the influx of skilled immigrants may have helped to temporarily obviate the need for apprenticeship. The rhetoric continued, as the actions of labor were characterized as "a crime against the youth of the whole nation" (National Association of Manufacturers, 1905, p. 89). This led to advocacy for trade schools to assume the functions of the decimated apprenticeship system.

The National Association of Manufacturers (NAM) pronounced the U.S. to be 25 years behind overseas competitors and maintained that manufacturers must not only have first-class equipment, they must also have first-class workers. This claim should be a familiar refrain to Americans today. The American Federation of Labor argued for "a proper apprenticeship system," which meant a system that they controlled (National Association of Manufacturers, 1910, p. 101). The debate over the need to provide manual training in the public schools in addition to the purely cognitive curriculum advocated by educators continued. Educator Calvin Woodward argued in 1883 that all children should receive manual training as part of their general education to form proper moral habits so that "the windows of the mind are kept open toward the world of things and forces, physical as well as spiritual" (1883, p. 60).

Two laws passed early in the 20th century set the framework for modern apprenticeship. The Smith-Hughes Act of 1917 provided federal funding for vocational education and encouraged the development of trade schools. In 1937, the Fitzgerald Act called for expansion of apprenticeship

programs in cooperation with state and local governments, and established the U.S. Bureau of Apprenticeship and Training (BAT) in what is now the Department of Labor (U.S. Department of Labor, 1991, p. 16). With this help, apprenticeship continues to be a viable program in the modern era.

The modern apprenticeship is based on a formal written contract between apprentice and employer, setting a minimum standard of training (Murphy, 1971, p. 233). The earliest entry age is 16, except where the trade requires a high school diploma. Normally, the apprentice finishes the program by the time he is 24, having completed a 2 to 5 year program, depending on the trade. Labor's objections are addressed by indenturing the apprentice to the apprenticeship committee of the particular craft, thereby making the industry, not the employer, the keeper of standards (BCR, 1969, p. 144). Qualifications for the apprenticeships include: above-average manual ability in addition to cognitive skills, above-average physical fitness, aptitude for the trade, high school graduates are preferred, math and science skills are definitely preferred, and the apprentice must demonstrate perseverance, ambition, and initiative. Union related education in trades such as plumbing and carpentry calls for two-thousand hours of class time, usually provided at a local community college or vocational-technical institution, and on-the-job training (Murphy, p. 233).

The 11 member Federal Committee on Apprenticeship provides guidance, in the persons of 5 management, 5 labor, and 1 vocational education members. This committee is quite similar to the Chambers of Commerce in Germany and Austria which over-see the development of the vocational education and licensing program in each of the German and Austrian "lander" (states). The American BAT has field offices in every state and territory, working with employers, employees, and state agencies to develop apprenticeship and industrial training programs. More than half of the states have apprenticeship programs working in conjunction with the federal program administered by the BAT. The industries taking advantage of the apprenticeship program range from the very small companies that have only one or two apprentices at a time to the automobile-manufacturing giants. Estimates of the number of apprenticeships active in America vary. In 1991 the BAT stated that there were nearly one-half million registered apprentices annually in American industry (U.S. Department of Labor, p. 1). These apprentices are grouped in approximately 800 apprenticeable occupations (p. 18). Interest in apprenticeship programs in America is growing as a way to help bridge the transition from school to work (Kiester, 1993, p. 52).

At the beginning of the 19th century, the number of colleges in America had grown from the post Colonial period level of nine to fifteen. By 1861 there were 182 colleges. The rapid growth of colleges really began in 1862 with the Land Grant College Act, signed by President Lincoln, that made 30,000 acres of public land available to the states for each Senator and Representative the state had in the Congress. This Act enabled the establishment of the system of public colleges that forms the basis for the extensive capability enjoyed today, as an integral part of the education system available to every American (Knowles, 1977, pp. 30-31). This act, also known as the Morrill Act, is highlighted by Peter Drucker as an important step toward the knowledge economy. He argues that the partnership of the land grant colleges with the extension service led to increased farm productivity, thereby freeing labor from the land and making it available for other pursuits (1969, p. 270).

Howard Gardner, Professor at the Harvard Business School and developer of the theory on multiple intelligence's, points out that the modern school design is not well suited to the basic modes of human learning; in fact, we have not previously understood just how difficult it is for schools to accomplish their appointed tasks (1991, p. 142).

> The key is to devise learning environments in which students naturally come to draw
> upon their earlier ways of knowing and to configure those environments so that
> students can integrate these earlier forms of knowing with the formats of knowing
> that are necessarily and appropriately featured in school (p. 180).

Apprenticeships have provided just such environments for years and might serve well as the model for the future (p. 181). Apprenticeship may be the teaching approach that most effectively builds on the ways in which humans learn (p. 124). Apprenticeship has long been a primary vehicle to introduce the young to the world-of-work (p.122). The challenge is to build on this knowledge in the structuring of the school-to-work transition system. According to Malcolm Knowles, "[t]he notion that a free society requires an enlightened citizenry became established as an integral element of the national mind…a unified, articulated, democratic national educational ladder for children and youth from the primary grades through university" (1977, p. 33).

American education has evolved from the selective institution serving the intellectual elite of colonial times to the 20th century model offering educational opportunity to all. The apprenticeship system that served so well in colonial times is downplayed in the modern era, yet it has much to recommend to the world-of-work. The battle for control of education has been carried

into modern times and is probably more intense today than at any time in American history. Next, public education's is examined as it responds to the numerous attacks on how well it is executing its mission.

Public Education

Education of all Americans is the responsibility of the system of public schools and the state assisted colleges and universities. Public education is not well coordinated. Colleges and universities are renowned for their independence and in many cases for outright competition for outstanding scholars, students, and funding. The public schools are, at best, loosely connected at the county and city levels, almost unconnected at the state level, and often disassociated at the national level. Recent Presidential candidates have campaigned on the "education platform," while conveniently ignoring the true nature of the education system; both major party nominees declared themselves for education in 1996. Public schools in particular and schools in general are controlled locally by a loose consortium of school principals, school boards, and Parent Teacher/Student Associations (PTSAs), with some influence from the business community and society at large. The last two might be counted as the primary customers of education, given the objective: to educate and prepare the young to be responsible citizens and productive members of society. Because they are also the bill payers, they have even more reason to participate in the process.

Thomas Sowell, a conservative economist and senior fellow at the Hoover Institution, characterizes the American "educational establishment [as] a vast tax-supported empire existing quasi-independently within American society -- as morally and intellectually bankrupt...[that]...will breed disaster unless immediate steps are taken to reform the entire educational system." (1993, Flyleaf). The bottom line is that American school children are held responsible for not measuring up to the educational achievements of their contemporaries in foreign countries that compete with America in the international market place. Sowell adds, "The brutal reality is that the American system of education is bankrupt...Its educational failures cannot be justified, or even mitigated, by its many non-academic social goals" (1993, p. 285). He retreats a little by saying that this judgement is not a blanket condemnation of every aspect of American education; the assets worth recovering from this bankruptcy are its postgraduate institutions. He summarizes the position by stating, "[l]ike MANY other people, I have long been appalled by the low quality and continuing deterioration of American education." (p. ix). Education Week commentator Bradley adds the

observation, "Americans do not place high value on knowledge for its own sake, instead, they value practical skills and knowledge and mistrust highly educated people" (1995, p. 13). Yet, an apparent conspiracy exists among guidance counselors and parents to send as many high school graduates as possible to college. College is seen as the preferred route to economic success in the world of work (Sperling, 1997, front flap).

Most high schools measure their success by the numbers of graduates accepted for admission to colleges and universities, with emphasis on the prestige schools. Commenting in Teaching K-8, Cook tells us, "[m]any kids capable of doing great things that do not require higher education are not cut out for college. A thoughtful nation would have offered alternatives" (1994, p. 42). A high school teacher in Arizona, with 25 years of teaching experience, has rewritten the curriculum to move these students through high school in 2 years and to prepare them for careers. The program results in a GED and leads the graduates to continue their educations in the local community colleges, well on their way toward the careers of their choice. In fact, parents endorse this program and plead with the teacher to teach their children. These parents recognize that high school is out of the question for their children, and they do not know where to turn (Allen, 1996, p. 1). This recognition, you may recall, is a problem for non-college preparatory "tracks": parents and their children see enrollment in a vocational education program as a put down. Without a college education, the children's futures are circumscribed. In many schools, the vocational education label is teacher code for "dumping ground for the unmotivated, uncooperative and unqualified". The Germans, on the other hand, define all education as vocational because it ultimately leads to a job (Airing, 1993, p. 401).

John Silber, past president of Boston University, says our society is ill, and one of the symptoms is the "failure of our system of public education...The schools turn out millions of functionally illiterate graduates..." (1989, p. xi). Another indicator is our inability to compete in world markets. The American educational system has become lost, "frequently failing to do even adequately what they once did superbly." (p. xv). Silber offers us this expression of hope: "[t]he situation facing our nation is critical. But it is not hopeless" (p. xvi), adding, "[t]he crisis of our schools is the crisis of our democracy. It will reach the point of disaster unless parents, educators, politicians, and citizens unite to reverse the trend and provide our children with dedicated teachers and excellent schools." (p. 36). Others disagree.

The title of the recently published work: The Manufactured Crisis - Myths, Fraud, and the Attack on America's Public Schools summarizes Berliner and Biddle's position on criticism of public education:

> By now it should be clear that American education has recently been subjected to an unwarranted, vigorous, and damaging attack -- a Manufactured Crisis. On average, American schools are not only holding their own but are also improving in modest ways...the Manufactured Crisis was revealed as a Big Lie...promoted by specific groups of ideologues who were hostile to public schools and who wanted to divert attention from America's growing social problems. (1995, p. 343).

As interesting as the book itself is the response. Diane Ravitch, former assistant Secretary of Education, fires back, saying that Berliner and Biddle's argument "blithely disregards ample evidence to the contrary" (1996, p. 16). A Washington Post book review of the Manfactured Crisis states "I find Berliner and Biddle's achievement analysis deeply flawed and misleading...selective presentations are typical of this book." (Wesley, 1996, p. 16). Teacher Magazine carried detailed analysis of the book's premise that specifically commented on the authors' fixation with statistics. Gerald Bracey, a former research psychologist for the Educational Testing Service, justified Berliner's use of statistics, arguing that "test scores must be used to expose the school bashers' lies." (Ruenzel, 1995, p. 33). Deborah Meier is credited with pointing out that, "[d]ata are important tools in studying schools, but they cannot, by themselves, tell us much about the quality of school life." (p. 33). The impression created by the book is that a cabal of ill-intentioned, right-wing zealots (the bad guys - such as former Secretary of Education William Bennett) wish to destroy the public education system to favor their own interest groups. This "Conspiracy Theory" has the critics out to get the "Good Guys". That assumption falls apart when we are confronted with some of the most vocal critics: John Goodlad, Jonathan Kozol, Ted Sizer, Deborah Meier, and David Cohen: "liberal minded reformers" according to Teacher Magazine (Ruenzel, 1995, p. 33). Berliner and Biddle finish with a call for more investment in educational research; certainly a difficult position for a researcher who is writing an education dissertation to dispute. They point out that while our nation spends 15% of its defense budget for research, the Education Department only spends 0.1% of its budget on research (Berliner & Biddle, 1995, p. 347). David Cohen, a professor at the University of Michigan and co-author of The Shopping Mall High School, says that we get the schools that we want. We are willing to tolerate mediocrity in order to be democratic and to not make graphic

distinctions between winners and losers. As Pogo said in the 1950's, "we have met the enemy and he is us." Again, writing in <u>Teacher Magazine</u>, Ruenzel states: "[h]ow can schools be better than the society of which they're a part?" (1995, p. 33). The <u>Washington Post</u> writers allow that even if we dismiss the attacks on education, "it is true that schools aren't as good as they should be to meet the needs of the 21st century" (Patrick & Calfee, 1966, p. C4).

Lewis Perelman, director of the Hudson Institute's Project Learning 2001, suggests that the "information age" is only a transition period leading to a "knowledge age" which will be mobilized by automation and, more importantly, intelligence. The new era "will be filled not just with information but with comprehension." But, even more important for education, we are engaged in an international competition that is just beginning, that is characterized by more than narrow competitive advantage, but by global prosperity and peace (1992, p. 20). The importance of a good educational foundation cannot be overstated in view of this situation. The academic standing of freshmen entering America's colleges is somewhat less than spectacular.

By the mid-1970's, awareness of the decline in American student educational accomplishment was spreading. By 1975, American students had a run of eleven straight years with decreasing scores on the Scholastic Aptitude Test (SAT), placing American youth behind those of other countries in the sciences and mathematics. Business was expressing its distress with the level of skills attainment and cognitive achievements of recent high school graduates, while colleges and universities were equally unimpressed with the academic credentials of incoming freshmen. Most colleges regularly enroll incoming freshmen in remedial courses meant to bring them up to a level of academic proficiency consistent with the demands of the post secondary curriculum: 60% of California University system freshmen must take remedial math and science courses (Cohen, 1996, p. A31). Virginia colleges put 24% of incoming freshmen in remedial classes (O"Hanlon, 1997 & Kennedy, 1997). In 1983 the National Commission on Excellence in Education observed that if an unfriendly foreign power had attempted to impose the mediocre educational performance that was extant in 1983, that imposition might well have been viewed as an act of war. This lack of proper preparation for post-secondary education directly impacts the effectiveness of the college experience. Time spent making up for deficiencies in the K-12 preparation is unavailable for more advanced studies needed to meet competition from abroad. At the other end of the spectrum, students who completed advanced placement courses in high school are able to move on to more

advanced topics, thereby maximizing the return on the college tuition investment. How could this be happening in a well designed public school system?

The modern public school with its focus on cognitive learning is based on a 19th century model intended to serve a small percentage of the population. Given a small town philosophy, where everyone assumes some responsibility for the moral and ethical development of the village youth, the resources of the school should be sufficient (Finn, 1991, p. 21). The technological marvels of the modern era have generally bypassed the public schools, but the President is working to install computers and internet access in all public schools and libraries. However, many of society's most abominable maladies - drugs and child abuse, teen-age suicide and pregnancy, parental neglect, the breakdown of the institutions that support families, and community violence invading the schoolhouse -have created nearly impossible learning situations for educators and students alike.

Simple arithmetic shows that a public school pupil spends just 9 to 10% of his first 18 years under the school house roof. The other 90% of those years are spent under other, sometimes anti-learning, influences. Yet history shows Americans harbor unrealistic expectations for the leveragability of this 10%. In the 1930's educators charged the schools with humanizing industrial civilization; in the 50's they were to eliminate prejudice; in the 60's, they were to eliminate poverty for the "Great Society" in the 70's, they had to turn back the doomsday clock of nuclear war, address physical handicaps, and liberate the spirit; in the 80's, school kids are told to say no to drugs, reduce stress and adolescent suicide rates, increase self-esteem, save the environment, stop the spread of AIDS and deal with unwed teen-age mothers (Finn, p. 26). In the last decade of this century we appear to have added to the list of school assignments: leading the world in productivity while maintaining our high standard of living. Seemingly intractable problems are assigned to the schools to give the appearance of their being addressed, since solutions appear to be unattainable elsewhere. The mission of the education system has expanded considerably and become correspondingly less tenable. If this mission were a Department of Defense system development project, it would not pass its milestone reviews due to extremely high risk and a non-executable program plan, meaning the objectives cannot be accomplished with available resources. These additional tasks and expectations placed on the public education system have helped to expand the required time in school from 12 or 13 years to a minimum of 14 years. The bachelor's degree may no longer be sufficient to guarantee a good life; certainly, a high school diploma is no longer sufficient.

While education was taking on many of the nation's problems, the relationship between economic competitiveness and education was being re-forged. In 1988, New Jersey Governor Tom Kean wrote: "[n]ever has the link between education and the economy been clearer or more compelling" (Finn, p. 39). U.S. Secretary of Education Richard Riley, testifying before the House Committee on Economic and Educational Opportunities on January 12, 1995, said:

> Our economic prosperity, our national security, and our nation's civic life have never
> been more linked to education than they are today as we enter the Information Age
> of the 21st century (US Department of Education, 1995, p. 1).

Citing recent bipartisan support of education improvement expressed in recent Federal statutes such as the GOALS 2000 Act, the School to Work Opportunities Act, and the Safe Schools Act, Secretary Riley also reiterated education's place as a national priority but noted that education remains a responsibility of the states, with primary control at the local [school board] level (US Department of Education, 1995, p. 1 & US Department of Education, 1996-June, p. 1). Silber agrees, stating that as a general rule local control and local funding, along with local responsibility and accountability, are dominant factors in improving schools performance (1989, p. 36). A December, 1994 New York Times/CBS poll revealed that 81% of respondents supported a balanced budget amendment, but only 22% favored cutting education to achieve a balanced budget. Secretary Riley testified: "The American people know that we are in a unique time of economic and social transition," (1994, p. 1). Are the times unique enough to overcome the educator's traditional resistance to external interference in the operation of the public school, especially from the business community?

Given 14,626 school districts (Geiger, 1996, p. 19), 83,000 public schools, 2 million salaried overhead employees supporting 2 1/2 million classroom teachers, 1,221 national and international education associations, and two powerful teacher's unions, the NEA and AFT, all of whom have a strong interest in maintaining the status quo, the system has tremendous resistance to change and the political power to punish those who would threaten that status quo (Finn, 1991, pp. 126, 187-189). The power of the teachers' unions is significant. The National Education Association (NEA), headquartered at the seat of national power in Washington, D.C., with 2.2 million members (Geiger, 1996, p. 19), employs more than 500 people with an annual budget of $100 million (Sowell, 1993, p. 247). The distribution of power in education at the three levels: Federal, state, and local makes any concerted action against the entrenched interests represented by

such as the NEA difficult if not impossible. Republican Presidential candidate Bob Dole was alternately praised and questioned for taking on the NEA in his campaign.

At the post-secondary level, the tenure system ensures faculty control of the implementation of college and university education and the independence of the classroom teacher. The difficulty of agreeing on what constitutes good teaching further exacerbates the situation. This question is not new. As philosophy professor Dr. Philip Smith points out, the Greek philosophers and sophists had an ongoing argument on how a teacher should approach his students (1964, p. 1). Silber warns that "the Socratic quest has been replaced by the relativism of the sophists." (1989, p. 64).

Dr. Smith introduces his approach to the study of the philosophy of education as a study of the nature of the enterprise of education (1964, p. VII). Philosophy deals with matters of interest to the general public and its main value is in sharing the discussion with many interested parties (p. 3). Calling on the wisdom of Aristotle and John Dewey, we find that we learn by doing and that we appreciate most what we gain through our own efforts (p. 6). According to Dr. Smith, "[t]he respected, successful teacher must continually fight against being so honored that students accept without question everything he says." (p. 14).

John Dewey stated that the purpose of education could be strictly to serve education, and therefore would not be subject to partisan pressure to serve any particular interests. He went on to admit that all of those who support education have particular reasons for granting that support; therefore, there are basic assumptions in the minds of the sponsors that must be considered (p. 30). Plato's Republic states the purposes of education are: first, to allow each member of society to discover his own abilities and proper place in society; to determine where [or how] he might make his contribution. Second, education should help the citizen prepare to serve the Republic.

Aristotle "believed that support and control of public education is the single most important function of government." (p. 30). Differences about both the content and methods of education have been with us since the Greek philosophers began to record their thoughts. Generally, people accept that the educational institution should support the form and spirit of the society that enables it. In American school systems, a mixture of secular, religious, cultural, civic, and cognitive bases for education emerges (p. 32).

Dr. Smith points to three governing principles that were loosely agreed to by early American educators: (1) the need for an informed and educated public; (2) the expectation that education must not be dominated by any single religious organization; and (3) the local, not centralized control of

education of our children (p. 33). Education Secretary Riley puts a little different twist on the principles in presenting the four areas of national concern where his department plays a role: "helping to ensure national security, economic security, a responsible citizenry, and equal access to education." (US Department of Education, 1995, p. 5). We do seem to have carried through the spirit of eschewing domination by any single religious organization. In the same Community Update is a statement agreed to by over 30 religious organizations representing about 75% of Americans with acknowledged religious ties supporting the involvement of families in the education partnership. They "call upon all citizens, religious communities, community organizations, and businesses to do their share" and ask business to "adopt family-friendly policies in the workplace." (p. 4).

Ted Sizer, Director of the Annenberg Institute for School Reform and Chairman of the Coalition of Essential Schools, Brown University, made the following comments during an interview about the Coalition of Essential Schools project that is developing a strategy for reforming U.S. schools. He emphasized that no model can be imposed on all schools. Rather, the opposite is true: each school must reflect its own community. The key decisions must be made and the issues debated at the local level, "you have to look at reform school-by-school-by-school." (O'Neil, 1994, p. 4). On the question of "outcome based education (OBE)" Sizer says that all education is outcome based; the real issue is "what are the outcomes and who sets them?" Sizer thinks that outcomes should be set at the local level by those who are accountable for the students receiving the education: the parents and local community (p. 7). Reform has to take place at the local level (p. 9). Echoing this admonishment, researchers at the University of Southern California (USC) report on efforts to make school-based management (SBM) work. The USC researchers report two necessary conditions to making SBM work:

1. People at the school site must have genuine authority over budget, personnel, and curriculum.
2. That authority must be used to introduce changes that directly affect teaching and learning. (Odden, 1995, p. 32)

These necessary pre-conditions have not always proven to be sufficient for success. The USC researchers' experience in the field underscored the importance of strong leadership from the school principal, a solid curriculum framework, and broad-based school and community commitment and

support for redesigning the school (pp. 32-35). A major factor impacting any program to change or improve the public schools is the sheer volume, diversity, and inertia of the system.

The public schools system is under attack from all quarters: educators, business, parents, politicians, and even the students. The authors of the Manufactured Crisis make the case that the data used to support these attacks are misused, misquoted, and manipulated. They contend that an almost malevolent cabal masterminds the attack with the intent of destroying the system. Business leaders, while being less vulnerable to direct political pressure, none-the-less do have to consider their corporate images and are reluctant to antagonize such a sizeable and articulate constituency as 4.5 million public school employees, many with advanced degrees and access to the internet and print media. The less confrontational route is safer; simply supply the money and services the educational community is willing to accept from outside the walls of academia (Finn, p. 194).

Of interest is the corresponding lack of criticism of American colleges and universities. Is the post secondary level where the model to be followed in reforming the school system in general is to be found? Should high schools become more like their local two-year colleges or some of the more elite universities? Should high schools look to their universities and colleges for hints on how to structure the secondary level school-to-work transition system? In the middle of all the turmoil and controversy surrounding the mission and effectiveness of the American education system, what is the role and responsibility of the business world?

Business Position

Employers put very little emphasis on student grades, teacher recommendations, and school reputation when making hiring decisions (Mathews, 1996, p. A7). This position reinforces the contention that employers do not trust the public schools to properly prepare the work force. Eighty-one percent of employers provide on-the-job or formal school training to their employees (Sommerfield, 1994, p. 8). This level of distrust is unfortunate at a time when schools need more business involvement in developing better school-to-work transition programs. Even college transcripts are not considered to be as important as the college diploma itself. The student or new hire who earns a bachelor's degree has demonstrated the ability to complete a complicated task (Sanchez, 1996).

American businesses have become primary providers of basic education (Eurich, 1985,

p. 1). American corporations spend anywhere from $40 billion to $100 billion annually on education, much of it for remedial training in subjects that have already been covered by the public schools (p. 6). Futurist Marvin Cetron cites the CEO of Xerox Corporation expressing the concern that soon companies will be forced to hire one million new workers a year who cannot read, write, or count well enough to do their jobs. Covering this deficiency will cost industry $25 billion per year over many years (Cetron, 1989, p. 60). As a result, most American companies see education as their top community relation's objective (p. 60). Corporate education and training systems are providing more of the traditional education that once was the province of the public schools (Eurich, p. 12). The business world has, since the birth of the Industrial Revolution, recognized the importance of employee education. Industrial leaders have consistently supported public education, particularly those programs that prepare more competent workers (p. 45), because they would much rather be the recipients of educated workers than the providers. At least they do generally provide resources in the form of tuition assistance and time to take courses to their workers, rather than providing a structured basic education program of their own.

While industry and education exhibit parallel development, education has generally lagged behind the needs of industry, often leaving industry to fill the void from its own resources (p. 45). Corporate education programs in recent years have broadened to consider the educational needs of the whole employee, covering areas such as reading, writing, and arithmetic as well as the more traditional business courses in sales, service, customer training, management, and executive training (pp. 58 & 59). In a 1983 survey of corporate executives and school administrators, the corporate executives ranked mathematics, science, and speaking-listening skills as the greatest concerns, while school officials felt students were adequately prepared in these areas (U.S Department of Education, 1995, p. 2). So, corporate leaders are left to reluctantly fill this apparent shortcoming of the education system they already pay for with their taxes.

The University of Pennsylvania's National Center on the Educational Quality of the Workforce found that each additional year of education employees receive improves company output by 8.6%, and yet, "employers have lost faith in the nation's schools and are skeptical of hiring young workers...Employers have so dismissed schools that students are getting the message that schools aren't important to work. What we're losing is the clear relationship between school and work" (Turcol, 1995, p. 2). At the recent corporate education summit, political and business leaders called on hiring managers to factor in school performance, to include requesting high school

transcripts and using level and difficulty of coursework in hiring decisions. New Jersey Governor Kean placed college completion percentage at around 19%. Another source estimates 22% of 25 to 29 year-olds complete 4 years of college (Perry, 1992, p. 133). Just how important is finishing high school and how useful is the content? Are there enough college graduates to meet industry's needs, and how much college is enough?

Based on the market indicators available to high school students, finishing is important (for the diploma) but content is not. During the first eight years after high school, those students who do not go on to college receive no reward for science, math, or language arts courses taken in high school. In fact, some educators claim that we emphasize the wrong math in high school; in reality, statistics has greater application than algebra on the production line where Statistical Process Control (SPC) prevails. If avoiding these courses makes one's passage through the traumatic adolescent years of high school easier, conventional (teenage) wisdom says, avoid them! Especially since few employers ask to see high school transcripts, the diploma itself opens most doors. Industry regards the diploma as evidence of the applicant's reliability and staying power. At least the applicant had the character to finish something (Sanchez, 1996, p. A 13). A 58% share of Fortune 500 companies reported difficulty hiring employees with basic skills; the CEO of Pacific Telesis complained that only 40% of entry level applicants were able to pass an exam based on seventh-grade level academics (Sowell, 1993, p. 6). Writing in The Washington Post, Cohen states: "Poor literacy costs American business $25 to $30 billion a year in lost productivity" (1996, p. A 13). A Program Manager at Textron, a high tech Department of Defense contractor in the Boston area, told me that they do not hire workers straight from high school.[2]

Businessmen complain about the academic qualifications of applicants, but their actions say otherwise: "attitude, punctuality, and scores on their own company tests were more important to them in deciding who gets a job" (Mathews, 1996, p. A7). The acceptable applicant was further described as reliable, having a good attitude, a pleasant appearance, a good personality (Finn, p. 118). The conclusion is that employers put little stake in the quality of high school courses, demonstrating that they either do not read or do not believe the course descriptions given in school

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[2] Conversation between the author and Mr. William Peck, Director Wide Area Mine Program, Textron Defense Systems, Wilmington, MA, May, 1993.

catalogues. In addition, when employers request high school transcripts, they seldom receive them. Less than 20 % of high schools respond to employer transcript requests (p. 119).

Appropriately titled, America's Choice: High Skills or Low Wages, this study, commissioned by two former U.S. Secretaries of Labor, laid the young person's choices on the line: keep up with the rapid changes or plan to live on a meager income. The charge to education in the nineties: be competitive in the global marketplace while maintaining our accustomed standard of living. Futurist Cetron argues that as traditional skills are obviated, workers will require less emphasis on vocational training and more on science and mathematics, foreign languages, easy use of computerized data links for data searches, and retraining in new technologies. He goes on to say that the public schools will be asked to meet these needs (p. 59). Again, employers would rather be the recipients of this training than the providers.

U.S. Department of Education records show that in 1988 there were 140,000 school-business partnerships in operation. That amounts to less than two partnerships per school. Typically the relationship consisted of businesses donating or loaning resources, both human and material, to schools; providing technical assistance; providing awards and incentives to teachers and students; and guaranteeing jobs, college entry, or financial aid for high school graduates (Finn, 1991, p. 48). Such a relatively small base of school supporting business' cannot make up for the financial support not being provided by the Federal government.

Dr. Carol O'Connell, director of elementary education for Northmont City Schools near Dayton, Ohio, initiated the school/business partnership program in the Northmont School system. Her stated intent is to extend the boundaries of the school and to build improved contacts between industry and the schools. She states: "[p]artnerships with the private sector is a way to regain trust and confidence in education" (O'Connell, 1985, pp. 7 & 8). She feels that partnerships should be reciprocal, which is not the expectation of most business enterprises working in the programs (p. 14). Many colleges and universities offer work/study programs wherein the student alternates between schooling and working. The industries that offer these opportunities benefit by hiring a fully indoctrinated and motivated employee. Among the benefits of partnership are:

- helping students to see the relationship between what is taught in school and the world-of-work;
- communicating the multiple goals and problems of the school;

- providing students with opportunities for career exploration, a more realistic view of the world, and the opportunity to experience successful people in industry; and,

- showing the community that education is a joint responsibility and that they can play an important role in the schools (O'Connell, 1985, p. 15).

An example of industry's interest in partnerships is the Hughes Aircraft Corporation in the greater Los Angeles area of California. The company has established an Education Resource Center, which is charged with helping Hughes employees and retirees to find opportunities to help-out in the local public schools. Their brochure proclaims: "Little people are very important because they will be our future leaders and employees...We are giving them a clear message that we care that they learn." The Education Newsletter urges Hughes employees to "join us" in one of the partnership schools or "to go to the school your child attends" and get involved. The company offers help in making employees more literate in the vocabulary of education, showing them new developments in math and science, and by donating resources. The newsletter exhorts the employee: "You have to do it! It is up to you! Call me (Sylvia Connolly). Our children are important!" (Hughes K-12 Education Newsletter, 1993, p. 2). The newsletter includes specific examples of partnership programs and employee involvement (1993, p. 2). This newsletter illustrates how the Hughes Aircraft Company implements partnerships.

Late in 1994, business leaders formed the National Employment Leadership Council to work with the Federal Departments of Labor and Education to implement school-to-work programs in the business world. The overarching objective was to improve the competitiveness of the U.S. in the global marketplace. Listed among the charter members are Ford Motor Company, American Express, Atlanta Life Insurance, Bell-South, Charles Schwab, Eastman Kodak, McDonalds, Siemans, and twelve other prominent companies. According to President Clinton, "[t]he commitment these CEOs and their companies are making is a significant step toward increasing opportunities for students in every part of our nation" (Olson, 1994-3, p. 19). Increased industry interest in the schools (perhaps enlightened self-interest), has an opportunity emerged to make a near-term impact on the public education system? Cetron looks on industry as a natural ally for the education system, although no single corporate entity is in a position to replace the badly needed billions of government dollars. However, the corporations do have a valuable resource in their technically capable employees who might well act the role of part-time teachers and role models for students (Cetron, 1989, p. 63). Project Bridge implemented by Polaroid Corporation in

Massachusetts does just that. The company funds the teacher-certification program for a designated number of full time employees, on full salary, to become math and science teachers in the local public schools (Cetron, p. 53).

Despite the statistical arguments of Berliner and Biddle, the no-nonsense leaders of the business community have a problem with the results of the education system. They have been expending precious profits on making up for what they see as shortcomings in public education. At the same time employers ignore high school records in making employment decisions, they tout the education system as the key to competing in the world marketplace. Many industries, especially high technology firms, will only hire college graduates. School-business partnerships, aimed at helping students to see the relationships between their studies and the world-of-work, are growing in popularity. While there is considerable inertia in the public education system, the legitimacy of change is supported by many in the education field, including philosopher John Dewey, Ted Sizer, and a multitude of political and business leaders. According to The Washington Post:

> Corporate CEO's may indeed be concerned about the education of their incoming
> workers...What is less acknowledged is that today's workplace requires a higher
> degree of integrated knowledge than ever. Society used to have a slot in the
> workplace for the hard working, marginally literate who were willing to learn a skill;
> that slot has disappeared (Patrick & Calfee, 1996, p. C4).

This study is concerned with where this "integrated knowledge" should be acquired and how those that possess the knowledge make the transition to the work place. Knowledge workers come primarily from the college ranks (Sperling, 1997, p. 3). The role of formal and informal learning in the work place will be examined next.

Formal and Informal Learning in the Workplace

The work place commonly employs formal and informal learning to transmit norms and values of the employer. Organizational socialization is the process an individual uses to acquire the social knowledge and skills necessary to function in an organizational role (Wiswell, 1994). New hires learn by reading office operating manuals and procedures, from supervisors and senior employees (networks), and mentors, both assigned and self-appointed.

In the model developed by Mocker and Spear, the institution drives formal and informal learning objectives. The institution controls the formal learning means, while the employee-learner controls the informal learning means.

Traditional formal learning involves a formal setting, often in school buildings set aside primarily for education. The traditional approach or means is group or classroom instruction. Nontraditional formal learning takes place in other settings and with other approaches. Holding classes in a storefront or workplace conference room or office are examples. The use of correspondence courses, kits, and distance learning are examples of non-traditional means.

A well-managed workplace would naturally encourage and benefit from both formal and informal learning. Learning the office or workplace culture, norms, values, and KSA's required to be an effective employee takes place through the cooperative efforts of co-workers, role models, mentors, and supervisors. Learning can occur through intentional training or learning situations such as case studies or dry runs and as a byproduct of specific work-day assignments. That is, in the process of executing the primary mission, with or without a mentor or teacher, the employee can learn corporate roles from job experiences and thus experience informal learning. All roles which are created, sustained, and transmitted by people include both content characteristics (i.e., what it is people should do) and process characteristics (i.e., how it is they should do it) (Van Maanen & Schein, 1979, p. 226).). To better understand the parameters of the problem we will now explore some of the issues in the school-to-work transition process.

The School-to-Work Transition

The topic of the January 1995 GOALS 2000 Satellite Town Meeting was: "School To Work: Preparing Students for High-Skills, High-Wage Jobs". A panel of "innovators in the school-to-work area" with participation from Education Secretary Riley and Deputy Secretary Madeleine Kunin discussed the essential contribution school-to-work programs make to the education of every student and to the economic well being of the nation. The list of skills students will need for jobs in the 21st century was led by "teamwork". Employers are looking for employees with problem solving skills, critical thinking abilities, and basic communication skills. Mike Hryciw, Principal of Portland, Oregon's Roosevelt High School reported his four-year curriculum is based on school-to-work principles. In summing up, Deputy Secretary Kunin declared the program to be for all

students; to offer flexible career and educational options; to integrate classroom academics with on-the-job experiences; and to involve the entire community in the program, including parents, business, and higher education (US Department of Education, 1995, p. 2).

Society has done a poor job of facilitating the transition from the schoolhouse to the work place. In fact most public school students are not prepared for the world-of-work. They lack the attendance habits, interviewing skills, and work habits. They lack the very discipline and self-image conducive to success in the work place. The Educational Quality of the Workforce - National Employer Survey results led researchers at the University of Pennsylvania to encourage better school-to-work transition systems (Sommerfeld, 1994, p. 7). Professor Smith states: "[t]he purpose of secondary schooling is to broaden and deepen the skills and understandings developed in elementary school and to provide college preparatory studies and whatever vocational training can be agreed upon by the community." (1964, p. 36). According to John Dewey, three courses of action are open to education: "perpetuate the present confusion and possibly increase it"; "select the newer scientific, technological, and cultural forces that are producing change in the old order...see what can be done to make the schools their ally"; or, "strive to make the schools a force in maintaining the old order intact against the impact of new forces" (Dewey, 1937). Dewey advises us to select the second course, pointing out in Education and Social Change, that:

> [t]he problem will be to develop the insight and understanding that will enable the youth who go forth from the schools to take part in the great work of construction and organization that will have to be done and to equip them with the attitudes and habits of action that will make their understanding and insight practically effective...(Smith, 1965, p. 38).

Prior to writing Education and Social Change, Dewey wrote in Democracy and Education,

> ...the key to the present educational situation lies in a gradual reconstruction of school materials and methods so as to utilize various forms of occupation typifying social callings, and to bring out their intellectual and moral content...this educational reconstruction cannot be accomplished by merely trying to give a technical preparation for industries and professions as they now operate.…The problem is not that of making the schools an adjunct to manufacture and commerce, but of utilizing the factors of industry to make school life more active, more full of immediate meaning, more connected with out-of-school experience. (Dewey, 1915, p. 325).

34

Dewey is telling us to allow the schools to accomplish their assigned mission and to task industry with supplying the lessons in the relevance of education to the world of work; that the schools are equipped to prepare the young to deal with the world in general terms. It is up to the plant to teach the assembly line worker how to operate the equipment on that assembly line.

The Secretaries of Education and Labor, testifying to Congress in 1993, stated that 75% of the children entering American high schools would not achieve a four-year college diploma. The assessment that this group is not adequately prepared by the public schools for the world-of-work, leads to advocacy for a comprehensive school-to-work transition system that would team education and business to help this vast majority of American students to make a smoother progression from the classroom to the work place. A study by the National Center for Research in Vocational Education (NCRVE) at the University of California, Berkeley reported that such a system should not just prepare students for first jobs, but should also prepare them for life-long learning and the multiple career transitions they will face during their working lives (Stern, 1994, p. vii). The present system is characterized as "often messy", time consuming, and often unsuccessful for "some people" (p. 1).

Many young Americans first experience work while in high school. Those students who attend college often also work while there, many in work/study programs. After completing course work, these youngsters "flounder" from job to job. In the 18 to 27 age group, the average high school graduate who did not go on to college held nearly six different jobs and was unemployed four or five times (p. 1). The Carl D. Perkins Vocational Education Act (PL 98-524), as amended in 1990, requires schools to provide career counseling and job placement services to students enrolled in federally supported vocational education (p. 72). A study by the National Assessment of Vocational Education (NAVE) reports that most two-year colleges do claim that they provide these services. NAVE reports that, for the most part, students are still on their own in finding work and that the counseling services at these two-year colleges are still most successful at helping the minority who go on to four-year colleges (pp. 73-74).

A twelve-year longitudinal study of 2,716 people ages 16 to 19 who were in high school in 1979 shows that those who worked while in high school enjoyed an average of $1,300 to $1,600 more in earnings per year than those who did not work while in high school. Other favorable characteristics shown by this group, included better than average grades, stronger work force

35

attachment, and lower unemployment. This group was also less likely to start or to complete college than those who did not work. The researchers concluded that this slight drop could be due to the observed "glut of over-educated labor in the American market." Perhaps, the early worker observing this concluded, quite logically, that the value of completing college is lessened in view of the increased chances of keeping a job once in the market with a proven track record (How, 1995, p. A3). College graduates continue to have far greater earnings potential than high school graduates (Sperling, 1997, front flap). Does this translate to the school-to-work transition process? That is, do college graduates enjoy a measurable advantage over high school graduates moving into and about the world-of-work.

The school-to-work transition usually takes place over several years, commonly beginning during the final years of secondary schooling. The NCRVE study concluded that a successful system will take advantage of this transition period and will exploit the opportunity to combine learning with work. Such a system will probably stand the future worker in good stead as the economy and jobs shift, requiring frequent job changes (Stern, 1994, p. 145). A measure of the sincerity of Congress in this area is the NCRVE research report itself. Required by the Carl D. Perkins Vocational Act, and directed through the Office of Vocational and Adult Education in the U.S. Department of Education, the 1994 version of the study was 100% funded by a federal grant of $5,892,480 (Stern, Funding Information page). Even by Department of Defense standards, that amount is a lot of money for a 189 page one-year study. The Perkins act calls for the NCRVE to "annually prepare a study on the research conducted on approaches that lead to effective articulation for the education-to-work transition, including tech-prep programs, cooperative education or other work-based programs, such as innovative apprenticeship or mentoring approaches..."(p. vii).

The apprenticeship concept continues to be viable, as we progress toward the third millennium. We seem to have come full circle, as the Phi Delta Kappan notes, "technology has all but eliminated unskilled labor positions, while the need for semiskilled and highly skilled employees grows." (Packert, 1996, p. 682). Packert further notes that the schools must be "open to new ideas", that they must be "willing to accept the inevitable changes", and that they "must take the initiative to go out into the workplace and find what training would best serve the needs of the community" (p. 683). The most critical feature of apprenticeship training is educational flexibility (p. 683). President Clinton made apprenticeship his top educational priority when he first entered the White House (p. 683).

The NCRVE report describes efforts to implement the apprenticeship concept in school-to-work transition programs, citing the efforts as too new to be formally evaluated. The definition continues to evolve, as the commentary reverts to classical apprenticeship as practiced by the European guilds in the Middle Ages. Of specific interest is early exposure to the world-of-work, which allows students to continue their education in "applied settings and to mature gradually in the company of adults who care about them" (Stern, 1994, pp. 23-25). This advance is further supported by the finding that mentoring, usually by people in the workplace, is an important element of an effective school-to-work transition program (p. 59). Listed among the most important elements of youth apprenticeship are:

- Employers provide paid work experience and guided work site learning.
- Schools integrate vocational and academic learning.
- School and workplace learning are coordinated and integrated.
- Programs articulate high school and post secondary learning and are at least two years in duration.
- Completers receive widely recognized credentials of both occupational and academic skill mastery.
- Programs are governed by broad coalitions of institutional partners (Stern, p. 24).

Two-year colleges are assuming a greater role by providing the classroom component of apprenticeship programs (p. ix). The NCRVE report, discussing issues with the Youth Apprenticeship Program, found several interesting, though not new, sticking points. For instance, the title incorporating the term apprenticeship connotes "in the minds of many" non-scholarly pursuits. Guidance counselors are finding that "[p]resently, it is difficult to convince parents of high school sophomores that their children will be able to go to college after having participated in an apprenticeship program." (p. 32). Programming work experiences into the rigid class schedules of high schools and getting the teachers to support the program are difficult tasks (p. 33). Consider how few teachers (or counselors for that matter) have experienced apprenticeship. The route to teacher certification tends to follow the single path of post secondary education, often requiring post-graduate work equivalent to a master's degree. What does such a person know of the transition from education to work? On the working world side of the equation are the issues of labor unions, child labor laws, hazardous working environments, wages, and business' long term commitment to

the program (p. 33). NCRVE cites a 1993 Bailey and Merritt study arguing that such a system will have to evolve to fit the changing economic situation and the industrial dynamics of the nation (p. 34). An additional complication is the implied national commitment to allow every American access to post-secondary education, most often interpreted as a four-year degree program. President Clinton effectively guaranteed this in his 1997 State-of-the-Union address. The Fiscal Year 1998 legislation providing for a balanced budget made special provision in the income tax code to encourage and reward college attendance (Gingrich, 1997). The NCRVE contends that these programs can be structured to keep the four-year college option open for participants. This provision might also help to alleviate parental fears of "tracking" (Stern, p. 142).

Carnoy and Levin, discussing contradictions in education, put great stress on the "tension" between the two education roles of preparing the young for citizenship and preparing them for employment. They contend that these two roles are in dynamic tension with one being emphasized at the expense of the other. The ascendance of one or the other tends to lead to pressure to bring the system into balance (1985, p. 161). Also, in situations such as the mid to late 90s, in which a perceived national need gives greater emphasis to one role (meeting the need for a workforce equipped to compete in the international arena), the debate becomes more public, vociferous, and heated. Emphasizing business' demand for qualified workers threatens the democratic reproduction role of education (Carnoy, 1985, p. 175). The schools' obligation to develop workers with the cognitive and vocational skills necessary for the jobs that will exist in the workplace today and in the future can be perceived to be at odds with the commitment to prepare citizens to exercise their democratic rights and responsibilities, to have equal opportunity, and the right to participate in our democracy (p. 148). Carnoy and Levin identify five functions that divert effort away from efficient production of a qualified workforce are:

- democratic participation;
- social equality;
- social mobility;
- cultural development; and
- independence of the educational bureaucracy (p. 148).

This last function gives us a clue about much of industry's frustration with the educational system. In fact, educators have traditionally favored the teaching of democratic principles over the more practical obligation to prepare students to face the harsh realities of the world-of-work (p. 154). In

times of lessened international competition for world markets, this attitude may have been tolerated by business. While irritating and inefficient, the issue was not yet one of survival. As the year 2000 approaches, more educators find reasons to agree with business on this issue and to conclude that neglect of work force issues may no longer be tolerable. A national level response to the expressed concern of the business world about how well students are making the transition from the world-of-education to the world-of-work is the School-to-Work Opportunities Act of 1993.

The School-to-Work Opportunities Act

On August 5, 1993, a bi-partisan coalition of 43 members of Congress introduced the School-to-Work Opportunities Act (H.R. 2884). The stated purpose: "[to] bring together partnerships of business, education, labor, and community leaders to build a high quality, comprehensive school-to-work system that prepares young people for careers in high-skill, high-wage jobs" (Committee on Education and Labor, 1994, p. 1). The "Dear Colleague" letter points out that the lack of school-to-work assistance has a negative effect on the earning potential of young Americans, puts a financial burden on business, and penalizes the American economy. Factors driving this legislation are the doubling of the earnings gap between college and high school graduates, the rapidly changing marketplace, global competition, and the advanced technologies emphasized in the world-of-work today (p. 1).

For the first time in thirty-years, the Secretaries of Education and Labor testified together before Congress on a bill of mutual interest. Secretary of Education Riley testified that of the millions of youth entering American high schools every year, 75% would not complete a four-year college degree program. Acknowledging that high school counseling departments concentrate their efforts on the college bound, he describes this so-called forgotten majority as those who drift through high school and at the end suddenly discover that the time to find a job is at hand and that they have no idea about how to proceed. Without family connections, marketable skills, or knowledge of how to relate to the economy, they wander from one job to another for ten years or more before they work out the semblance of a career plan (pp. 52 & 53).

The Federal role in the school-to-work transition is to provide seed capital to promote local support systems that embrace the following three basic elements:

        1.   School based learning consistent with the Goals 2000 program.

2. Work based learning that will provide paid work experiences and mentoring in the workplace.

3. Connecting activities that help to match students with employers.

The experiences should lead to a combination of high school diplomas and skill certificates that will be accepted and recognized by industry as verification of the real accomplishments of the holders. The certificates are intended to be portable and recognized in any state. Finally, Secretary Riley holds out the hope that this program will help the high school student to see the connection between learning opportunities presented in the public schools and the world-of-work (p. 54).

Secretary of Labor Reich echoed most of what Secretary Riley had to say, adding that we must "disenthrall ourselves from the premise that in order to have a good job, you have got to have a four-year college education" (p. 55). This route cannot be the only way to a good job; future workers must be prepared to use advanced technologies that now dominate industrial processes. Advanced technologies apply with equal vigor in both manufacturing and the service sector (p. 55). The proposed legislation builds on what has already succeeded in more limited applications. Secretary Reich alludes to four factors in favor of this legislation:

1. The business community is involved from the start, building on the tradition built-up in the development of vocational education, allowing business to participate in the preparation of future workers.

2. Building on concepts that already work, the legislation allows each state to build a system tailored to local needs, rather than imposing a mandatory Federally developed model.

3. The legislation encourages employer and labor partnerships with educators and government agencies.

4. The Federal funds are seen as venture capital to be leveraged to encourage and help states and local communities (school districts) to get started (Committee on Education and Labor, 1994, p. 56).

In their prepared joint statement, Secretaries Riley and Reich state that international competitors are improving their school-to-work transition systems, while American youth are left to "[m]ake their way into their first jobs with little guidance, direction, or support" (p. 60). Employers complain about not being able to hire entry-level workers with sufficient academic preparation and work skills, making international competition more difficult (and expensive) for them (p. 60).

President Clinton is quoted: when we waste these personnel resources, "the rest of us pay. We pay in unemployment. We pay in welfare. We pay in jail costs. We pay in drug use costs" (p. 61). This litany sounds like a return to the nineteenth century philosophy in which schools were viewed by the elite as a means to keep the working classes out of trouble and out of jail. The emphasis is not on creating a new Federal bureaucracy, but on building on a foundation of programs that already exist and work: youth apprenticeship, tech-prep and cooperative education, career academies, and school-to-apprenticeship (p. 61). In their conclusion, Secretaries Riley and Reich state:

We believe the School-to-Work Opportunities Act can help produce the skilled, prepared, and flexible workforce that the new economy demands. That is why this proposal is such an important part of the Clinton Administration's workforce investment strategy (pp. 68 & 69)

The General Accounting Office (GAO) reported on the transition, from school to work, for the committee. Their statistics are the gloomiest yet. In an education system that sees high schools putting most of their resources into preparing students for college, about 15% of incoming high school freshmen will obtain a four-year college degree within 6-years of graduating from high school. Most of the remaining 85% wander among the different educational and employment experiences that are available (p. 134). The GAO listed four states that were developing comprehensive school-to-work transition programs aimed at preparing high school graduates for the world-of-work. They are Florida, Oregon, Tennessee, and Wisconsin (p. 135). Among the obstacles to implementing effective school-to-work transition programs:

1. Training and supervising young students in the program adds cost and management time.
2. School officials and teachers have few connections with the business world.
3. Parents perceive the school-to-work program as "vocational education" and therefore not a good step in preparing their children for college.
4. State funding for such programs is problematic.
5. Using funds under other existing Federal grant programs (such as Job Training Partnership Act) for these efforts is difficult.

6. Regions that do not have very many promising career path jobs; areas with low-growth occupations, low-skill and low-paying jobs, and businesses with limited futures offer few opportunities (pp. 141 & 142).

In addition to these daunting obstacles, two additional topics addressed by the GAO are of interest.

First, there is concern about how effective such a program would be in the United States: "this is largely an uncharted area for most states and school districts and...is likely to take a long time." (p. 143). America is an impatient nation. Second, how early should schools introduce career guidance and development? Many experts recommend programs of career guidance and development starting before the eighth grade (p. 143).

The School-to-Work Opportunities Act is now law. The funding came under attack in the Republican-controlled Congress that convened in 1995. Despite the best efforts of a conservative reform-minded Congress, the school-to-work program survived the FY-96 budget wars and has been fully funded in the FY-97 and FY-98 budgets that President Clinton signed into law. Clearly the entire community should be involved in school-to-work transition programs. The programs should begin before the student is faced with the harsh realities of finding a job; preferably at least two years prior to graduation from high school. Federal seed money of around $100 million funds HR 2884 to encourage school-to-work programs with industry participation. How the program and associated funding will be reshaped during upcoming Congresses will determine the impact of this Federal effort to improve the school-to-work transition process.

The School-to-Work Opportunities Act targets the majority of students who will not complete a four-year college program. What can we learn of the transition process from those who are tacitly assumed to be successful: the college graduates? We know that a major factor in economic growth is the human capital responsible for generating new ideas and innovations (Sperling, 1997, p. 2). The development of that human capital depends on education and "almost all scientific and technical innovations are produced by college-trained scientists and engineers, and most other innovations are produced by college-educated managers and professionals, usually working as members of a team." These people representing less than 25% of the workforce tend to decide the skill levels of the other 75% (p. 3). Hence, this group has great leverage. Their College-to-work experiences should not only provide clues to the basic process, but also to how the entire system might be improved.

John Dewey and Dualisms

Arthur Wirth describes John Dewey as "the most controversial figure in twentieth-century American education.…He was a leader in the criticism of traditional schooling. He has suffered from uncritical adulation as well as unwarranted vituperation" (Wirth, 1966, p. vii). Dr. Dewey has been tagged with the blame for many of the less-than-successful progressive education concepts that have plagued education for the past 20-30 years (p. vii). Dewey's life spanned much of America's coming of age period, when the nation grew from its post-Civil War posture of isolationism and agriculture-based production to its post-World War II emergence as the industrial and military leader of the world. Professor Cubberley, Dean Emeritus at the Stanford University School of Education says, "[t]he great period of our educational development and expansion has been since 1860" (1962, p. vii). He goes on to state that Dewey spans a time that included the first two reorganizations of elementary education (Cubberly, 1962, p. ix & Wirth, 1966, p. vii). During that time American education experienced tremendous change, responding to the call to educate all Americans in the tenets of democracy and to meet the growing need of American industry for an increasingly capable labor force. Dewey, the leading education philosopher throughout that dynamic transition period, has considerable relevance today as we face similar challenges. The transition from a production-oriented economy to an information-based economy, ultimately posturing America to lead the world through the next major transition to the knowledge-age is fraught with difficulty. Cubberley describes Dewey as:

> the foremost interpreter, in educational terms, of the great social and industrial
> changes through which we have passed, and the one who has done more since 1895
> to think out and state for us an educational philosophy suited to the changed and
> changing conditions in our national life (Cubberly, 1962, p. 506).

The goal of education can be summed up in Dewey's response to this rapid change, his "conviction that children entering this new world needed to be prepared by a reformed kind of educational experience that would equip them for an effective, and fulfilling go at life" (Wirth, 1966, p. x). We can see in Dewey's resistance to dualisms the hints at the solutions to today's education problems. He identified New England's dualist heritage as a "tradition representing divisions by way of isolation of self from the world, of soul from body, of nature from God" (p. 8).

His insistence on a unifying philosophy that addresses these dualisms provides a glimmer of hope for education today.

One duality that particularly bothered Dewey was the separation of what took place in the school from the activities of the student outside the school. A related duality was the isolation of one area of study from others (p. 30). He introduced his theory of occupations in the Chicago Laboratory School to provide the opportunity for students to relate in-school learning activities to out-of-school experience (p. 131). Dewey saw in the child a young human with interests and questions who wanted to explore the world in a variety of ways. Tools such as reading and writing developed naturally as the student learned self-expression (pp. 162-163). Learning occurred through play, construction, use of tools, and contact with nature as students learned by living life and by studying social institutions and industrial processes (Cubberley, 1962, p. 506). He deplored the artificial separation between the teaching of humanities and sciences, because the humanities became the domain of the leisure class while the worker was excluded (Wirth, 1966, p. 177).

As early as 1901, Dewey recognized the duality in the high school program as preparation for post-secondary education or for the world-of-work (p. 204); the college-prep versus vocational education dualism. He revisited the question in 1931, stating that both liberal educators and conservative (practical) educators deplored the existing, dualistic, situation (p. 206). The increasing specialization of courses in both the industrial arts and the humanities led to the loss of connection. The integration of knowledge, which the student needs to understand the world, was damaged by the separation (p. 208). Dewey was opposed to "trade training" as a separate entity. In a 1914 article on industrial education, he advocated in-school education programs that provide "insights into scientific and technical concepts and principles, and reflection on social relations and values" and that the proper place to impart technical competence in production details should be on-the-job (p. 211). He carried this concept one step further, advocating the introduction of a project or problem method of instruction into the schools. He felt there was a real chance of locating projects in schools that would lead to students "raising questions, introducing new undertakings and creating fresh demands for knowledge. Students would be provided with the opportunity to be more active in both an intellectual and a constructive sense. They would be forced to seek their own integration's and solutions." (pp. 211-212). He further believed that the public school is the best place to address the ills of society. He worked to make the school a reflection of the society at

large, where "children are taught to live amid the complexities of modern social life" (Cubberley, 1962, p. 506).

Dewey recognized the dual responsibilities of the secondary education system: to meet the liberal education needs of those students bound for college and the vocational needs of those not bound for college (Wirth, 1962, p. 225). He was strongly opposed to the idea of a dual system of high schools, separated into academic and vocational parts. In fact, he was a vigorous advocate for the comprehensive high school in which the college bound student could be exposed to the tools, materials, and industry of the world-of-work and the work bound student could be exposed to science, history, and literature (p. 228). Speaking to the role of comprehensive schooling, Dewey said:

> industrial occupations have infinitely greater intellectual content and infinitely larger cultural possibilities than they used to possess. The demand for such education as will acquaint workers with the scientific and social bases and bearings of their pursuits becomes imperative, since those who are without it inevitably sink to the role of appendages of the machines they operate. (p. 230).

Dewey felt that every student should be well grounded in all subject matter and the political, economic, religious, cultural, and social aspects of life. The goal for education:

> [to] equip students to emerge from the schools with a broad understanding of the nature of industry and technology, a respect for the dignity of work, and an awareness of the social implications of change (p. 230).

Dewey subscribed to the organic theory of society in which common purposes bind people. The ethical concept of democracy included industrial with civic and political life (p. 240). Thus, rather than addressing the needs of college bound and workforce bound youth separately, Dewey advocated combining the two, thereby increasing the learning value for both groups. A unified and holistic approach, versus a dualistic and, therefore divisive, education system.

Summary

The vocational education system in America has evolved from the British apprenticeship model, loosely governed by the Statute of Artificers, to its modern incarnation. Along the way, many factors and leaders have shaped its development, not the least of which was John Dewey. The

current debate over the effectiveness of the larger educational system that includes both vocational and college preparation and its legitimate purposes is reminiscent of the efforts to bend it to the needs of a growing industry in the 19th century. Many of that era's educational issues have reappeared today. American workers are accused of not keeping pace with foreign worker productivity. Foreign kids learn more in their schools than do Americans. Who should be in control of the education system? What should be emphasized, the principles of the American democracy or workplace skills? While apprenticeship continues in the modern era, it is not the primary means for meeting the nation's work-force needs. Peter Drucker says that we cannot afford apprenticeship in the modern era because of the narrow focus of the training (1969, pp. 58 & 59). Drucker and many other management leaders preach the need for our industries to be mobile in order to compete in the international market place. On the other hand, the Training and Development Handbook declares that most technical jobs are in a state of constant evolution and that apprenticeship should not be overlooked (Mallory, p. 643).

Supporting this view is the Bureau of Apprenticeship Training's observation that the type of people that emerge from apprenticeship programs are "all-round craft workers" who have learned to use their imaginations and are versatile and adept at meeting changing requirements (U.S. Department of Labor, 1991, p. 20). The burden of responding to the foreign competition threat is placed directly on the shoulders of American workers. A concerted effort is underway to make them active participants and "partners" in efforts to compete effectively. The concept of production floor teams taking on the responsibility for meeting production challenges is receiving greater and greater emphasis. More industries are sending their employees to team building courses to learn the requisite skills. A rapidly growing business in Clearwater, Florida, is PDS Inc., doing a brisk business consulting about and teaching production floor workers and their supervisors how to create and manage self-directed work teams. The PDS emphasis is on empowering production floor workers to respond to the shifting nature of the international market place and to make their products and production processes more efficient and competitive.

Business and industry leaders are clearly unhappy with graduates of the public education system. They are already committed to spending training funds on making production processes more efficient in order to compete in the international market place. To also have to contemplate spending training funds for something they have already paid for with their taxes is not good. Public education is a major enterprise, employing over four million professionals and accounting for

over 200 billion taxpayer dollars every year. College education is the second largest family investment, behind purchase of a home, and is heavily subsidized by the taxpayer (Sperling, 1997, pp. 9-14). The taxpayer underwrites about 80% of the costs of operating public colleges and universities (front flap).

The focus in this study is the college-to-work transition. The Congress considered the subject important enough to enact legislation setting policy and providing Federal funding in the School-to-Work Opportunities Act of 1993 (H.R. 2884). For the first time in memory, the Secretaries of Education and Labor testified together before Congress on a single issue. This issue connects the spheres of responsibility of the two departments. How do we resolve this duality? Their testimony that 75% or more of the students who enter the American education system will not complete a college degree is revealing. The Government Accounting Office (GAO) says it is closer to 85%. The Federal Government is now targeting the majority of students who do not go on to complete college programs. The major opportunities belong to those who complete some college. The definition of an adequate education is shifting from K-to-12 to K-to-14, two years of college or some form of post-high school education or training. Balancing the educational needs of the working world with the need to teach the precepts of the American democracy and the elements of citizenship is important and is in need of attention and priority.

While the education community is acknowledging the link between education and national well-being and economic success, the business community is so dissatisfied with the American education system that they discount the value added by education (Turcol, 1995, p. 2). Can the colleges and universities fill industry's needs for skilled workers?

Post secondary institutions are being asked to put more emphasis on the skills and values required in the workplace and on development of continuing education and self-improvement attitudes in the workforce (Sperling, 1997, p. 1). The secondary education system does not appear to be adequately addressing the life-long learning issue. How are they doing on the other skills needed to function in the world-of-work? To date, school-to-work transition programs are rare in the public school systems. Fairfax County, Virginia, schools are just beginning to explore the issue (Wiswell, 1996). The high school guidance counselor's attention is focused on the students who are going to college. Our national leaders actively encourage college attendance, offering student loans and income tax breaks for college tuition. Life long earning data gives a definite edge to college graduates. The high school diploma is no longer adequate preparation for the work place. (Sperling,

1997, p. 4). What about the 75% (or 85% according to the GAO) who are going to enter the work force soon, with only a high school diploma or less? These are the forgotten "minority". Professor Cubberly addresses the issue: "[i]t is as true today as when public schools began that the nature of the national need must determine the character of the education provided" (1962, p. 502). Given the additional edge of four or more years of preparation, college graduates should be better prepared than high school graduates for the school-to-work transition. But, are they?

The next chapter will detail the methods that were used to study this problem and to better understand and improve what is being done.

CHAPTER III
RESEARCH METHOD

This analysis of the college-to-work transition process focused on the relationship between education and industry in preparing an effective work force: how well prepared is the new hire for the world-of-work? How and where does the new hire learn the knowledge, skills, and attitudes (KSA) necessary for success in the workplace?

Critical ethnography informed by specific concerns and questions in the mind of the researcher is the method of analysis. Carspecken and Apple discuss the potential of the method to "enhance our understanding and explanation of social phenomena." (1992, p. 512). The method creates a critical dialogue between the researcher and the participant, leading to specific theoretical models that illuminate phenomenon of interest in the broader context of the structure of society. The researcher can form an "Orienting Theory" which puts the researcher's questions and concerns in the form of an investigation of the relationship of employee activity in the corporate culture and related social and political structures (p. 511). The study progressed to a continuously refined and altered orienting theory.

The critical field study led to a description of the ways of learning the ropes in the workplace and resulted in a body of knowledge that contributes to improved understanding of the theoretical bases of the college-to-work transition. The process progressed through five steps:

1. Monological data collection
2. Preliminary reconstructive analysis
3. Dialogical data regeneration
4. System relationships described
5. System relationships explained (p. 514).

The first three steps focused on the collection of field data, preliminary analysis, and additional interaction with participants based on the preliminary analysis. The fourth step employing additional data analysis led to the discovery of relationships between the routines and cultural forms of the workplace. In the last step, further exploration of these system relationships yielded a more general model of societal relationships in this workplace (pp. 512 & 513). The researcher maintained open dialogue with the study participants throughout the study process. This relationship helped with data validation and confirmation of inferences drawn from that data. In addition, this approach allowed for a democratic form of theory production by allowing the

participants in the study to provide input to the analysis of the collected data and the development of theory (pp. 548 & 549). Finally, this approach encourages participants to assume ownership of the research. Participant ownership is important in the event policy should ultimately emerge from this research, although this eventuality is not a primary research aim. As Carspecken and Apple state: "[t]rue critical research is a collaborative endeavor." (p. 549).

The researcher conducted in-depth interviews with managers and newly hired employees of the Systems Engineering Division, a major information technology company in Virginia. The constant comparative method of analysis focused data collection and the development of theory (Strauss & Corbin, 1990, p. 62).

Data Collection

The primary data source is a single aerospace company. The researcher interviewed five participant volunteers. The first interviewee was a corporate Vice President who provided basic information on the overall corporate culture and the means to ask for volunteer participants among the population of new hires. The three new hire participants came from a pool of six initial volunteers. Two of the volunteers transferred out of state to other divisions of the company, and one left the company. The fifth participant is the program manager who hired one of the new hire participants.

The corporate Vice President is a highly motivated and hard working individual who carved out thirty minute blocks of time from his busy schedule to talk to the researcher. Each meeting was terminated by his secretary reminding him that he was already due elsewhere for his next meeting.

The three new hire participants all volunteered to participate in the research based on a brief description of the research purpose provided by the researcher. They are all young, single women in their mid-twenties with college diplomas in the liberal arts. They are all very bright, motivated, and hard working individuals.

The program manager was also the hiring manager for several projects and had been volunteered by the participant whom he had hired into her first job. He graciously agreed to be interviewed on that basis. He is a retired military officer working on his second career.

All interviews except the first one with the corporate Vice President were tape recorded with the participant's permission. This data collection method overcame many of the problems associated with interviews: missing data, misunderstood comments, and the distraction of taking

written notes during the interview. This method allowed the researcher to be more completely focused on the study participant and the surrounding environment. Interviews were transcribed quickly and were e-mailed to the participants. The participants were invited to critique the transcriptions and the researcher's comments, observations, and processing of the interview data. None of the participants replied with comments, although each acknowledged receipt of the transcription. Grant and Fine reaffirm Oakley's 1981 suggestion that the more appropriate orientation for researchers is the interviewing approach in which researcher and participants know of each other's agendas and work together to mold the research so that it addresses the concerns of both (1992, p. 432).

No technology substitutes for the alert individual observer, with all senses unstopped and sensitivities working at top efficiency. Of course this "turned on" observer is not simply collecting data impartially. A model of possible relationships exists in the mind of the researcher. And yet, an observer has no substitute, because only the human observer can be alert to divergences and subtleties that may prove to be more important than the data produced by any predetermined categories of observation or any instrument. (Spindler & Spindler, 1992, p. 66).

The research question in Chapter I guided the dialogue with the study participants. The interviews were allowed to flow according to the natural progress of the dialogue. An interview outline served as a conceptual roadmap to help the researcher and the participant to orient themselves. As the Spindlers state in their ninth criterion for good ethnography: because the participant is the one in possession of the cultural knowledge the researcher is after, the interviewer will have to "flow" with the participant's conversational style and approach to presenting the story without imposing a preconceived agenda on the conversation (1992, pp. 73 & 74).

Data Analysis

Grounded theory provides a method of analyzing data and invites the discovery of theory from data (Strauss & Corbin, 1990, p. 76). The goal is to develop theory based on evolving categories and concepts. Commercially available sorting software, Ethnograph, was used to code the data. The researcher coded and analyzed the data iteratively throughout the data collection phase. Coding began with general observations and narrowed to more concise preliminary theory

statements as the study progressed. The constant comparative method allowed the identification of similarities and differences as facts were gathered. An ever widening explanation of the phenomenon emerged, leading to an increasingly generalizable theory (p. 109). Strauss and Corbin state: "[i]n developing grounded-theory we are trying to capture as much of the complexity and movement in the real world that is possible.…The discovery and specification of differences among and within categories, as well as similarities, is crucially important and at the heart of grounded theory" (p. 111).

Individual cases were compared with larger categories, allowing categories to be interrelated. These comparisons helped in generalizing the preliminary theory. Data collection and analysis continued to ground the theory until saturation was achieved (pp. 111, 112, & 188).

The researcher established linkages and patterns in the data using axial coding (pp. 107 & 110). Axial coding is complex, but so is the reality the researcher is attempting to illuminate. The research purpose is to capture the complexity of the reality of the college-to-work transition process. To do this task, both inductive and deductive reasoning were employed to account for the context in which this social activity takes place (p. 114).

Description of the Research Site

The following data provide a general description of the hiring situation at the information technology company addressed in this research.

- Over the last six months, approximately 1200 people were hired.
- Approximately 100 employees were laid-off over the last six months, which is about average.
- To move one level in the employee skill structure takes two to four years for a new employee.
- The following is the destribution of educational levels in that group of new hires:
    - BS/BA   60%
    - MS/MA   20%
    - PhD   2%
    - Degreed   82%
    - Non-degreed   18%

The Corporation

The Corporation was established as a software and information systems house. The principle business was building system software. During the 1960s, the corporation expanded to include government contracts. Business operations are international, with units in Europe and Australia. The corporation employs 32,900 people through out the world. The company had $5 billion in annual sales last year (1997) with 27% of its business with the U.S. Government and two thirds of that with the Department of Defense (Finnegan, 1998, p. 40). Projected total sales in 1998 are be $6.58 billion (Leibovich, 1998-2, p. E2).

A succinct one page statement of "Management Principles" signed by the Chief Executive Officer (CEO), expresses the corporate purpose: to be preeminent in the solution of client problems in information systems technology." To meet the corporate commitment to excellence in contract performance, five management principles must be met:

1. Satisfy clients, is the most important principle.
2. Recognize the importance of the employees and encourage initiative, individual contribution, respect and fairness toward each person, and opportunity for individual growth.
3. Require that employees maintain the highest standards of professionalism and technical competence, ethics and business conduct, and operate within the laws of the United States and all other countries in which the company does business.
4. Commit to identifying and to responding to business opportunities and to success in those undertakings.
5. Achieve reasonable growth and profit (Management Principles, undated).

The Systems Group

The Systems Group is a rapidly growing division of the company, employing 7,300 people mostly in information technology positions. The business focus is on US Government software development and support, and information technology consulting. Major contracts are with the Department of Defense and the Intelligence agencies. Services provided include management consulting; education and research programs in the strategic use of information resources; and the design, development, and installation of computer based and communications systems. Customers served in the federal market include NASA, FAA, DoD, and the Bureau of

Land Management. The focus of this study is the employees of the Systems Engineering Division (SED) of the Systems Group. Members of the Systems Group Corporate staff were also interviewed to better understand the SED culture.

The Corporate Culture Model of the Systems Engineering Division

Van Maanen and Schein describe organizational roles as including two characteristics: the content of the role and the process characteristics. That is, what should be done and how it should be done (1979, p. 226). Understanding that organizational roles operate in the culture of the organization, the culture is described in an overview and eight categories: business, satisfaction, opportunity, power, communication, policy, performance, and leadership. Each of the categories was developed by the process of axial coding, described previously in this chapter, which is a set of procedures for aggregating data in new ways by making connections among the categories (Strauss & Corbin, 1990, p. 96).

Overview: The company is a successful information technology (IT) firm at both the national and international levels. The corporation is highly dependent on customer satisfaction, its reputation in the field being defined by how well customer IT needs are met. The Systems Engineering Division (SED) is largely committed to government contracts, with emphasis on the Department of Defense and the Intelligence community. Considerable importance is placed on business growth to add new and to maintain existing customers and the capabilities of employees in information technologies and customer relations. All participants expressed a sense of enjoyment at the challenges and variety of the information technology business. They emphasized the importance of the customer and the need to continue to grow. In fact, growth seems to beget growth. As the corporation hires more people with new capabilities and trains current employees in IT areas of interest to customers, the business base expands in response to the new capabilities of the corporation expressed in the knowledge of its employees. This is a knowledge based industry.

Business: The causal conditions for a business enterprise revolve around the very reason for its being: the fact that the doors are open, customers are invited to contract with the corporation for its services which include information technology and computer consulting services. The strength of the corporation, in this case, is invested in the performance of its employees, in their capability to meet customer needs in their knowledge areas.

The business operates in the context of international competition with contracts in foreign nations, with the United States Government, state and local entities, and private business concerns, mostly in information technology. Customers satisfaction with the products that the company delivers is vital. This business is highly volatile with many pretenders willing to promise to do what the company does faster and cheaper. Therefore, the business thrives or dies based on the performance of its employees.

The properties that apply to this particular business area are embodied in the corporation employees. The most important and critical employee attributes are the knowledge, skills, and attitudes they bring to the work place, expressed in their responsiveness to customer demands and needs, their inventiveness and cleverness in applying their knowledge, and their willingness to learn new skills and to understand the customer's requirements. Most importantly, their attitudes as they are reflected in their morale and cheerfulness of spirit; their willingness to work overtime when deadlines loom; their volunteering to cover for an absent team member; and their ability to work effectively in teams are expected practices.

The intervening conditions that prevail are expressed in the contracts the company commits to, the laws of the countries in which the company operates, state and local laws and customs, and company policies, both written and unwritten. The business depends on contracts to define customer needs and to specify terms and conditions of the products to be delivered by employees. The company must comply with the legal mandates of many different countries and cultures, which are often in conflict with US law and custom. The new employee must master the rules of the road that the corporation lays down in written policy statements, as well as the unwritten policy that is enforced by peer pressure, operating procedures, and local norms.

Strategies used by the corporation include competing for new business and strategies for maintaining present contractual relationships with good customers. To be competitive in new business areas as well as holding on to present customers, the company relies heavily on the exhibited capabilities and talents of its employees. The nature of this business is constant change, expressed in new technologies and improvements in the familiar ones. Employees must constantly upgrade their skills and new employees must be hired. These changes infer an ongoing employee education and training program. Employees look for this benefit in the companies with whom they seek employment. The ease of getting education and training is better for employees and company alike. The employees interviewed were aware of this benefit

and were learning how to use it to their advantage. The new employees interviewed did not have the anticipated computer science degrees. They were liberal arts majors instead. The critical capability these new employees bring to the corporation is the willingness to learn. All seem to embrace Malcolm Knowles' idea of lifelong learning and are eager students, interested in exploring new ideas and learning new skills. One participant claimed she did not even know how to turn on a computer before coming to work, but she is learning and is actively seeking education and training that will make her an asset to the company.

The consequences of a successful business venture are employment, products delivered to customers, profit for the shareholders, growth of the business, opportunity for the employees and the corporation, and satisfaction for customers and employees. Success begets success. As the business succeeds, the reputation of the company as a producer of quality products is enhanced. This improvement leads to more business opportunities and makes the corporation a more attractive employer. This attractiveness, in turn, leads more capable people to seek employment with this first class team. As long as management can guide this growth and wisely manage the new opportunities, the company will continue to succeed. Pivotal to success in business is capable employees who are satisfied with the challenges of working for the company.

Satisfaction: The conditions that enhance employee satisfaction are grounded in the work environment. The information technology (IT) business is naturally challenging and rewarding to those who are computer literate. Even those who are not necessarily trained in computers, basic to IT, can learn in the work place context. If the IT professional feels her talents and efforts are appreciated, she will make the system work. She will be motivated to meet the customer's needs and will work as long as it takes to achieve the sense of satisfaction that results from a complicated customer requirement being satisfied. An important feature of the working context is the free access to continuing education and training that allows the experienced IT worker to stay on the leading edge of the technologies she works with and helps the newly arrived to learn the ropes. Each person will be a happier and more satisfied employee, and will continue to contribute to the best of her ability to the success of the work team.

The properties that prevail include positive attitude toward the work place, a positive self-image and happiness. Employees who are supporting the organization's mission and are functioning in a positive team work environment will deliver products that meet the customer's needs, leading to satisfied customers and more opportunities.

Several intervening conditions that facilitate employee satisfaction include a positive management style, good working conditions, capable employees ready to work in teams, good employee and management performance, and solid opportunity for members of the work force. The corporate working atmosphere appears to invoke happiness, enjoyment, and interest in continuing to work for the company.

Opportunity: The growth of the business and expansion to new customers and markets create opportunities for everyone in the company. Growth creates new organizational leadership positions, intellectual challenges, and a variety of customer needs. The corporate policies that come into play in these situations tend to hinder rather than to help. The larger the rule set, the more likely someone is to bump into it or to abuse the original intent of a rule. The company has made a concerted effort to minimize the list of written rules: the less than one page of Management Principles signed by the corporate CEO. The informal or unwritten rules developed in the ranks and at the first and second levels of management should be of concern and help to shape the context.

The context in which opportunity operates is the levels of the work place culture, which include the employee to employee working relationships that develop in the work teams, the relationships between managers and employees, and the relationships with customers. The greatest opportunities to excel appear to be in the relationships with customers who are most interested in the benefits gained through the use of company products and consulting services. Of these, the most important context is the interface with the customer, where employee talents come to bear, due to the nature of the business: helping the customer to solve problems through IT.

The two strategies that seem pre-eminent are those concerned with seeking and keeping customers and the company policy toward continuing employee education. As long as the business continues to expand and to create opportunities for the employees to exercise their talents productively, the business strategy will be successful.

The consequences of opportunity are growth, happy and productive employees, improved employment prospects, satisfaction with the working environment, more power positions, and improved performance. Growth yields more new employees with the potential for new capabilities and could mean the creation of a large enough work force to allow the company to take on the largest of projects, which further improves business prospects. Growth can also yield

turmoil and change, which are a threat to many. People tend to prefer the familiar status quo and are threatened by change. The negative consequences are often the price that must be paid to move forward and to continue to grow and increase the power positions in the company.

        Power: The exercise of power through the corporate structure from the most powerful, the CEO, to the least powerful, the new employee, is fairly well understood. The hierarchical management structure provides the context in which corporate power is exercised. Power is used to conduct orderly change in the organization and to control the outcomes of business decisions made by the corporation. Power at at the company is largely invested at the lowest level practical; ideally the manager and employees at the point of executing the contract have specific power for that contract. Upper levels of management seek to minimize the amount of oversight of the exercise of this power.

        The intervening conditions appear to be promotion and opportunity. With growth comes increased opportunity for promotion and for the individual exercise of power. The dimensions of power include satisfaction with the business, the number of people under any one person's influence, and the potential for use or abuse of the power.

        The consequences of power are control of company ventures, accomplishing tasks for customers, and the support of new business competition and keeping existing clients. Communication, which is vital in the exercise of power, will be examined next.

        Communication: Communications are paramount to any business concern, but especially so, the larger the firm and the broader its products base. The company uses the obvious communications vehicles: the chain of command, memos, bulletin board notices, faxes, telephone, and e-mail   The most powerful of these is e-mail, especially in an open communication environment. The variety and quantity of contracts and customers, both in the United States and overseas, make good and open communication essential. The need to readily communicate with customers, members, corporate staff, and anyone else in the company drives the requirement.

        The critical properties of the communications system are timeliness, accuracy, coverage, and flexibility. E-mail has moved a long way in this direction. The pervasiveness of the tool and the relative low cost of the support systems, combined with the pure power and flexibility of e-mail makes it a virtual necessity to any modern corporation. Smaller businesses may still depend on the telephone and the fax machine to meet their needs, but the large firms need the

capabilities of e-mail. However, to be truly effective, the system must be universally available throughout the company. The next level of necessary access is the internet. Company leaders are still wrestling with the issues of providing employees unlimited access to the internet. The company has to seriously consider allowing employees such access because of the nature of its products.

More customers are operating on the internet with web sites of their own and interest in other data access that is provided by this system. In this situation, the dimensions of timeliness, reach and coverage, distribution control, time required and convenience in preparing messages and responses, and access are all important. To leave anyone out of the net is costly, but sometimes to be able to select the participants is also important. The actions and strategies for facilitating communication are important.

Actions and strategies concern determining who has how much access to the system. This decision is partly a policy issue and partly a hardware availability issue. Can the company afford to put a computer with modem and complete software suite on every employee's desk? Maybe the reverse question is more to the point: can the company afford not do so in the existing competitive environment. With world-wide access to the internet, anyone in the world can compete for the knowledge business now held by U.S. corporations. And, they can often undercut U.S. labor rates, while providing equally gifted and hard working software people. An increasingly vexing issue is the protection of proprietary data and products stored in company electronic media that are openly accessible to employees. How does the company allow its employees access while denying access to outsiders who may use the data to compete with the company?

Policy: The corporate culture will dictate the need for written rules and regulations. The company seems to have very few written rules: a statement of corporate objectives signed by the CEO and an employee handbook issued upon entry to the company. A good part of the rules that govern any culture are unwritten, established and handed down by the employees and management through their example and actions they take. An excellent example that came up in every interview was dress code. How does the new employee know how to dress for work? Usually, one of the veteran employees takes the new hire aside and tells her, much as he or she was told. Much can be learned by observation. One of the participants mentioned learning how managers apply discipline by observing how another employee was treated.

Other intervening conditions might be to hold periodic employee meetings at which such issues are addressed and explained. Supervisors can explain the ground rules when they are not clear. Mentors can be assigned to new hires to help them with their transitions to the culture. Or, the rules can all be written down and provided to the employee on the first day of work. Updates can be provided as needed. The less written rules, the more flexible and relaxed the culture. However, the lack of written rules does make the strategies for enforcement of the rules more difficult.

How the cultural norms are communicated and enforced can affect the efficiency of the organization. As pointed out earlier, the more that is written down, the less flexible the organization and the more confining it seems to be. On the other hand, if there seem to be no rules, some people will have difficulty knowing what are their boundaries. Some areas of concern require written rules because of the consequences of incorrect actions. Time cards were listed as a sensitive issue. The consequences of not doing time cards right can lead to debarment from bidding on Government contracts. That action can result in the loss of business. The process for visiting an employee involves signing in with a security guard in the lobby of the building. Non-employees are not permitted to freely roam the building without special permission. This researcher was not granted such access, and there was no need to do so.

The consequences of policy are to maintain order, peace of mind, and reasonable security. Important among the consequences is a sense of fairness about how the rules are codified and enforced. This enforcement has a direct impact on employee morale and can affect employee performance.

Performance: The properties of performance involve project completion and customer satisfaction, the employee's work ethic, and the ethical conduct of those involved in all aspects of the project. The actions of those in leadership positions are vital. If a manager is not performing well, he has a negative impact on the performance of all associated workers and products. If the employees who come to work every day must pick up extra work because of someone who has not come, the absent employee owes an explanation. Sickness can be an excuse if it is not overdone. The heroes of the corporation are those who initiate things, who bring in new business, and who meet customer needs. Those directors who merely put in their time are not heroes.

Taking on work assignments and applying all of one's capabilities to satisfying those assignments is the requirement. The dimensions are production, learning rate, and good performance. The actions and strategies are to work in teams, pulling one's share of the load and contributing all that one's abilities allows. This strategy is enhanced by continuous learning. Taking advantage of the company provided education and training opportunities to prepare oneself for future tasking is reflective of good work ethic and pride in self. The role of project managers is critical. Project managers must be capable of managing people, properly motivated, and good leaders for their assigned projects to succeed.

The consequences of poorly executed and managed projects can be the loss of future business and potentially the loss of profit on the present project due to a dissatisfied customer. The positive benefits of good team work are more work, new and renewed contracts, satisfied customers, individual recognition, promotion, team recognition, and empowerment. Generally improved employee satisfaction with the work environment and improved effectiveness can lead to new leadership opportunities in addition to the other positive benefits of success.

Leadership: Good leaders are indispensable throughout the organization structure. A poor leader at any level in the organization is damaging. The higher up in the organization, the more damage that might be done. New hires look to their immediate managers for leadership.

The intervening conditions are the organizational and individual challenges that face the leader and the capabilities and loyalties of those who work for the leader. So, the effectiveness of the leaders and the willingness of others to follow, drive the action strategies that might be used. Finally, the consequences of good or bad leadership are the success or failure of the business or project. These actions lead to growth of the company and the individual employees, increased opportunity, employee happiness and satisfaction, performance, and power. Often, new managers or leaders can learn the ropes through the example of a mentor or role model.

The corporate culture directly impacts its employees. Perhaps most vulnerable are the new employees who are just learning about the world of work. They have not yet established their own yard sticks of what is acceptable and what is not. The more quickly the new employees can learn the tasks, the better for them and for the corporation. The next chapter describes the case studies and the college-to-work transition model that emerged from the analysis of the data supplied by the employees who were living in the environment just described.

CHAPTER IV
RESEARCH RESULTS

This chapter presents the results of the study. The major topics include a summary of the research results, the three case studies, the cross case analysis, substantive theory of the role of formal and informal learning in the college-to-work transition process, and the chapter summary. The research data that support this chapter are available in Appendix A.

Summary of the Research Results

This study of the college-to-work transition experiences of three newly hired employees of the Systems Engineering Division (SED), resulted in a substantive theoretical model of the more general school-to-work transition process. The process can be considered in the following five phases: entry, initiation, exploration, functioning, and producing. Each phase will be briefly described next.

The entry phase begins with the placement of the temporary employee (temp) in the company environment. This phase is a time when the company and the temp can look one another over. Company managers have the opportunity to view the temp in the company environment, executing assigned tasks. The temp is allowed to get a feel for the work place culture and the company business enterprise. In the process of exploring the informal learning environment, the temps were in a position to demonstrate their willingness to learn and their work ethic. This phase winds down as the temps experience a "realization" that the time has come to seek fulltime employment. At this point they notified the temporary employment agency, the company, and their personal networks that they were interested in an offer of fulltime employment. The job offer and acceptance kick off the initiation phase.

The initiation phase begins with acceptance of a fulltime offer. During this phase the new hire begins the process of moving from outsider to insider. The beginning of networking is seen in this phase. As the new hire learns more about the company, he moves into the initiation phase, which overlaps the exploration phase.

The purpose of the exploration phase is to learn about the operation of the corporation and the corporate business ventures. A great deal of informal learning and some formal learning take place during this phase. The new hire expands and refines the professional network by

discovering the holders of the corporate knowledge and expertise. The new hire also learns about the corporate culture. The new hire is given low-level tasks that support the company's business goals and provide additional informal learning opportunities. All of this is in preparation for progression to the functioning phase.

The functioning phase overlaps the exploration phase and provides the first opportunity for the new hire to experience the role of contributing member in a work team. Ultimately, the new team member becomes a functioning part of the team and is entrusted with individual projects. The new employee is ready for the final phase, the transition to fully functioning employee in the Producing phase.

In the Producing phase, the new employee graduates to fully accepted employee and productive member of the corporate team. In this phase, which overlaps with the functioning phase, the employee is engaged in the search for his or her niche or place in the company. A continuing focus on formal and informal learning develops individual skills and capabilities needed to be a functioning member of any team.

The next sections describe the college-to-work transition system as experienced by the three volunteer participants who provided interview data to support this study.

Analysis of Case 1

The participant is a young college graduate with a non-technical degree. In the interviews she came across as very competent, polite, and assertive. She expressed satisfaction with the company. She was still adjusting to the job she was in, stating that she needed about a year to become completely comfortable with a new job. She had several other assignments prior to the present job, which will be described in the appropriated phases of the transition process.

Following graduation from college, the participant wandered for approximately two years, a time she described as one of the worst periods of her life. During this time she worked in the hotel business and as a temporary employee in several businesses in the Washington, DC, Metropolitan area. She felt she was not getting the expected return on her investment in her bachelor's degree and was tiring of the short duration and low paying nature of temporary employment. At the time she was working for a strict temporary employee placement service. When she decided it was time to seek full time employment, she switched to a temp-to-hire service, which promptly placed her with the company.

Her first task was Administrative Assistant. This job lasted for about two weeks, during which time she looked over the company, deciding that she liked the people, the type of business, and the corporate culture. At the same time, managers were observing her and drawing their own conclusions about offering her a full time position. She was beginning to form her network among her fellow employees. She was immediately convinced that she wanted to work for SED. Her two years of wandering had given her a fair idea of what she wanted in full time employment. She let her network know that she was interested in full time employment. Within two weeks, she was offered a full time position.

The participant had spent her early time with SED wisely, learning everything she could about the corporation and its employees. She demonstrated a willingness to learn that stood her in good stead with managers. She also demonstrated a positive attitude and the willingness to take on any task. With acceptance of the job offer, she became a full time employee. She continued to operate as an Administrative Assistant, but now as an insider, an employee.

As a full time employee Administrative Assistant, she was the junior assistant to the woman who was there ahead of her. Her duties included secretarial work, answering telephones, and sending faxes, among other low-level tasks. Three months after joining the company, her senior partner moved on, allowing her to move up to Senior Assistant. She used her time in this phase to learn more about the company. She used a combination of mentor and network contacts to facilitate this informal learning. After nine months in the position, she was promoted to Information Management Specialist.

She worked on a major company interior design project as an Information Management Specialist, in the administrative services department. She demonstrated her ability to learn quickly and her willingness to take on any task. She learned more about the company and its employees because of the access that resulted from working on an internal project. She practiced informal learning by attending company management meetings to learn more about the company and its capabilities. During this time she expanded her network and was promoted again after eight or nine months.

Her promotion to Contract Administrator propelled her into a functional phase. She views this move as very beneficial to her career development because it will provide her with a better understanding of the business end. She learned about negotiation, acquired information on

different agencies in different companies, and is pursuing a graduate degree. She administers about 15 to 20 different contracts.

When she needs help, she uses her network of fellow employees, with whom she has developed a working relationship. She has a supportive group of people available to her. When asked about what she does to innovate in her job, she replied that she had not yet reached that comfort level. She stated that it takes her about a year to get a job sufficiently under control before initiating change. She is beginning to understand how the company makes money.

One can make the argument that this participant is in the early part of producing. A recent demonstration of her proximity to this phase was her one-week trip to Colorado to meet with company employees. At this point she would be trusted to make decisions for the company and to meet with the customers with a chaperone. She is continuing her education, working on a Master's in Business Administration at the University of Virginia, with tuition assistance from the company. The tuition assistance is important to her educational pursuits.

Analysis of Case 2

This participant is also a young college graduate with a non-technical degree. She comes across as very polite, cheerful, and easy going. In fact, her philosophy appears to be to go with the flow of events and not to make waves. Her goal while in college was to graduate. When she did graduate, she began the process of looking for work by "winging it" as she puts it. She reinforced the prevailing opinion that SED is part of a good strong company, that it is big, and that the employees are its strength. She did express the feeling that the company is so large that she feels as if she is treated as a number, rather than as an individual. She also had a variable opinion of managers, stating that some treated employees unevenly, treating some as favorites. She was involved in a major development project before and after being offered full time employment.

The participant came to SED after temping for several other companies in the Washington, DC, Metropolitan area. At the time she was just interested in gaining office experience and learning about the culture of the office environment. She worked for six months as a temp in the test group before being offered a job. The temp experience was a time of great learning. When asked how her high school and college learning experiences helped her in the world of work, she said the high school experience was a non-player. In college, the major area of study was not as important as the inherent educational experience. There is a need to

organize oneself in preparation for classes and to schedule ones time and effort to address complicated and disassociated tasks. Breaking a task down into smaller, doable sub-tasks, which can be accomplished in reasonable blocks of time and being more analytical and thinking the task through are important. Being responsible for oneself, organizing one's time, and setting goals are important elements of the learning. allocating the available resources and meeting obligations on time complete the learning.

Everything was new to her. An avid learner, she picked up everything that came her way. Her responsibilities included coordinating with other groups, which allowed her to meet employees in other groups in the company. These employees were the beginning of her network. She got to know the people on the project and learned about the unwritten rules from the older employees. She demonstrated her learning ability, and her willingness to work by taking on anything that she saw that needed doing. People noticed and thanked her for her positive attitude and efforts.

Her first task at SED was to finish some three days worth of filing. She expressed a great lack of enthusiasm for filing and completed the task in one day just to be done with it. She kept saying to herself, I do not want to be doing this tomorrow. Her attitude was: I did that, now what is next? She says the managers were appropriately impressed and came up with other tasks to keep her busy. She later stated that she would take on any task except filing; she had learned she did not want to do clerical work. When asked who had the most and least power, she said she had the least power. The most power was up "there" somewhere; she was not sure exactly where. It is a highly disciplined company with an ex military influence in the leadership in the local area.

She came to the working world without any computer skills. Saying she had not even learned how to turn on a computer in college, she learned the computer very quickly and easily through her temping assignments both prior to SED and with the test group. She learned communication, general work skills, and organizational skills. Most, if not all, of her training was informal. When asked if there was formal training offered, she replied there was none. She learned on her own, usually seeking out people with the knowledge she needed and asking questions. Her primary information sources were her peers. She built her network by getting along with everyone and going out of her way to be non-offensive and non-confrontational, as she says, to avoid problems.

She learned about gender bias through experience. She saw prejudice happening with her peers and learned something about manager biases at the same time. Her feeling of lack of power influences her way of dealing with bias; she simply accepts it as something she can not change. She also noted there is age bias based on her youth and lack of experience. When asked if there was bias based on technical knowledge, she said she preferred to say no, because the responsibilities are different. She also pointed out that a lot of programmers and techies cannot even change the Xerox or type a letter. So, she is beginning to recognize her niche in this high technology firm.

Toward the end of the temp assignment, she decided to seek full time employment. She realized she was missing out on things like benefits and that she was not realizing the potential her college diploma promised. With this realization, she told her temp agency that she was interested in full time employment and notified her manager and her network. At that time the manager of the test group made her an offer that she characterized as a "low ball", which she turned down. Shortly thereafter, the manager was replaced because the program was in trouble. The new manager asked her what it would take to get her to stay. She told him, and he came up with the required offer. She accepted the offer because she felt comfortable with the people she was working with and with the company; it had been six months since she first joined as a temporary employee. As the project progressed, she was required to go overseas for 20 months to field the system. This was her first initiation into the company and the beginning of performing a useful function for the company.

Her initiation probably lasted at least for the 20 months she was overseas. During this time she overcame what her boss characterized as her programmer mentality: "come to work late and leave early". The test group regularly worked 57 hours a week for the duration of this assignment. Toward the end, she was working the long hours with the boss with enthusiasm.

Characterized as a go-getter, willing to take on any task, and ready to help anyone, she exhibited a positive attitude. The move from temporary employee to full time employee provided her with the positive feelings of being an equal and having an offer and not having to find another job somewhere else. The temp experience started as a means to gain office experience and turned into the route to a full time job. Along the way she learned the office culture and the employee skills needed to gain entry.

She characterized the job as an entry-level position on the non-professional track. She was hired as a senior member of the technical staff and was soon promoted to test administration prior to the project being deployed overseas. She was the program manager's administrative back up. Given the style of the program manager she worked for, this position involved her assuming a great deal of responsibility. His observation was that she excelled at everything he gave her to do.

Her major task was to create a system for controlling, maintaining, and publishing the documents produced by the test group. She then continued the responsibility of maintaining the system, while picking up whatever other tasks the group needed done. As with the other new hires interviewed, she had the positive attitude of doing whatever needed to be done. Here again, the network she had established and continued to develop worked on her behalf. Whenever she had a problem or question about a system, such as Micro Soft WORD, she had access to an expert who usually could answer her questions. Following her style of dealing with people, she maintained good rapport and a generally pleasant relationships with everyone. She is non-confrontational, friendly, and non-offensive. Thus, she continued her approach of informal learning.

Being part of a successful delivery to a customer, she was able to explore the business, coming to a better understanding of how the company does business with its customers and learning from a good program manager. She continued to expand her horizons and to improve her capability to meet customer services needs.

The test group project allowed her to continue to explore, and to learn more about the company. She began her transition into systems design during this phase. She began to work toward being a programmer and to learn about data base design. She mentioned a few areas such as learning to use people server, ADO, and the various data calls that make data base systems function. She is running reports in a system called crystal reports and is running queries to extract data from the reports, a very timely subject in this era of increased government access to contractor internal data bases. She says her favorite activity is in the creation of data bases, also a very timely and useful pursuit. But, most important, she is learning to design systems.

She began work on an internal company project to track internal company management information. The system keeps tabs on project assignments and funds committed to those projects. In this project, she is involved in systems design, data base design and maintenance,

and a little programming. She is uncertain she can call herself a programmer, or if she even wants to be one. She is busy exploring the different options and coming to grips with the different ways programmers think. A liberal arts major, she is aware of the differences in thought processes. Carrying over from the exploration phase, she is continuing her search for a niche with which she can be comfortable. She feels that she is still in that entry-level mind set, partly because she has been on this project for only seven months.

She continues to learn both by formal and informal means. Her formal learning is mainly via the college courses she takes with tuition assistance. In support of her search for a niche, she takes courses that might give her insight into what to do next. When asked what her next niche might be, she said it was likely to be the next class in which she gets an "A". In her informal learning program, she leans on her network of knowledgeable fellow employees for specific technical information and guidance on what needs to be done next. She continues to work at learning to comprehend the technical documentation that crosses her desk.

This participant is firmly operating in the functioning phase, while continuing her exploration of what the company has to offer, what she can contribute to the company business, and what her next niche or niches might be. It is unclear if she has entered the producing phase, but she appears to be near that cross over point. It is probably a matter of her clicking on that next niche where she and the company will experience coincidence of goals and needs. When she interviewed for the full time position, she told the interviewer that she did not know what she wanted to do, but she did not want to be a technical writer, which her English Literature major would have indicated. She did want to get into the technical aspects of the business.

Analysis of Case 3

The third participant is also a young college graduate with a non-technical degree. In the interviews she came across as very bright, capable, and somewhat frustrated with her progress at work. She earned her Bachelor's degree in English Literature, having dropped Computer Science early on because it did not challenge her. That is a recurrent theme here. Part of the reason this individual is frustrated is her own ability to quickly learn a process and organize it. She has her current job so well organized that it no longer presents a challenge to her, in spite of the fact that it was a job with a reputation for short survival time for the incumbent. The ability to learn quickly is a definite asset that she needs to learn to live with.

After completing her college work, she wandered a bit, visiting Europe on her own and subsequently found work in the retail trades. She quickly mastered the job and rose to manager of the store. This advancement left her unchallenged and wondering how she was going to apply her college degree. She went through a phase where she interviewed a lot seeking information on the world of work and a challenging position. She took about eight months to reach the realization that she was ready for full time employment. She was familiar with the company through a relative and asked him to float her resume in the company. The relative provided her with insight on the managers who were interviewing her and what to watch for. A job offer resulted from the process, without the relative's direct influence. This disclaimer was important for the participant.

Like the other participants, she started as an Administrative Assistant. She had no specific previous knowledge of computers, but proceeded to learn very quickly. She learned the EXCEL spreadsheet software and in two weeks was teaching temps the system. She finds computer applications easy to learn. The knowledge requirements for the Admin Assistant job were very general, and she had no problems mastering this first tasking. In general, she finds the work very logical, but not particularly challenging. She did acknowledge that if she had stayed with the computer science major, she would probably be making much more money now. She cited the experience of a school friend who was making $60,000 working with a Masters degree in Program Design.

A large part of her initiation overlaps into her exploration of the company. The Administrative Assistant job served as the vehicle for much of her initiation and exploration of the local company areas. She is characterized by management as organized and as a charger, she does not like to stop. Her positive learning style has stood her in good stead with her managers. She moved rather readily from outsider to insider. When asked about gender bias, she stated she did not experience it: no glass ceiling. She did acknowledge that in the operations side of the house there is probably a technology bias and that not having a degree at an IT company would be a definite problem for women her age.

While in the Admin Assistant position, she used every opportunity to learn about contracting. She established a network of knowledgeable fellow employees who could answer her questions. She took all the contracts classes offered by the company. Her reward was

promotion to the contracts department made possible by formal and informal learning. She expressed pride in that accomplishment.

She was totally focused on learning her job and the corporate culture, using her network and reading everything that came across her desk. She took courses when they were available. She has not taken advantage of the college tuition support. This choice is partly because of her long commute to work, which makes night classes too late when added to the driving time and partly because she cannot get a match between the types of courses the company will subsidize and her interests. She wants to take more English Literature courses, which the company will not support because she already has that degree.

Once she had learned all of the important aspects of her job process, she proceeded to improve it. She simplified the data handling system so that it was easier for company users to interface with the system. She says she is more organized than her predecessors, which is believable due to her nature and the reputation the post had prior to her arrival. Previously no one could stay in the job for more than a year, and that everybody disliked the data processing. She has set up a data base to track items in the system, and people are no longer reluctant to call and ask the status of their data requests. In fact, she is a victim of her own efficiency. The data processing is so well organized now that she is bored and is seeking other challenges. Another manager observed that she has become irreplaceable and is therefore stuck in that job. They cannot afford to let her go. This frustrates her. Her previous manager stated that she needs to train her replacement.

She has continued to learn about the company culture and the corporate business while in this position. She has also expanded and exercised her network. Finally, she feels she is losing her creativity and some of her freedom of expression that she had experienced while she was in school. Surely this realization is part of her corporate culture learning.

The participant feels that she has a great deal of time and effort invested in understanding contracts and wants to exploit that knowledge in her next job. Given the choice, she would prefer to move up in the contracting division.

Cross Case Analysis

The cross case analysis continues the process of extracting substantive theory from the data summarized in the case studies described previously. As the method indicates, the

researcher has been formulating an iterative hypothesis throughout the data collection and data analysis phases. The new hires interviewed appeared to be executing a five-phase process in moving from college graduate to productive member of the company work force. Managers seem to accept this process without defining or naming it. The phases describe the college-to-work transition model talked about briefly in the introduction to this chapter and in more detail in the next section. Accordingly, the cross case analysis will focus on comparisons and contrasts among the three case studies generally in the phases of the model.

Entry actually begins long before the prospective new hire first approaches the corporation. Formal and informal educational activities are of greatest interest to this analysis.

The participants in this study are college graduates with majors in the social sciences and arts as opposed to the engineering and scientific disciplines. Whether the major was culinary, English literature, or business, the important learning in college concerned process over subject of specialization. Given a well-rounded college education in which the student mastered the general menu of liberal arts disciplines, the learning most applicable to the world of work appears to be informal learning in the areas of self-discipline and general organization of tasks. By facing and learning to deal with the multiple and sometimes complicated requirements of college life, the college student prioritized multiple tasks, broke down complicated tasks to workable steps, and scheduled her time to meet the asynchronous requirements of college life. Most colleges do not impose a schedule or routine on students. That task is left to the observant student to learn. This accomplishment was recognized by the participants as the most important learning coming out of college, given that the basic skills of reading, writing, calculating, and logic/analysis have been acquired.

The participants all seemed to wander a bit after college graduation, from eight months to two years. This wandering appears to be a part of the learning process. Two of the new hire participants used temporary employment agencies to provide them with work experiences in which they learned work place skills, office skills, and the nature of the working environment. This tactic also provided the participants with the opportunity to participate in the world-of-work. The third participant accomplished a similar outcome by moving from job to job and interviewing extensively. These processes led each participant to the realization that it was time to seek full time employment. Prior to this realization, the participants did not feel inclined to make such a commitment. The most commonly stated needs were for stability, that is, not

moving from job to job without any idea of what the next work place might be, and benefits. Once the realization had struck, the participants announced their intent to seek full time employment. In the case of the participants working with temp agencies, they notified their agencies of this intent or sought an agency whose purpose was to provide the opportunity, the temp-to-hire agencies.

An unspoken agreement between the employer and the temp was that they were mutually evaluating each other. In both cases, the temporary employees announced to the company representatives the desire for a full time position. In both cases, the message was: offer me a job or I will search elsewhere. This announcement still gave the company room to simply say to the temp, we no longer need your services. This action would result in no harm to either party because no formal commitment, such as full time employment, had been made. Given mutual interest, a full time employment offer was made to a potential employee who was a known quantity and who knew enough about the company to feel comfortable with the offer. During this trial period of mutual evaluation, the successful temp demonstrated several traits that made her attractive to the corporation. Among them were the desire to learn, the willingness to take on any task, and the ability to work with other employees of the corporation in the corporation's business areas.

All of the participants demonstrated a strong desire to learn. They aggressively sought information sources and in the process began to establish networks of knowledgeable employees who are the keepers of the corporate expertise. They also began to learn about the corporate culture. Each of them reacted differently to the culture. One seemed to adapt immediately and was beginning to maximize her opportunities with the company. Another did not accept everything in the culture, but adopted a strategy of nonconfrontation with the culture and accommodation. The other participant fights the culture. She is having the greatest problems with becoming a productive member of the company.

The tasks assigned to the temps were not challenging or vital to the success of the company. One of the purposes served by these first tasks was to test the temp in the corporate environment. Would the person demonstrate the work ethic the company values? Would that person be resourceful and find necessary information sources among fellow employees (networking) and in available documents. What did that person do when the task was complete? The management must have been impressed with the participant who did three days filing in one

73

day, just to get it done, and came back the next day looking for something else to do, but not filing. The most employed approach to learning was the informal method utilizing the developing network to find the holder of the required knowledge.

The role of formal and informal learning in this work place setting is interesting. The company saves money because of the worker being motivated and initiated in self-instruction (informal learning). The need for formal, company provided, training programs is greatly reduced. This approach may be the only reasonable way to address the expressed need. No standardized curriculum appears to be emerging here. Each new hire's needs seem to be unique, based on the individual's background, schooling (degree), and learning ability and style. For a company training coordinator to attempt to set up formal training against this requirement would both be challenging and expensive. In addition, the type of worker the company is hoping to attract to these high technology positions tends to be self motivated and independent and just might resent a fixed curriculum designed to address everyone's training needs in addition to her own perceived needs. Finally, the company gets a good return on its tuition reimbursement program, which pays about one-half of the cost of taking graduate courses at institutions of higher education of the employee's choice. The professional work force values this benefit, which was a factor in worker employment decisions.

The participant who came to SED through the interview and hire process, as opposed to the temp-to-hire process, executed the entry phase outside the corporate environment, thereby missing out on any shaping of her learning the company might have offered. Therefore, the initiation phase had to encompass much of what transpired previously under the guidance of the company for the other two participants who entered by way of the temp-to-hire process. Where the temp-to-hire participants had already begun to build networks within the company and to impress their managers with their positive work habits and learning attitudes prior to being hired, the third participant was faced with doing all that work after being hired.

With the acceptance of a job offer, each participant moved from outsider to insider. They were full time employees with benefits, office space, and the challenges of acclimating to the corporate culture. All started as Administrative Assistants, a loosely defined tasking that allows management to give the new hire time and space to adjust to the working environment.

A definite feeling emerged in the interviews that the two new hires by way of the temp-to-hire process were having an easier time adjusting to the corporate culture than the participant

who was hired based only on an interview. The adaptation strategies were all different. One participant seemed to be able to embrace the culture in its entirety with a few reservations about minor items of convenience to her. The second was able to accept the culture despite reservations about inconsistent treatment of employees by managers. Her reactions may have been colored by the manager who offered her a low-ball salary at the end of her temp job. Her strategy was one of not making waves and being nice to everyone. She tended to go with the flow of the work place and to look for opportunies. The new hire who was interviewed and had no temp experience appeared to be at odds with the corporate culture. She expressed frustration with her lack of progress in the company and indicated that she was seeking new challenges. This aspect of being challenged is also common to all the new hires interviewed for this study.

The nature of these individuals was to want to be constantly challenged in their working positions. They all seemed to be avid and quick learners who put themselves whole heartedly into learning their new jobs, using all the resources available. These included, but were not necessarily limited to the use of informal networks and mentors, company documentation, vendor product documentation, internal training, and external education and training opportunities. Once the job was learned and under control, some of the fun and challenge went out of the job. A common characteristic of the three was to seek new challenges as soon as the present job was mastered. They wanted to give eight hours work for eight hours pay. They resent managers who waste their time. This could present a serious challenge to their managers. They might be sending signals of discontent based on the lack of anything challenging to do which the managers might misread and react to inappropriately. The manager is in danger of putting himself in the position of criticizing the behavior of an employee who is, in reality, asking for more work. So, the management challenge is to keep these bright employees busy with challenging work. The mid-level manager who was interviewed indicated a need to train intermediate-level managers to deal with employees as whole human beings with concerns outside of the corporation. The natural tendency of the technology oriented and educated manager is to think of workers as corporate assets to be applied to corporate business problems based on the technical aspects of the problems that are present.

Once the initial rush of learning a first job was completed, the new hires tended to move into a period of exploring the range and reach of the company. For all of the new hires this time was one of transition from the low risk tasks of the initiation phase to positions in which they

could have some impact on the company business, either directly or indirectly. They tended to leave their Administrative Assistant jobs behind and were promoted to jobs like information management specialist or contracting specialist.

The strategies for learning the corporate culture and the specifics of their jobs varied but contained some striking similarities. One participant made a point of seeking out a mentor to serve as a source of information, mainly about the culture, the norms and values of the organization. The other two individuals tended to rely more on networks, which the first participant also used. All employees seemed to understand that it was up to them to establish the informal relationships needed to provide access to the technical information they need to do their jobs. Besides learning about the corporation and their technical responsibilities, they also began to learn about the corporate customers. This learning will be very important later when they start to work on customer projects.

All of the participants effort seemed to focus on self-improvement. One participant made a concerted effort to take all the contracting courses offered to prepare herself for promotion to a contracting job she had set her sights on. The other two participants seemed to be less aware of the internal course offerings and were more focused on advanced degree programs at local universities. This degree work seemed to be the extent of formal learning. The vast majority of their learning came by informal means, mostly through the networks each had individually established. The people who had the corporate knowledge the new hires sought were helpful; they seemed to understand that it was part of their job to be available. Alternatively, their egos may have played a major role in their cooperation. People do like to talk about themselves and tasks at which they excel. Probably some combination of these phenomena is at work here. When the researcher asked a corporate manager about rewards for mentoring and being a part of people's networks, his answer was basically that the manager depended on the employees to get the work done and only looked good when the employees did. This answer really does not address the situation of a peer offering his expertise to other employees. There does not appear to be any recognition of this role or any corporate rewards for providing the service.

The new hires assumed new and more important responsibilities for the success of the company, continuing to explore and search of their places in the company. Finding the next niche was an important activity for all of them.

They all experienced the start up transient of learning about new tasks, and about the people in the new office. They expanded their networks and continued to learn about the corporate culture. All of the new workers initially learned the job as defined for them, to the extent that the definition existed. One of the new hires quickly began to innovate in her job and made improvements to please her customers. The other two were waiting until they had more experience with the positions before beginning to innovate.

This activity can quickly lead to production, depending on how the incumbent handles the new responsibilities and the opportunities that are presented. One of the new hires appears to have crossed over into the producing phase. The other two appear to be close, but have not yet made the transition. The new hire who feels trapped in her present job might have to force the issue in order to move on. At the very least, she needs to train someone to replace her so her manager will feel comfortable with facilitating her progress.

The college-to-work transition model description that follows is based on the data analyzed in the preceding three case studies and the cross case analysis of the college-to-work transition experiences of the study participants.

The College-to-Work Transition Model

The substantive theoretical construct that emerged from this study of the college-to-work transitions of the three volunteer participants describes a process that appears to be evolving naturally in the work force of the information technology work place. The process that emerged appears to draw heavily on the precepts of the apprenticeship system that was practiced widely in the middle ages in Europe and in colonial America.

This substantive theoretical construct of the college-to-work transition model is based on the interview data in the three cases and the cross case analysis summarized in the preceding sections. The construct is enhanced by the researcher's observation of the subject working environment over the six months of the study and his 35 years of experience in the high technology aerospace industry. The researcher's working life experiences include Department of Defense (DoD) high technology weapons systems development and acquisition, high technology industry development program contracts with the federal government, and academic responsibilities for the education and training of the DoD acquisition work force.

The model of the school-to-work transition system that emerged placed great emphasis on the unique role of temporary employment agencies in the process. This result is an unexpected outcome of this study. The recent college graduate new hires who were interviewed for this research negotiated the following five phases in their transition from the schoolhouse to the work place: entry, initiation, exploration, functioning, and producing. Each phase will be described in turn.

Entry Phase

The entry phase begins prior to any contact between the future worker and the corporation. The school experiences of the future workers are not normally focused on developing specific job skills. What does emerge as a result of the college experience is the development of the ability to manage complex tasks and to manage ones time. In the process of completing college level assignments and surviving the college experience, the student learns to deal with the uncertainties of scheduling classes, completing homework assignments, and meeting specific course requirements and schedules. In addition, the college student learns to divide complex tasks into manageable pieces, to do the research required to meet the requirements of the task, and to complete the task on time (hopefully) and to the specifications laid out in the course syllabus. Apparently a "wandering phase" of variable length occurs during which the college graduate explores the working world and establishes some semblance of personal bearings. Usually, this wandering leads to early attempts to relate to the world of work. For many college students this interfacing actually began during high school or college with some type of part time employment. Hiring managers often look for this experience in interviewees as an indication of willingness to work and to be responsible for oneself. For some people this part of the phase is characterized by interviews; and for others it involves contracting with a temporary (temp) employment service. Often the temps are seeking to develop work place skills as well as to learn about the working world and potential employers.

In the case of the temporary employment service approach, the first contact with the company comes with the placement of the temp in the company environment. The company and the temp both view this temporary assignment as a mutually beneficial opportunity to look one another over, somewhat like the currently popular practice among young people of living together before committing to an expensive wedding. Company managers have the opportunity to view the temp in the company environment, executing assigned tasks. The temp is allowed to

swim in the corporate waters, to get immersed in the work place culture and the company business enterprise. The participants interviewed for this research used that opportunity to learn informally as much as possible about the company and its employees, the nature of the business, and some of the customers.

In the process of exploiting the informal learning options available, the temps were also demonstrating to their managers that they are avid learners, eagerly absorbing everything they can about the company and the business enterprise. In addition, they were willing to take on any task. In fact, their demonstrated willingness to explore and to learn at their own initiative were major factors in the corporate decision to offer them fulltime employment. The temps were also establishing working relationships with the holders of the corporate knowledge base. These networks will serve them well in the upcoming phases as they learn about the corporation and take on new job tasks. The tasks assigned to the temps during this phase are low level and low risk for the company.

For the college graduate who interviewed during this phase and did not experience the temp agency, this phase was almost totally out of the view and influence of the corporation. In the case of the participants in temp-to-hire situations, the corporation has the opportunity to shape their learning. The temps also got a head start on learning the corporate culture and to some extent were shaped by it while temping.

This phase runs down as the temps experience a "realization" that it is time to stop playing and to seek fulltime employment, with benefits. At this point they notified the temporary employment agency, their managers, and their personal networks that they were interested in fulltime employment. The job offer and acceptance mark the initiation phase.

Initiation Phase

The initiation phase begins with acceptance of a fulltime offer by the temp-to-hire candidate or the person interviewing from the outside. The new hire begins the process of moving from outsider to insider, to the status of full time employee. This lack of status was experienced by the temps; they felt "temporary", as if they did not quite belong. The newly hired employee is endowed with benefits, office space, a computer and other tools of the information technology (IT) trade.

Establishing personal and professional networks is a major activity of this phase. Employee orientation to the corporation and to the trade is accomplished by putting the new

hires in the corporate waters and inviting them to demonstrate their swimming styles. If the new hires are exhibiting the expected levels of enthusiasm and willingness to learn, while making appropriate progress their mistakes in this phase are likely to be forgiven.

The tasks assigned during this phase are still low level and low risk. The complete newcomer begins to build a network, while those employees with temp experiences expand and refine theirs. In some cases, mentors and role models play a role in the development of the new hires. The new hires begin to adapt to the corporate culture and come to understand the norms and values that govern the work place through both written and unwritten rules. The new hire begins or continues the learning process. The emphasis is on informal learning, although formal learning opportunities occur through company sponsored course offerings. The phase is usually short and overlaps the exploration phase. One way that this phase might be lengthened is if the new hire is not working out in the company culture.

Exploration Phase

The purpose of the exploration phase is to learn about the operation of the corporation and the technical aspects of the corporation business ventures. This phase includes learning more about the written and unwritten rules of the corporation, the tools of the information technology (IT) trade, the corporation's customers, and the limits of personal and professional behavior.

Much informal learning and some formal learning develop during this phase. The new hire expands and refines the professional network by discovering the holders of the corporate knowledge and expertise on the tools of the IT trade and the customers the company serves. The new hire is also learning the corporate culture through day-to-day experiences and learning the informal network as it expands and provides more opportunities to learn the detailed functioning of the corporation. The new hire is assigned low-level tasks that support the company business and provide additional informal learning opportunities.

The exploration phase offers the new hire the opportunity to ask questions and to develop a comprehensive network of technically qualified experts in the corporate business. This phase is also a good time to begin to develop specific job skills that meet corporate needs, especially in the high technology industries. All of this activity is in preparation for progression to the Functioning phase.

Functioning Phase

The functioning phase overlaps the exploration phase and provides the first opportunity for the new hire to work on projects directly impacting the company's position with the customer. She may be invited to experience the role of contributing member in a work team. The new hire can be assigned to a project work team and given low level tasks at first, moving to more demanding tasks as she demonstrates the capability and willingness to assume the increased responsibility. The new hire is introduced to the customer as a member of the team and is allowed to participate in reporting project status, first to the company management and then to the customer when management confidence warrants that level of trust. Ultimately, the new team member becomes a functioning part of the team and is entrusted with individual projects which she is expected to report to the customer, including making final product presentations and finally training the customer on the use of the product.

This phase is characterized by the new hire's search for a place in the company, a niche that is unique to that individual. After assuming a specific task responsibility, the employee is in position to innovate ways to improve the functioning of the position. The employee is encouraged to take advantage of the company-sponsored training and education program. To many, the availability of company reimbursement of college course expenses is a significant benefit that plays a large role during this phase and the next. The new employee is ready for the final phase, the transition to fully functioning employee in the producing phase.

Producing Phase

In the producing phase, the new employee graduates to fully accepted employee and productive member of the corporate team. In this phase, which overlaps with the functioning phase, the employee continues the search for his or her niche or place in the company. Actually, a number of niches are possible with a number of companies throughout the individual's working career. A continuing focus on formal and informal learning develops as the individual molds the skills and capabilities needed to be a functioning member of any team. The better companies underwrite advanced degree programs for employees in this phase of the employee's work life.

The employee continues to improve and refine the network of fellow employees who are the keepers of the technical knowledge that makes the company successful. The researcher observed a definite tendency to rely more on these knowledge experts for the most current

information on the IT trade than on written information such as user and maintenance manuals. There is no guarantee that the individual will stay with the first employer nor that the first employer will continue to need that individual's skills and capabilities. The work place is too dynamic to support the once dominant concept of lifelong employment with one corporation. Apparently that both employers and employees understand and accept this.

Summary and Conclusion

The evolution of the school-to-work transition process described here is the result of informal learning. The researcher visualized a scenario in which workers in temporary positions discovered that they liked the work and the environment where they were temping. Accordingly, they conspired with local managers to interview and sign on as full time employees. The temporary employment agencies must have noticed that this phenomenon was happening and at some point decided to facilitate rather than block what had developed naturally: the introduction of the temp-to-hire agency.

The informal learning process would inform the principal players in this exercise through the offices of mentors and networks. The just described process for transitioning to full time employment evolved naturally, taking on many of the aspects of the apprenticeship process. The apprenticeship system worked well in the middle ages and survives to this day under the auspices of the United States Department of Labor's Bureau of Apprenticeship Training, the BAT.

Some of the main characteristics of the process that emerged are listed next:

- employees must take charge of their own learning: consistent with the precepts of adult learning;
- informal learning dominates the process;
- college graduates take on temporary jobs to gain office skills and work experiences not covered in college or high school;
- the college experience itself has greater validity in the work place than the major area of study - industry will teach employees the specific job skills they need to be successful in the work place;
- despite the claims of industry that the school systems are not doing their jobs, it is not obvious that the institutions of secondary and higher education should respond to their demands to add more work place specific education;

- the emerging college-to-work paradigm for the 21st century appears to draw on the precepts of the old apprenticeship system;

- the company role in the apprenticeship paradigm that emerges is that of the master craftsman, who supplies the required education and training to make the apprentice/temp ready to be a full time employee; and

- managers must learn to deal with the employees as individuals with interests and needs outside the corporate boundaries; they cannot afford to think of them as merely assets to be applied to business problems.

CHAPTER V
SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter presents the title topics in four sections. The first section summarizes the background and design of the research. The second section presents the conclusions drawn from the findings. The third section explores the implications of the study, while section four recommends directions for future research.

Summary of the study

This research has examined in considerable detail the transition from the school house to the work place of three recent college graduates who are working in their first full time employment with the Information Technology (IT) industry. Specifically, the researcher was interested in the role of formal and informal learning in the transition process that these people followed as they moved from the halls of academia to the reality of the work place and its culture. How did these new employees learn the norms and values of the corporate culture, what coping mechanisms came into play as they learned the culture and their specific job responsibilities, and what were the detailed strategies used to gain organizational entry and to excel thereafter? The educational emphasis of these three employees and their relationship to their chosen vocation is of considerable interest. All three are graduates of liberal arts programs working in knowledge based employment. Is this combination an aberation or is it indicative of future trends in the high technology work place.

The researcher's first task was to describe the corporate culture of the work place nder study, to better understand the coping mechanisms and strategies employed by the new hires as they assimilated the work place culture. The researcher created a corporate culture model based on data provided by the five participants interviewed for this study. The participants were the three new hires, a corporate Vice President, and program manager. Chapter III describes the culture and the participants. Seven basic categories describe the corporate culture: business, satisfaction, opportunity, power, communication, policy, and performance.

Conclusions

The data yield several interesting conclusions. The researcher anticipated three areas of concentration based on Holton's (1991, pp. 131-145) conclusions about the events surrounding

organizational entry, the importance of organizational entry for the corporation, and the factors that impact on organizational entry.

Holton's statistics show that 60% of organizations do not develop a plan for individual socialization to the organizational culture, 62% do not assign a mentor, and 46% do not offer formal training to new hires (1991, p. 135). Significant effort is expended by management to hire people with the appropriate skills, to supply good technical training, to evaluate employee performance, and to identify the best candidates for promotion. All of this effort is consistent with Holton's findings (p. 136). He confirms the importance of the college-to-work transition for both the corporation and the new hire. He cites other studies that confirm the importance of the first year on the job to career success (p. 138). The conclusion is that the success of the college-to-work transition has long term implications for individual success in the work place (p. 139). Finally, Holton concluded that the graduate's awareness of the college-to-work transition process is a significant factor in the success of the transition (1991, p. 142).

Each of the participants in this study expressed considerable interest in seeing the results of this dissertation. They all indicated that their reasons for volunteering were based on their perceptions of the importance of this transition process. The most interesting conclusion of this research is the discovery of an informally developed process in which job seekers and employers seek to make the match between worker and work place. The precepts and lessons learned in this process are informally transmitted among the principal players in the process. Emerging from the data are the details of the workers' entry to the corporation and their subsequent strategies for coping with the culture and learning the elements of their assigned jobs.

The natural evolution of this process is fascinating. The players in this process apparently responded to the changing nature of the corporate work place by inventing a system that closely parallels the apprenticeship system established during the middle ages in Europe. The problems of matching people with widely varying interests, expectations, and capabilities to the needs of the equally varied working world of today are enormous. The middle ages situation may have been simpler because of the lack of choice offered at that time, but the root problem of teaching new workers the elements of a particular craft and work culture are very similar. Modern high technology industries have struggled with the problems of bringing the needed mix of talents to the work place. The system that has evolved provides the flexibility to employer and employee alike to consider any number of different possibilities without making a full time employment

commitment. When a match is sensed, the announcement of intent to seek full time employment and a job offer can take place. The process is not perfect, but does appear to be functional. Perhaps, we are seeing the job transition process of the 21st century.

The fact that the school-to-work transition process begins while the person is still in school is not surprising. The more interesting observation is the reduced relevance of the academic specialization expressed in the college major.   There was more relevance to the transition process in the life experiencees and informal learning of process while in college. That process taught how one goes about allocating time and energy. The college students in this study learned to make order out of the chaos of uncoordinated course assignments that come from different professors with different requirements for form and function. The students learned to prioritize tasks, usually based on due date. The students also learned how to divide a complicated task into sub-tasks that can be handled in a reasonable fashion. Finally, the students learned how to organize the execution of a task from understanding the requirement, to doing the required research, to writing the results in a logical paper, and finally to submitting the report to the right course at the right time. All of these processes and the corresponding stress the student experienced served to prepare the student for the working environment of the information technology company. Once these students graduated from college, a wandering phase ensued.

In the wandering phase, the graduate seemed to be recovering from the schooling experience. Graduation from college is for these students was a time of major transition from a student status of dependence on Mom and Dad to potentially productive member of society. The length of this wandering period varied depending on the individual. The researcher was not able to comment on whether that wandering would be altered if the student participated in some form of work while in high school and college. The program manager interviewed for this study looked favorably on interviewees who had worked while in college. Other activities that characterized this phase were the practice of interviewing often and working with temporary employment agencies. Two of these study participants signed with temporary employment agencies simply to gain employment experience and office or job skills. The evolution of the temporary employment agency into the temp-to-hire agency appears to be an outgrowth of the evolving job seeking process discovered in this study.

The wandering phase came to a close as the worker realized the need to seek full time employment and made that decision public by seeking out a temp-to-hire agency and informing

the network of supporters or the mentor that he or she was ready for an offer of full time employment. Each of the research participants appeared to reach such a realization that led to their decisions to seek full time employment. In fact, two participants came to SED via the temporary agency route. Their realization of the need to find full time employment led to a serious job search that ended with the acceptance of the SED employment offer. The psychological mechanisms at play are beyond the scope of this research. But, in each case, once on board with the company, the next major task seemed to be to find a niche in which they could add value to the company's products and could best meet the needs of the customers.

All of the participants were very willing to acquire new skills; in fact all of them are classified as avid learners. It is possible that this quality is the result of the participant volunteer selection process. That is, it is possible that only those employees who are motivated and eager to learn would volunteer to be interviewed for such a study. Is this indicative of a conscious decision on the part of hiring managers to bring people dedicated to lifelong learning to the corporation? Or, did the manager see in these candidates the potential to be of maximum service to the corporation and to his or her particular project because of the flexible capability this attitude represents? The researcher's experience with both Government and private industry program managers supports the contention that recognition of this trait in potential employees greatly improves that individual's chances of landing the job. An important aspect of the process is the informal establishment of networks of technically qualified fellow employees and mentors who can help the new hire to adjust to the corporate culture and to learn the technical aspects of the job.

Formal and informal learning played a significant role in bringing the new hires on board. The amount of formal learning offered by corporations varies, but in this study, learning was dominated by the informal learning that takes place on a daily basis. Formal training and company supported college courses constitute the majority of formal learning in evidence in this study. The informal learning takes place by way of the employee established networks and through mentoring relationships. All of the participants had established working relationships with other employees who could help them understand the corporate culture and who could answer their questions on the technical aspects of their jobs. The participants who entered the company via the temp-to-hire route appeared to have an advantage in forming these relationships. Informal learning was important in the college setting as well. As students, these

study participants acquired important job survival skills through the process of meeting class assignment objectives.

The temp-to-hire candidates also enjoyed one other advantage over people coming to the company from the outside, usually via the interview to hire route. The temp was placed in a position to demonstrate to managers the positive work attitudes and the willingness and capability to learn, that managers look for. The more aggressive learners, those who sought out tasks that needed doing and who took maximum advantage of informal and formal learning situations, stood out to management and had the potential to be identified as workers to put on the next critical project. The other good aspect of this situation was the opportunity to provide challenging tasks to these new hires who seem to thrive on challenge.

All of the participants were happiest when being challenged in a learning situation. None of them seemed to have a clear vision or direction. They seemed to have neither near term nor long term goals for themselves in the company, which is unsurprising for young persons just starting out in the world of work. They seemed to be at least partially content to let their career choices float for the present. They appeared to be almost opportunistic, in that they were willing to try any task that came along. None of them had the computer science college degree one would expect to find in this business area. However, none of them appeared to be intimidated by the technologies they have to use in the work place. To them the digital computer seems to be fulfilling its promise to be an easily accepted tool, much as the telephone was accepted by previous generations. Managers appear to have recognized the need for other non-computer science disciplines, in the design, development, testing, and selling of its products and services to a wide variety of customers. In selling information technology, the company appears to recognize that many customers are more comfortable working with less specialized persons than computer programmers.

The researcher affirmed the apparent chaos in the business of career planning by observing that the work place is structured for individuals with known goals. Those job seekers who do not have clear objectives receive little help in discovering what those objectives might be. No career planning is in evidence. This fact may partially explain why the participant in Case 1 uses the coping strategy of seeking out a mentor in such chaotic situations. This process parallels the apprenticeship model, where the participant will seek out a mentor/role model, once called a master craftsman to teach her about the keys to the work place and specific job tasks.

This company does not assign mentors, so the new hire must find his/her own. Management might consider assigning mentors to help new hires learn the ropes, the norms and values of the organization, and the specific requirements of the job. This action constitutes a separate, but related issue in the structuring of training and education for the work force.

In the researcher's experience, program managers tend to recognize the need for and hence to plan for training and education when technologies change, or when a new system is coming into use. Less obvious and also less visible are the needs of individual employees who are molding themselves to fit organizational needs that they do not yet have the skills to master. In these cases, the individual must initiate the process of not only identifying the need, but also the potential source of instruction. In the extreme cases reported by the participants, the implementation of the training also fell to the employee who often found someone in the corporation who had the knowledge required and used whatever means needed to effect a transfer from the expert to the trainee. Obvious problems occur with this approach. The new hire does not have the visibility or knowledge of the corporation capabilities to reliably identify the best sources of the required knowledge. The new hire may not even know the extent of his or her lack of knowledge. The corporation should facilitate this informal learning process.

What is the significance of the college major compared to attaining the degree itself? In the cases examined, a Computer Science degree was obviously not required to work in the information technology field.. Are there qualities of the Liberal Arts major that are of importance in the information technology work place? What are the implications for the future when knowledge based skills are expected to lead the work place? Does the presence of liberal arts majors in the the information technology work place indicate a corporate need for systems engineers who can translate the conversations between customers and computer programmers? The college learning that was highlighted as important in the work place was the discipline that had to be applied in the college environment in order to successfully survive the experience.

College students learn to organize and execute the planning for complicated tasks, to meet dead lines, and to work under pressure. The ability to organize a complicated task into executable subtasks is important to success as a student, just as it is important in the working world. Such discipline may be viewed as incidental learning (informal learning) that amounts to the development of survival or coping skills which further reinforces the observation that the process is as important as the major area of concentration. General knowledge, skills, and

attitudes learned in college are associated with basic work place requirements such as getting out of bed in the morning to attend an early class, responding to the syllabus by discovering the deliverables and their due dates, and working to the schedule that is imposed.

For example, the student should respond to an essay paper requirement by determining a topic that is acceptable for the course, doing the research on the topic, developing well reasoned arguments that lead to reasonable conclusions, and presenting those conclusions along with the reasoning that supports them in a cogent well written essay, on a schedule that meets the professor's deadline and the course requirements. In addition, the college student learns to perform all of these activities for several courses that run in parallel without coordination among individual courses, so that the student is often faced with resolving conflicting demands on his time and energy. College students often resolve this conflict by taking time away from sleep. This action means taking responsibility for your own performance and self-improvement, that is, learning to be a life long learner.

Completing a college degree program might be viewed as an extension of the process of completing a high school degree program. Apparently, college requirements are different. To begin, the college experience is much less structured. The high school completion is really a matter of attendance; high school students do not have the options college students typically have. Nor do they have the freedom to fail. The truant officer is not going to seek out the college student to assure he attends class. That responsibility is up to the student.

The wandering phase identified with high school graduates who do not go on to college appears to apply to these college graduates as well. This wandering or indecisiveness may be a reflection of their non-specific college degree. That is, had they majored in computer science, they probably would have had job offers prior to graduation from college. Because of their non-engineering college majors, they were more difficult for management to identify and to place in the corporate plan. These participants wandered typically for eight months to two years before settling on full time jobs.

The preceding conclusions emerged directly from the study. The following section explores some implications of the study.

Implications

Holton confirmed the importance of organizational entry to the success of the college-to-work transition (1991, p. 146). The organizational entry process is an integral part of the transition to the work place and appears to play a significant role in work force productivity (p. 146). The handling of this phase of the socialization of the new employee also plays a major role in reducing employee turnover (p. 146). The two new hires who had adapted to and accepted the major precepts of the organizational culture appeared to be under less stress and to be considerably happier and more certain of their continued contribution to the company than was the new hire who was not adapting to the culture. This adaptation also seemed to play out in their individual perceptions of the culture. The participants who had adapted were less defensive about the culture and appeared to have a better outlook on their ability to contribute to the success of the corporation. This socialization issue is a vital and recurrent theme in this research. The employee's opportunity to make a contribution to the corporate mission is affected.

The implications for employees and the company are to pay attention to the socialization process. Managers need to be sensitive to the needs of the whole person, not just the technical needs of the project.

All of the new hire study participants repeatedly returned to the theme of needing to be challenged. They all mentioned boredom as the enemy. Once they had the job organized to the point of routine, the issue of being bored and not challenged surfaced. One participant was concerned about losing her creativity which is the very trait high technology firms covet. The challenge for management is to insure that these bright productive employees are not bored and that they do, indeed, have plenty of challenging tasks. The researcher's conclusion is that these employees will not stay around without challenging tasks; they will find interesting work elsewhere, inside or outside the company. The participants in this study seem to thrive on challenge and new learning opportunities. In fact, these young people seem to resent managers who waste their time and talents, even though they are being paid.

The positive work ethic displayed by these workers should be encouraged and rewarded with more work. This positive attitude toward one's work obligations seems to balance the apparent lack of commitment of young employees to the corporation. The day of the loyal

lifelong employee is over, having died with the past decade of "down sizing", "right sizing", and whatever other euphemisms were developed to avoid saying to the employee, "you are fired".

The message for management seems clear. Hire good people and keep them occupied with meaningful and challenging work. Intelligent hard working people are what industry is seeking. As the working world tasks workers with the responsibility for meeting the competition from abroad and for innovating improvements in production processes, this type of reaction should be expected. These bright young people want to be part of the process, involved in making their world better. Above all else, they detest boredom. The employers who bore them will lose them, one way or the other. Either they will become unmotivated and unproductive, or they will seek employment elsewhere.

The implications for learning on the job hinge on the role of formal and informal learning in the work place. However, the vast majority of the personal and professional learning experienced by the study participants seemed to be informal. The experiences of these participants support the dominance of informal learning. The company does a good job of encouraging formal learning by supporting on-campus offerings of lectures and discussion groups on timely topics in the company business areas. The tuition reimbursement program is another valuable tool. One might argue for greater latitude in the range of courses defined as "work related." What courses to pay for seems to be a decision made at the lower supervisory levels, which is probably the best place for such a decision. But, this delegation of authority can lead to some unevenness in the application of the policy. The fact that the employee considers the learning to be important should be sufficient reason to approve the course.

All of the participants immediately began to create networks of fellow employees and supervisors who could teach them and answer their questions as they arose. The participants exhibited a definite preference for asking a living human being for information, rather than searching an operation or maintenance manual. The informal learning network of competent and accessible holders of the corporate knowledge appears to be vital and successful in assuring the success of the new hire. All the participants develop some form of mentor or role model relationship with one or more people in the company. This networking process was also informal and varied in its overtness. One participant appears to seek out mentoring relationships wherever she goes. Another denies any such relationship, but does appear to do some role modeling. An issue that remains is the motivation of the providers of informal learning and

mentoring or role modeling. No apparent corporate reward exists for performing these services. Mentors are not assigned to new hires and no overt indications given of the corporate value of networks. The people who share their knowledge and expertise appear to perform the function informally on a one-on-one basis and expect no reward or recognition. Perhaps the corporation should find a way to encourage and reward mentoring and networking activities.

The heated debate concerning the role of public education in the preparation of the work force is of great concern. The industry leader marshalling his forces in the battle for international markets naturally seeks to recruit all the help he can get. This research does not support restructuring the public education system to prepare the workforce. In the high technology areas, which seem to need the most help from academia, the technologies are so fluid that the academy is not adequately equiped to respond. This is an aspect of the problem that probably should be taken on by the industries in the high technology market place. The role of the academic should be that of consultant on educational methods. The primary role of education should continue to be to perpetuate the principles of the American democracy and to provide a general foundation from which the learner can evolve to a life long learner.

Recommendations

This research produced recommendations in several areas. Throughout the course of this research, the researcher discovered many interesting areas of inquiry. This research focused on the school-to-work transition process of the college graduate with an interest in high technology employment, a highly select group. The corporation under study operates in Information Technology (IT) applications and consulting, exploiting the capabilities of the digital computer armed with sophisticated software. The company employees are highly specialized and well educated people.

An apparent contrast to this high level of technological sophistication is the child care industry, which is growing rapidly and is of great importance because of the nature of its main client – the children of working parents. The similarity to this research comes in the apparent development of a similar apprenticeship relationship with new employees. The standard customer profile is either a single parent or two parents who both work full time. This situation presents the parents with a difficult choice: where to leave their children during the day, either around the school day or for the full working day.

The day care worker does not work a standard eight-hour work day. The children arrive at seven in the morning and are not picked up until between five and six in the evening. Therefore, the day care providers are faced with staffing for an uneven workload over an eleven-hour period. The industry is further handicapped by being unable to pay even a minimum wage. This industry is characterized by high demand for service with little or no tolerance for error. Recently a daycare provider committed the unpardonable but very human error of forgetting a child. A baby was still in the day care center when the facility was locked up for the night. The people who staff these daycare businesses range from high school students working part time to college graduates working on advanced degrees or waiting for better jobs to become available. What a fascinating population to study! How does the daycare company inculcate new hires with the caring skills required to work with young children under such demanding working conditions and the numerous state and local laws and regulations that govern this vital industry? Apparently the older more experienced day care providers mentor and role model the younger new hires.

In an earlier stage of the dissertation formulation process the researcher considered studying the school-to-work transition process of union employees working in shipyards. Here are employees with the protections of the union working in what amounts to a dying industry. What is the nature of the work culture in such a shipyard? How many young people are willing to begin their working lives under such uncertain circumstances and how do they prepare for such a work life? Yet, the United States Navy needs ship yards to continue to build new warships into the 21st century. This situation is definitely a major national defense issue that needs serious attention.

Finally, what role should academia assume? Academic institutions should definitely adjust to meet the changing needs of the work place. It is the extent and nature of these changes that needs to be negotiated. It is counterproductive to tear down the existing establishment and to start over, although there are those who advocate just that. The problem is one of response time. Academia cannot respond to the changing market place as swiftly as industry does on a regular basis. So, let the industrial concerns continue to do what they do best, respond to the changing market requirements. Allow academia to perform its role of supplying new workers who are learners, who are prepared to respond to the changes in technologies and the nature of

the work place. And, most of all let academia continue to strive to graduate knowledgeable participants in the American democracy.

A vital and uncertain element in the debate about education is what is the next phase in the work place revolution? Recognizing that the world is transitioning to a technology and information based economy, is the next revolutionary change going to be the knowledge based economy predicated by Peter Drucker? The industrial implications of a knowledge driven economy remain to be determined. It should be clear that academia has a major role to play as the knowledge driven revolution unfolds. The definition of that role should evolve with the benefit of active discussions between industry and education as the issues become clear. It would be highly problematic and potentially destructive for any one constituency to dominate that evolution, be it the political, government, industrial, or academic interests. The guiding decisions need to be arrived at by compromise and negotiation based on the best data avaiable at the time the decisions are to be made.