Globalization Legacy:

A View of U.S. Factory Involvement in Mexican Education

Introduction

This research is just a step in the arduous task of defining the legacy of globalization on education as cultures are forced into new association via an international economic agenda. The task must be ongoing. Also, its complexity must be underscored. A close and purposeful inspection of the international exchanges will help determine if global economic power over labor resources in developing countries is leaving damaging social gaps or a sustainable global society.

Although many countries host U.S. manufacturing operations, I focused on Mexico. Other countries who provide labor for foreign manufacturing are farther from examination and do not have “neighbor” status with the United States as does Mexico. Therefore, from my view in the southern border area of the United States, it is easier to examine the impact of these international economic exchanges by learning from my neighbors.

Elaine Hampton
is an assistant professor
in the Department of Teacher Education
at the University of Texas at El Paso,
El Paso, Texas.

As a member of the society that is influencing many societal changes in Mexico, I feel that I must examine them carefully to weigh the economic benefit I derive from the cheaper products in U.S. markets against the social impact this activity spawns in Mexican education.

United States-Mexican interchanges have developed as a result of the encouragement for global economic activity provided by the increase in open trade during the last decades of the twentieth century. The economic changes engender by the global activities are monitored and documented to ensure benefit to the corporate interests. However, in the country hosting U.S. factory industries, the rapidly escalating societal changes left in the wake of the economic activity, such as those in education, are seldom monitored or documented.

The purpose of this study is to examine the impact of U.S. business involvement in Mexican education through philanthropic contributions that arise as social needs become obvious and through education and training provided to the employees of those businesses.

Maquiladora Context

One definition of globalization that lends itself to this research is a flow of monies and commodities between nations designed to provide an economic advantage to businesses and industries involved in the interchanges. The governments of the cooperating nations provide incentives, such as tax reductions or transportation infrastructure to the businesses in hopes that the national economy will benefit.

One particular aspect of globalization in Mexico since the 1970s has been the rise of the *maquiladora* industry. A *maquiladora* is a manufacturing assembly plant located in Mexico and linked with a foreign nation, mostly the United States. Japan, Germany, Korea, Mexico, and other countries have *maquiladoras*, but the majority of the employees in *maquiladoras* work for U.S. firms. Usually raw materials or partially completed parts are shipped to Mexico to be assembled into a partially or fully completed product and then shipped back to the country of origin. About sixty-five percent of this assembly line industry is located near the U.S. border and the rest in other regions of Mexico.

Economic and political interests dominate globalization’s efforts. The impact of the factory industry on Mexican society is linked to corporate profits. The U.S. businesses with factories in Mexico are often Fortune 500 businesses with healthy profits. One factory may employ 1,000-2,000 people, 80 percent of whom are line workers. In the United States, each line worker’s salary would be $10.00 per hour, often more (Cabral

A View of U.S. Factory Involvement in Mexican Education

BY ELAINE HAMPTON

2001). In Mexico, the same work is accomplished for $4.50 to $6.00 per day. Also, fewer union regulations in Mexico often speed production output. This “efficiency” may come at the cost of workers’ rights.

Because of the close link to U.S economic health, the *maquiladora* industry is susceptible to the same diseases. When the U.S. economy took a downturn at the turn of the century, Mexican employment fell — 17.3 percent in December 2001, and 18.2 percent in January. At the end of 2001, there were 1,081,526 employees, 6.5 percent less than 2000 (Mexican Intelligence Report 2002). More than 500 *maquiladoras* in Mexico closed in 1999 and 2000 and 250,000 factory workers lost their jobs (Jordan 2002).

In the past, Mexican *maquiladoras* have been described as sweat shops and criticized for poor working conditions in addition to low wages. Poor and unsafe working conditions have been documented in many *maquiladoras*. Arriola (2001) describes unsafe practices in the use of chemicals in a U.S. factory in Acuña. Kourous (1998) examines these practices in depth and reports evidence of the need for improvement in the use of hazardous materials in some factories.

The *maquiladoras* in this investigation appeared to provide satisfactory working conditions, and all made contributions to the employees and the community above the level required by regulation. I did not investigate the working conditions in other *maquiladoras*, but none of the employees that I interviewed described unsafe working conditions.

Research Design

The qualitative perspective for the research allowed me to focus on phenomena that occur in natural settings, and to study those phenomena in all their complexity (Leedy & Ormrod 2001). This study is complex and multidimensional, and the qualitative approach helped me interpret and portray the multiple perspectives. I approached the research as an emergent, grounded theory research design (Glasser & Strauss 1967). Implicit in the data that I gathered were the theories that emerged from the research.

The research data were gathered through observation, conversation, and interview.[1] In addition, I maintained an ongoing search for literature reports and documents that would further inform this study. Current literature describing the economic changes in globalization was easy to access. Also, Mexican educators generously shared documents on Mexican educational changes. However, I found no previous research describing the direct involvement of U.S. businesses in Mexican education and its impact. This validates the need for this research.

With funding from Mexico North Research Network I was able to spend a summer in the interior of Mexico. I visited more schools where I interviewed each school principal and at least one teacher. These schools were located in Ciudad Juárez, Chihuahua, Toluca, Puebla, and Mexico City. I also visited twelve *maquiladoras*. At each site I interviewed the personnel director or another middle level manager (N=23) and, in some cases, other employees as well.

Some of the most important information came from the interviews (N=24) with people who worked at the minimum wage factory positions. These interviews did not occur at the factory, but in these impact communities. Sometimes, I just drove down the street in the community and asked if I might visit with individuals about their work. We stood in the dusty road and talked. Some invited me into their homes and invited their neighbors to join us. No one turned down an interview and all willingly shared information about their previous homes and their new life working in a *maquiladora*.

In addition, in the past few years, I have developed friendship with school staff and *maquiladora* employees in Ciudad Juárez. They have extended to me the opportunity to partially experience the educational setting in *maquiladora*-impacted communities. This has led to a strong feeling of respect for Mexican educators who work in these communities. This respect and my interest in the themes about globalization and education impacted the design of the research, and I believe researchers must admit that their attitudes and interests are inherent in their research. I have attempted to provide sufficient detail in the report to give the reader confidence in the findings and to highlight multiple sources or examples to develop each concept or theme.

Research Focus and Theoretical Foundation

Mexican education, like education in most countries, is burdened with multiple layers of bureaucracy, political powers, corruption, resource competition, entrenched historical practices, social impacts, and people with wide ranges of abilities and disabilities. Educational programs are tools of society and continually change as society changes.

Mexican education will change with or without foreign intervention. I do not present the claim that global economic intervention is the single or major cause of changes in Mexican public education. I do present examples, some positive and some negative, of educational consequences in the environment of the large foreign factories and the communities they impact. Some of these are detrimental, and they deserve our focused attention.

The major themes or categories that emerged from the research pertained to (1) changes in Mexican curriculum to meet the corporate needs, (2) educational detriment in factory communities, and (3) foreign corporate involvement in local education programs. Because of the length and complexity of the full study, I focus on the third theme in this study. This does not decrease the importance of the other themes.

I found that the difficulty of accessing public education was exacerbated in communities serving factory employees because of the poverty and the lack of infrastructure support provided to schools. I also found evidence that, in this era of emphasis on the market economy, the educational curricula in Mexico, as in the United States, is shifting more and more to a purpose of serving industry needs and less and less to a purpose of developing critical thought for a democratic society. The reports on these other two themes will be told elsewhere.

This study focuses on the theme of the corporate involvement in K-12 public education via the specific evidence provided through my study in the Mexican communities. It supports more theoretical writings by Stromquist (2002), Stromquist and Monkman (2000), and Keuhn (1999) about globalization's impacts on education in other contexts and about the shift to neo-liberal policies in the global market environment.

These policies move goods and services out of the public sector and into the market or big business sector. Neo-liberal policies reduce public expenditures and marketize previously tax-supported programs. Also, along with Stromqist, I situate the foundational theory about globalization in the interconnection between power and knowledge.

I empathize with Buenfil-Burgos (2000) when she says that the meaning of globalization "flows, hovers, or floats in different directions depending on who is speaking about it and in what context…" (p. 9). In this study, globalization is contextualized in the hierarchy of the market economy in its move to world capitalism.

Implications of Corporate Involvement

A purpose of this research was to identify ways that globalization manifested itself in Mexican education, beneficial or detrimental. Fortunately, I did find that corporate involvement in the schools sometimes resulted in positive contributions to Mexican education. I saw friendships and respect between people of two nations that otherwise would never occur; schools were benefiting, and some Mexicans benefited with technical expertise and successful careers. I met several U.S. *maquiladora* managers who displayed a great appreciation for the Mexican people and did everything within their power to provide beneficial experiences to their employees. I am pleased to have the opportunity to highlight these contributions.

However, the growth of the factory industry far outpaces the ability of Mexican social systems to adjust to and sometimes repair the consequences (Grunwald & Flamm 1985; Kopinac 2003). A business's first priority is profit, and the reason these businesses are in Mexico is to make financial profit. Few businesses seemed to have the goal of a better Mexico in mind. Most contributions or educational involvement were implemented to meet corporate needs such as positive public relations, a motivation to work harder and better, or improved training for the work force.

Themes Describing the Corporate Involvement

The U.S. corporate involvement in the Mexican schools was most evident in these areas: (1) through direct contributions to schools in money, products, or services, (2) through those programs that the businesses implemented specifically to provide and improve education, (3) through the technical education inherent in improving production, and (4) through augmented gender inequalities.

The first area, direct contributions, was usually a one-time gift such as furniture (new or used), ball courts, painting the facility, or landscaping. In every case I found, the school principal made the request for assistance. Most schools did not receive any contributions. A few generous contributions are described below.

The second area of involvement was the support for ongoing education. Many of the *maquiladoras* provide opportunities for their employees to finish their elementary or *secundaria*[2] education by providing a meeting room and a teacher to facilitate the independent adult study program provided by the government. Some employees took advantage of this adult education, however, for a variety of reasons it was not a widely used program.

Upper level employees — technicians, engineers and administrators — were sometimes provided with generous funding to advance their careers through pre-approved coursework at local higher education institutions. Perhaps the most valuable positive impact on Mexican education was the increase in the quality and quantity of technical and administrative expertise, some 135,000 people, as a direct result of the *maquiladora* industry.

The third benefit was found in community improvement programs. I found three U.S. businesses involved in these community improvement programs focusing on social services including education. The funding for these programs, however, was less U.S. cooperate funds and more the contributions of the Mexican employees.

The final area of corporate involvement sheds light on gender issues that have arisen as the *maquiladora* industry impacts the communities. The direct link to education may not be obvious, but the indirect links are obvious and disconcerting.

Direct Contributions to Public Schools

The *maquiladoras* are wooed to Mexico with reduction in most taxes and elimination of some taxes. The foreign-owned businesses pay about 2.5 percent of their revenues in corporate income taxes and minimal social security taxes on their employees. They do not have to pay duty on raw materials they bring into Mexico, nor on the finished products they ship back to the home country. The tax-benefit plus the reduced labor and transportation costs (especially for border industries) is a virtual treasure for the industry.[3] The Mexican national and local societies receive money mostly through the wages (the majority of which are very low) provided to the employees. Very little is provided for infrastructure or social needs that arise when many (350 in Ciudad Juárez alone) large factories locate in a community within a short time span.

There is no requirement that *maquiladoras* provide assistance to Mexican schools or other social organizations in the host country. The Mexican public schools in these *maquiladora* communities, however, are in great need of assistance. The Mexican schools had ongoing and vast needs, especially in infrastructure, and this is obvious to outsiders working in the community. Most of the factories in this investigation responded to the school needs with some forms of civic involvement. The ways they contributed to the local society varied greatly. Respect for the local community and a desire to help was evident in every interview with the *maquiladora* managers.

It was this lack of infrastructure that allowed me to easily locate schools serving *maquiladora* employees. I drove around the periphery of the cities and looked for neighborhoods with no paved roads and other obvious infrastructure gaps. Then I asked if many of the people living in that area worked in the factories. If the answer was yes, I asked for directions to the nearest school.

Most of the schools I visited were relatively satisfactory buildings of cement or cement block. However, in the fastest growing emergent communities where Mexicans have relocated to work in the factories, sometimes the community had created a school out of any material available — packing pallets turned on end, temporary wood shelters, and even abandoned buses. I was allowed to observe and sometimes participate with a Mexican principal as he struggled for four years to convert this unacceptable shelter into a building of cement block. The responsibility for this construction was all on his shoulders. I observed, and sometimes collaborated with him, as he continually solicited assistance from community organizations and the city government.

Usually Mexican government funds provide to public schools the initial building, staff salaries, electricity and water, and books for all the children. Everything else — paper, custodial work, building upkeep, fences, toilet paper, telephones, copy services, chalk, etc. — has to be provided by the parents and/or faculty. To meet this need, the school staff or a parent organization establishes a registration fee for the children to attend the school. In the schools in this study, the fees ranged from about $20.00 to $150.00 per year per family. As a consequence, Mexican schools in communities where these fees represent several days work are disadvantaged in the extent of services they can provide.

The principals of twenty-two elementary and *secundarias* in Mexican communities where the majority of the parents work in *maquiladoras* graciously interrupted their schedules to accommodate my interviews. In each interview, I asked if the local *maquiladoras* provided any assistance to the schools. Five of these schools had received mostly nominal help from a local *maquiladora*.

For example, in one school in Chihuahua, the *maquiladoras*, Honeywell in particular, had provided help to purchase sports equipment and some school landscaping. Another school in Chihuahua had received some paper goods, napkins, and cups from Hallmark. A school in Puebla received small contributions of drinks or awards for the school festivals. Each of these contributions was made after the principal made a formal request for assistance to the business.

When I interviewed the *maquiladora* personnel directors, they described contributions they provided to schools. Usually this was in the form of small gifts of their products or help with furniture provided upon request. However, one gift was as generous as thirteen air conditioners installed in a school in Ciudad Juárez.

The personnel director at Honeywell described generous contributions to the local community. He expressed his willingness to help the schools with a frustration that the needs were much greater than his ability to help. “What surprised me was the lack of help the government gives to schools.” That lack of government help to schools is a result of a complex history in Mexico’s educational designs; but it is also the result of prioritizing public funds to entice foreign industry at the cost of serving social needs.

In addition, Honeywell gave $500 to help a local high school enter an international solar car race. On three occasions, this business gave a classroom set of new desks. They donated a large industrial machine as a learning tool for the engineering department of the university in Ciudad Juárez. They also provided about $10,000 worth of furnishings to help an elementary school build a library.

The foreign factories impact the social structure in their host nations greatly. The incentives they are provided to locate in these nations stress the local government’s ability to compensate. It was my hope that I would find that the foreign factories were providing informal infrastructure support as they lived and worked in the community in an effort to compensate for the lack of infrastructure support that additional taxes might allow the government to provide.

In the sample that I examined, I found evidence of some commendable support, but the majority of schools are left with nominal to none. The words of Martin Luther King, Jr. wisely synthesize this aspect of U.S. involvement in a host country’s social systems: “Philanthropy is commendable, but it must not cause the philanthropist to overlook the circumstances of economic injustice that make philanthropy necessary.”

Educational Programs inside the *Maquiladora*

Basic Education

Many Mexican adults have not finished the six years of elementary school, and the majority has not finished the three years of *secundaria*. A goal of Mexican education is that every Mexican over fifteen who wants an education or wishes to continue studying will have this opportunity. However, achieving this goal is far off as Mexico has only a twenty-six percent high school graduation rate (United Nations Development Program 1999).

There are a variety of programs to address this concern for the lack of adult education, including job training and technology education. In one program, the government provides the materials for this basic education free through their adult education program, *Instituto Nacional de Educación para Adultos* (INEA). Books and some of the necessary tools (notebooks, rulers, calculators) are also provided free. These books are similar to a correspondence course in that it is self-paced and calls for the student to read a book, pass a test, and continue onto the next book in the series. There are over thirty modules in the *secundaria* curriculum. INEA asks that a community organization or business sponsor these programs by providing space and a teacher/mentor. A similar program is called Open Education.

Mexico provides free public education through grade eight. However, about half of the children do not continue past grade six. Two main reasons are lack of access and the indirect costs. Many areas, especially in the rapidly growing northern border communities, still do not have enough *secundarias* to accommodate the population. Also, even though this education is free, the costs of uniforms, shoes, tests, school "volunteer" fees, equipment rental, etc. prohibit children whose parents are making less than six dollars a day from participating.

This continuing education is an opportunity for Mexicans to finish their degrees at no cost other than time, and is a beneficial service provided by some of the *maquiladoras*. It is a free alternative when regular school programs are not available. However, it is still an individualized, read and take-a-text curriculum. Some Mexicans count on this as an affordable option for continuing their education. One of the children of a *maquiladora* employee in Ciudad Juárez had just finished elementary school. She told me that she was waiting until she was old enough to work in a *maquiladora* to take her *secundaria* program there because it was free.

Ongoing research into the effect of Mexicans accessing this program will be important to see if it is a beneficial or detrimental alternative. Table 1 shows the numbers participating in the adult education programs and the recent growth. The numbers are not for graduates, only participants. Notice the growth in work training during the decade. According to these data, the numbers in a literacy program (basic reading and writing) have decreased as the access to basic elementary public education has increased.

All of the large U.S. *maquiladoras* in this investigation, those making automotive and electronic equipment, provided opportunities for their employees to continue and complete their basic education through INEA. Often, however, it was offered less as a service to every employee and more as a "reward" for good attendance. The smaller *maquiladoras* making clothing, where the majority of the laborers are women, did not provide this service, but it was available in every auto-related factory I visited.

The personnel directors of the *maquiladoras* shared their records of training and education for their employees. The following information comes from those interviews. If the *maquiladora* provided this continuing education service, in most cases it was open to all employees. All of these programs were provided outside of work hours. Some were held for a few hours on two or three days a week after the day shift was over and before the night shift began. Others were held on Saturdays for five or six hours. The participation in these programs was not large. Table 2 shows the numbers of participants in the INEA programs provided by the businesses. The participation is usually less than one percent.

Of the thirteen women *maquiladora* employees I interviewed in Ciudad Juárez, only four took advantage of this program. The women listed one of these three reasons: (1) some *maquiladoras* provided this as a reward for attendance and it was not available to everyone, (2) most women were mothers of young children and felt it was more important to be with the children than to work on their education, and (3) because of the hundreds of murders of young women *maquiladora* employees, some women were afraid to depend on any transportation that was not part of the regular shift route.[4] One woman told me that she wanted to attend, but her supervisor would not allow her to participate because she had been late to work.

Anay[5] provides more insight into the difficulties encountered when one tries to take advantage of this program. As a teenager, she worked in a *maquiladora*, first as a line worker, and then moved up to a secretary position. She went to the INEA classes provided by the *maquiladora* two afternoons a week for two years and finished her *secundaria* program. When she wanted to enter the high school program, she discovered that the *maquiladora* had lost her paper work, and she had to repeat all the classes. Anay told me she thought this was done on purpose so she would depend on the service and thus continue working at that *maquiladora*.

Anay lived inside the city and was close enough to walk home from the *maquiladora* after these classes, but she had to walk home alone. She told me this story. "One day, I was waiting at the corner to cross the street to go home. A black pick-up from El Paso with two men inside drove up beside me. The guy got out of the truck and grabbed me. I dropped my pack and held onto the sign post and started screaming. There were lots of cars going buy, so he jumped back into the truck, and drove away. He had sunglasses and a hat, but I can just remember his nose and mouth. I think I saw him at the *maquiladora*."

Anay fit the profile of the women *maquiladora* employees so brutally murdered in the past several years. She may be one of the few who escaped death. She went on to repeat the coursework and graduated from *secundaria*. She was half way through the high school program at the time of the interview.

The benefits of this basic education program that the *maquiladoras* assist in providing are that it is a free alternative to public *secundaria* and the student can have an income at the same time s/he is going to school. One weakness is that still many do not take advantage of the program and women, in particular, find it difficult or dangerous to participate. Another weakness is that it is difficult to align a

Table 1
Students Participating in INEA

Year	Total	Literacy	Elementary	*Secundaria*	Work training
1986	1,877,726	1,002,609	538,819	189,897	146,419
1995	2,556,391	456,330	783,380	534,043	773,638

Source: Instituto Nacional de Estadística, Geografia e Informática (INEGI), 1997.

Table 2
Maquiladora Employees in Adult Education Programs Provided by the Factory

Factory	Number of employees	Number of participants
Ford in Chihuahua	1,300	12 graduates in 2001 47 enrolled in 2002
Bimbo Bread (Mexican company)	49,000	1,100 enrolled
Packard Delphi	46,000	30 enrolled in elementary 193 enrolled in *secundaria*
PEDSA (auto harness) Ciudad Juárez	5,300	50 graduated in 2001

self-paced, read and test curriculum with the vision of a higher level, thinking-centered educational program.

Technical Training

The technical staff in a *maquiladora* operation, averaging twelve percent of the employees, includes engineers and technicians. The technicians' career involves specific skills such as maintaining equipment, making precise measurements, installing equipment, repairing automatic equipment, and programming. Engineers, credentialed employees, perform tasks such as diagramming, interpreting manuals, drawing, adapting equipment, documenting their work, planning production processes, supervising production processes, and quality control.

It is this investment into the technical training that provides one of the most beneficial impacts of the *maquiladora* industry on Mexican education. There is an increase in quantity and quality of technical expertise in Mexico because of the education provided by these industries. Additionally, the industry benefits as the technical expertise converts into a financial gain to the company.

State-of-the-art production technology is found in some of the *maquiladora* companies. For example, Delphi Mexico in Ciudad Juárez has a large research and design center for the auto industry with advanced production technology. The researcher engineers and technicians at Delphi are mostly Mexicans.

Technical education programs exist inside the industries. Before examining it closer, it is important to qualify the positive impact by looking at who benefits from this education. The increased quality of technical expertise may be impressive, but, overall, the quantity increase is minimal. Only a little more than twelve percent of the *maquiladora* employees, the technical and engineering employees, or about 135,000 Mexicans, benefited from this technical training and the vast majority of those were men (Vargas 1999; INEGI 2002).

In 2002, some 12 percent of all *maquiladora* employees were production technicians and engineers, 8 percent administrative employees, and the remaining almost 80 percent were laborers (INEGI Employment 2002). In the automotive industries, this number was 13.1 percent technicians and 8.1 percent administrative. In 2002, the thirty Delphi factories in Mexico employed just over 46,000 and of those 8,891, or about 19 percent, were technical employees — a higher percent than the average for all *maquiladoras*.

Much of this technical training is unique to the machines and processes of the industry and, therefore, of little value outside of that specific factory. Some training, however, was generalized and therefore could transfer to other industries (computer-assisted design, spreadsheet, etc.), further empowering the worker and providing more opportunities.

The auto related *maquiladoras* in this research provided generous opportunities for their employees to increase their general technical expertise through various onsite workshops and through programs at local institutions of higher education. One of the personnel directors told me that this transferable training was a concern for the *maquiladora* because this helped the employee become more marketable to other factories. To compensate, she said, the business focused on a good working environment and a team spirit to discourage their trained employees to look elsewhere.

Adrian was one of the Mexicans who has benefited from this technical training inside the industry. Adrian had worked for Honeywell for twenty years. He and his wife Carmen had four children and lived in Ciudad Juárez. One son was still in high school, and the other three were pursuing careers through local universities. All lived at home. The oldest son worked on the line at Honeywell on the evening shift to help pay for his university expenses.

Their home was a small, comfortable, three-bedroom house similar to some townhouses in the United Sates with rows of dwellings sharing common walls. Each house had a small front yard that included a place to park a car inside a strong metal gate. It was one of the many INFONAVIT houses — a Mexican government program to allow employees to purchase their own homes with low down payments and a sliding payment scale deducted from the employees' wages. Carmen told me that the house was smaller when they bought it twelve years ago. "We added the bedrooms *poco a poco* (little by little) through the years when we had money. It's been a long time."

Honeywell employed forty technicians including Adrian. There were four levels for this job, and he had worked up to the top level. He received 11,400 pesos per month or about $1,200. Adrian said:

> I was born in Juárez. I went to elementary, *secundaria*, and high school here. My son is in the same high school now that I went to. When I started at Honeywell, I had general electronics training. I was working on the line. The bosses look for good line workers, and they give them more training. About half the technicians come off the line. They gave me training in refrigeration and advanced electronics. They even sent me to Dallas for two weeks to learn about a new machine. Now I am a level 10A. A part of my job now is to train other technicians. The pay is good because we can buy our own home and our car. But it is hard now because our children are in school.

Adrian and Carmen met at Honeywell. Carmen finished her elementary education by taking advantage of the free adult education programs Honeywell provided. When Adrian worked up to a higher salary, she stayed home to take care of the children. Adrian had attended some of the English language classes Honeywell provided, but he said he did not practice enough and needed to take more classes.

The company benefited by having a highly qualified employee at a price much lower than that in the United States. Adrian, and the other mostly men in this technician category of *maquiladora* employee, benefited with training that enabled them to advance in the company and achieve a relatively "middle class" lifestyle on the Mexican salary scale.

Advanced Degrees for Employees

Some of the businesses invest in a few of their top-level employees by providing education above the technical training. General Motors (GM) Cooperate Offices in Mexico City provided advanced education opportunities to their administrators and engineers. If an employee at this level wanted advanced education that would enhance her/his career inside the *maquiladora*, GM funded the education at 75 percent of the cost for university education up through a master's degree.

For a doctorate or a special program certificate, the employee was reimbursed for 90 percent of the costs. In 2002, 29 of the 300 employees at the corporate office were taking advantage of the program. The participants selected local educational institutions to take these degrees. The personnel in the Department of Human Resources reported that most of the other GM factories provided these same opportunities if they had the budget to do so.

The Ford factory in Chihuahua City reported a similar service for their employees. In addition, they had sent their engineers to Detroit, St. Lewis, Seattle, and even Valencia, Spain, for more professional development. PEDSA, a subsidiary of Dodge Motor Company making auto harnesses, and Honeywell, making sensors, switches, and controls, had similar programs and pay a large percentage of the educational costs for any type of relevant education for any of the technical staff, engineers, or administrative staff.

At Honeywell, about 25 people were pursuing university and masters level degrees through this tuition reimbursement program. Delphi provided outside education to 785 of their over 43,000 employees (less than 2 percent) in 2001. This included any program of higher education (including some doctorates) that was deemed relevant to the industry. The program was a tuition reimbursement system available to professional staff in technical and administrative areas. Some were U.S. citizens, but the majority were Mexicans.

Therefore, the *maquiladora* industry provides a very generous educational benefit to Mexican citizens although the number who benefit is small. The large industries provide full or partial support to their top-level administrative and technical Mexican employees to advance their education when it is relevant to the industry. The vast majority of the employees, the factory line workers, do not have this benefit.

Community Assistance Provided by the Employees' Contributions

Quality programs with a focus of community assistance have emerged from the *maquiladora* involvement in Mexico. Delphi and some of the other large *maquiladoras* provide generous assistance for long-term employees to help with buying their own homes. Also, the Delphi administrators I interviewed reported that in 1999 they gave $300,000 (U.S.) to the local *maquiladora* association for infrastructure improvements in Ciudad Juárez.

The examples of the community assistance programs I found were indirectly caused by the U.S. firms' involvement in Mexico, and most were directly financed by Mexican employees' contributions. However, the majority of the financial support for the community assistance programs identified in this research was Mexican money. These examples are described below.

Tarahumara Schools

Adrian, the technician from Honeywell mentioned above, described a special outreach program that he and fellow employees initiated. "Every year some of us from Honeywell take a truck load of clothing and food to the boarding schools for the Tarahumara Indians[6] in the mountains [in the state of Chihuahua]. Honeywell lets us use the big truck and pays for the gas. All the employees donate good clothing, packaged food, toys, blankets, etc. We have done this for twelve years. We drive to the mountains and have a system where we give it to the schools located in the remote areas. It takes three days. I think this is a very good program, and they need the help."

Packard Delphi Program

The Packard division of Delphi had a program in all of their 30 Mexican plants similar to our United Way. The employees may volunteer to donate a part of their salary to provide community outreach efforts. Across the nation, 95 percent had give to this program for a total of 76,740.38 pesos in 2001 (about 7,800 U.S. dollars). This fund has been used to provide assistance to two orphanages, one home for the elderly and three schools. One school was built entirely by this fund with donations of work from the employees in the Ciudad Juárez plant.

Fundación del Empresariado Chihuahuense

In the state of Chihuahua there was a working partnership between corporations and communities, the *Fundación del Empresariado Chihuahuense*. The *Fundación* was built around funding it received from the state in the form of a tax on top of the payroll tax paid by all businesses in Chihuahua. Companies were legally obligated to pay about two percent of their total payroll in tax.

The 29,000 Chihuahua businesses volunteered to add this extra ten percent of the two percent payroll tax for the *Fundación* to provide its revenue, and 60 percent of these businesses were *maquiladoras*. Each business paid only a small amount, but multiplied by 29,000, the *Fundación* had an effective budget. The *Fundación* received about $226,500 (U.S.) per year through this fund.

The *Fundación* was not aligned with any political party and was the only recipient of this tax. Since its founding in 1993, it had approved over 500 projects and disbursed over 6.8 million dollars to social infrastructure throughout the state of Chihuahua. A majority of the projects were for increasing or improving medical and educational infrastructure in marginalized communities.

Three interesting *Fundación* projects focused on education. One was a parent education program. This was provided through schools, churches, and some *maquiladoras*. The organization paid the fee of about $32 per person. The curriculum covered topics such as child development, emotional intelligence, and talking to children about difficult topics such as addictions.

The Fundación also contributed about 40 percent of the start up funds to build one of the Ford Schools discussed below that is located in the southern part of Ciudad Juárez. The third project provided about one million dollars to start a private Catholic elementary school with a bicultural focus.

Ford Schools

In 1966, Ford began a program of building schools in Mexico. This was a joint effort between the Ford dealers in Mexico and the Ford Mexican offices and was created for the purpose of giving something back to the community. In 2002, there were 198 Ford schools, all at the elementary level, located in high poverty areas. There were 60,000 children in Ford schools in 2002, and over 1.5 million had been through the schools.

Sira Del Campo, Ford's Corporate Citizenship Coordinator, explained that to build a Ford school, the dealer must provide forty percent of the funding. This could be all funds from the dealership or contributions from other businesses and the government as well as the dealership. The dealer works with the local public education ministry to select a location. The municipality usually provides the land.

Then the Civic Affairs Committee at the Ford office provides sixty percent of the funds. The source of these funds is the Mexican Ford dealerships. The dealership must pay a small percent to this Civic Affairs Committee per each automobile it receives from the factory. The Ford cooperate office matches this amount. Therefore, all of the funds for this program were Mexican contributions.

The schools must meet high standards of quality in the building program, and they include a fully wired and equipped media room. They are public schools and adhere to the regulations and curriculum of other public schools. Graduates include attorneys, mayors, and doctors. I visited the Ford school south of Ciudad Juárez and found that it aligned well with the description Del Campo had provided me.

The most exemplary educational support programs I found during this research were linked to U.S. factories only incidentally. The *Fundación* and Honeywell did include funds from *maquiladoras*, but the Delphi and Ford programs were all contributions from Mexicans and Mexican offices. These contributions represented a significant infrastructure support far greater than providing paper goods for a party.

Gender Issues in Global Economic Environments

Women in the factory workforce is a recent innovation in Mexican society. The *maquiladora* industry has escalated the rate of the implementation of that innovation in some areas. To further complicate the social change, it has occurred mostly in high poverty situations in the factory environment. Again, Mexican society is left to struggle with an adaptation to a very complex innovation in an artificially created, short time span. Some believe that the stress this has engendered is a root cause of the violence against women occurring in Ciudad Juárez.

To people in severe poverty, even another version of poverty is more attractive. For example, for centuries, one of the few options for underemployed Mexican women was to work as domestic servants for a wealthy family. This provided satisfactory food, clothing, income, and shelter but the cost was a servant's life of few choices and limited freedom.

In Chihuahua, the school staff told me that the children took pride in saying that their mothers worked in a *maquiladora*, but were embarrassed to say that their mothers worked in someone's home. Other Mexicans supported this statement and told me that, although the working and living conditions may be higher, the status of a domestic servant's job is very low in Mexico. For a woman, working at a *maquiladora* provided more independence, some level of health care, a small social security savings, and a small income (about five dollars per day), which elevated their perceived social status.

Women have fewer opportunities to advance in the *maquiladora* industry than men. The nature of the job is technical machine-based work where fewer women than men are prepared or interested in the field. In the early days of the *maquiladora* industry on the border, the majority of the line workers were women. This was purposeful because women were less likely to unionize and were less likely to fight against low pay and poor working conditions.

As of 2002, there were about 390,000 men and 462,600 women working in the *maquiladoras* (INEGI 2002). However, the higher paying technical jobs and jobs in the auto industry were highly male dominated. The auto industry usually pays a little higher than minimum wage.

The Ford plant in Chihuahua had 1,300 employees — all (except a few administrators) were men. In 2001, this plant hired thirty women, but soon the U.S. economy began to decline and all new employees were released. This included the thirty women.

In the corporate offices of General Motors, most of the positions were for higher-level administration and engineers. Men filled over 70 percent of these positions. Opportunities, although limited, exist to advance from the low paying manufacturing line jobs to better paying quality control or technician jobs.

One of the technicians for Honeywell told me that about half of these technical positions were filled by line workers. These line workers had been selected on the recommendation of their bosses. These workers received more training. All of these technicians that had been selected from the line at Honeywell were men. There were some higher paying jobs open to women, but they were rare. Mostly, women could work in the administrative offices in positions such as secretary, receptionist, and personnel management.

Stromquist and Monkman (2000) shed light on this important aspect of gender issues in global production arenas. They state that a positive feature of globalization for women is the incorporation into the labor market. Indeed, the women I interviewed had an opportunity to work (in a field they considered more respectable than domestic service) that they did not have before.

However, as Stromquist and Monkman claim, often these forms are not particularly advantageous to women because of the routine, dead-end nature. Also, in order to try to care for their children and gain an income, women take advantage of part-time and temporary employment. This tends to support a gender dichotomy in labor levels.

Maquiladoras making clothing were more common in the southern Mexican states. I visited two of these in the state of Puebla. The managers allowed me open access and presented a factory environment similar to one in the United States, except for the wage structure. In the smaller plant, there were about fifty employees (three men) sewing on multiple copies of three shirts for Nike.

The other factory was located in a series of four gymnasium-sized rooms employing 350 to 600 people. The two major jobs were sewing and cutting using large machines. Eighty percent of the seamstresses were women, and women accounted for sixty percent of the total employees. There were no adult education programs provided by these clothing factories. All of the women received training on how to work the sewing machines.

These factories provided comfortable workspaces with comfortable chairs, adequate lighting, clean and available restrooms, and a free snack, *atole*, a traditional creamy drink made of cornmeal and brown sugar. Meals were not provided, but the employees were paid for the half hour lunchtime. Buses provided free transportation for the employees. The employees received minimum wages, and they received small bonuses for no absences and for the number of pieces they sew above a minimum level. Doctors were on the facility three days a week and free pharmaceuticals such as aspirins and birth control pills were provided.

The host community for the clothing factory has a strong tradition of festivals and religious holidays. The owners had an agreement with the employees to trade off weekend days for the festival days so that the employees met the required number of working days and were still able to attend the festivals. On the day I visited, Mexico was playing Italy in the World Cup soccer finals. The game ended at 10:00 a.m. on this morning. The factory delayed the shift until 10:30 to accommodate the employees watching the game.

The working environment does not sound bad until you consider that these women were mostly young mothers, working eight hours sewing the same seams over and over and over, for about $4.00 per day. They worried about their children and how they would buy necessities as they worked for someone else sewing clothes for people thousands of miles away.

There was little relevance, little ownership, little challenge, and little opportunity to interact with others. Even worse, there was little hope for educational advancement or life changes. One of the principals in a nearby elementary school said, "The women are reduced to choosing to feed their children or to care for their children. They cannot do both."

In the global labor market, women still predominate the labor-intensive and low-wage garment and electronics assembly lines. As the technological knowledge to perform factory work becomes more sophisticated, men begin to dominate. I found this to be true in Mexico.

Also, as mentioned earlier, when the *maquiladora* does provide free adult educational programs, women are disadvantaged in accessing this opportunity. Because many are young mothers, the extra hours required for the course work place additional stress on their child care needs. Transportation becomes more difficult because the course work is provided at times outside of their work schedule and they miss the regular transportation service provided by the factories. The fear of violence that might occur in the route to or from work, particularly in Ciudad Juárez, prohibits many women from taking advantage of the free educational programs.

Mexican culture and social structure play a big role in women's employment issues. I found no evidence that U.S. businesses had unfair hiring practices, but neither were there any affirmative action practices in place. Manufacturing in Mexico may be gender neutral, but I found very little evidence that it sought equity in gender-labor issues.

Conclusion

If the *maquiladora* program suddenly left Mexico, the positive legacy would mostly be evident in the increased quality of technical education for the approximately 132,000 Mexican, mostly men. This improvement in Mexican education is the result of the factories' need for more efficient production. A few small-scale contributions to school infrastructure would be remembered. The adult education, which was not used by a large percent of the employees, would continue because many organizations other than *maquiladoras* provide this service. The *maquiladoras* made this adult education more convenient for some people to access, although on a small scale.

The community assistance projects such as the *Fundación* would be reduced or eliminated because, although their funding is mostly Mexican contributions, they are still associated with the *maquiladora* programs. So, from the information acquired in this investigation, the *maquiladora* program is making positive impacts on Mexican education, but they are not particularly long term nor widespread.

It is worthwhile to identify and credit philanthropic activities provided by the guest industries to their host communities. International friendships breed compassion, and the *maquiladoras* in this investigation provided assistance to the local schools and opportunities for their employees to improve their education. The efforts were commendable, but not sufficient nor sustained.

In this research, it became obvious that when a business provided contributions to education, most often those contributions also benefited the corporate purse. Most of the *maquiladoras* in this research made contributions to the community and to public schools, but they were far from sufficient to compensate for the infrastructure needs in Mexican society that are exacerbated by the foreign factory industry.

Though the contributions examined above were commendable, the closer social examination provided evidence that the access to quality education for the majority of Mexicans is compromised in this global era.

Notes

[1] Research data sources: I made 20 school cite visits including interviews with the director and a teacher. These were in Cd. Juárez (5), Chihuahua (4), Toluca (4), Puebla area (4), and Districto Federal (4). There were also 12 maquiladoras visits. At each site I interviewed the personnel director or other middle level manager and, in some cases, other employees also. Number of people in each interview is included. The total of the maquiladora managers that I interviewed was 23. Maquiladoras visited were:

Siemans in Cd. Juárez - 3
Ford in Chihuahua - 3
GM Headquarters in D.F. - 2
Clothing factory in Puebla (Mexican owned) - 2
Garments de Matamoros in Izucar near Puebla - 3
Packard Delphi in Cd. Juárez - 3
PEDSA auto harnesses in Cd. Juárez - 1
Honeywell in Cd. Juárez - 1
A.O. Smith boilers in Cd. Juárez - 1
Sunrise candy factory in Cd. Juárez - 1
Bimbo Bread in Mexico City (Mexican owned) - 2
Rio Bravo Electronics #9 in Cd. Juárez - 1

I also interviewed 23 maquiladora employees who were the laborers working for the minimum wages. There were 15 interviews with other Mexicans. These are people with information about global economic change or Mexican education.

[2] Mexican public education is a little different from the educational model in the United States. There is a strong kindergarten program available to most people. The elementary program includes grades one through six. Usually there are two separate schools held at the same facility to maximize resources. One school meets in the morning and the second in the afternoon. The *secundaria* is similar to the junior high program covering grades seven through nine. However, students have several choices of school types at this *secundaria* level. One provides an extension of the basic elementary education, and another, the *Secundaria Tecnica*, has a strong career focus where students receive a basic education and also must choose a training focus in one area such as secretary, auto mechanics, basic computer programs, electric technician, and seamstress. In rural areas there is a *telesecundaria* where students receive satellite programs in a distance learning type environment. The high school programs are also varied and provide preparation for university education or certification in a variety of areas similar to our community college certificates.

[3] The *maquiladoras* are required to pay income tax only on the value added to the product. About half of this value added is wages to the laborers and half is on utilities and rent. The former president of the *maquiladora* owners' association in Ciudad Juárez reported that *maquiladora* revenues in Mexico in 2000 were about 16 billion U.S. dollars. Corporate income taxes paid to Mexico were $400 million or 2.5 percent. Another 1.3 billion dollars or 8 percent went to social security taxes for the 1.3 million workers (Thompson 2001). Therefore, *maquiladoras* contribute about 10.5 percent of their revenues to the country, mostly in the form of social security for employees. This is an attractive reduction in the amount of taxes the business would pay in the United States.

[4] Since 1993 until this writing in 2003, about 300 (some Mexicans say it is higher) young women have been brutally murdered in Ciudad Juárez. All of them were young women and the majority worked in the maquiladora industry. Speculations exist about the involvement of politicians, gangs, bus drivers, El Pasoans, serial murderers, and drug dealings. Inconsistent and questionable police practices have complicated any investigations.

[5] Anay asked that I use her real name. At the time of this writing, Anay and her husband, Enrique, had requested assistance from friends in the United States and scraped together enough money to build a tiny house (about 400 square feet) of cement block. They used a bucket for the toilet. Water was delivered to the barrels in front of their house for daily use. However, they had to buy water to drink. Last Christmas, the water delivery truck did not come for two weeks. Enrique just laughed as he told me, "We were sure stinky that week." There are no roads, only the paths of previous autos. The landowners charged about $7000 for this tiny parcel of desert land with no infrastructure and no zoning regulations. On my last visit, I noticed a building being constructed just four feet from their east wall. Anay told me that it was going to be an ironworkers shop.

[6] The *Tarahumara* or *Raramuri*, as they call themselves, inhabit the Copper Canyon, as it is known in the U.S., or the Sierra Tarahumara in northwest Mexico. Today, the Tarahumara are Mexico's second largest native Indian group with between 50,000 and 70,000 people. They live in remote areas and are well known for their ability to run long distances. Modern mining and lumber industries have impacted their traditional life style. The children often live in boarding schools during the week and are in need of the necessities the Honeywell employees provide. Raramuri Souls by William Merril provides valuable insight into their lifestyle and their culture.

References

Arriola, Elvia Rosales. 2000. "Looking Out from a Cardboard Box: Workers, their Families and the Maquiladora Industry in Ciudad Acuña, Coahuila." In *Frontera Norte Sur*, Border Features [electronic journal], December 2000-January 2001. Available at: http://frontera.nmsu.edu.

Buenfil-Burgos, Rosa Nidia. 2000. "Globalization and Educational Policies in Mexico, 1988-1994: A Meeting of the Universal and the Particular." In Stromquist & Monkman (Eds). *Globalization and Education: Integration and Contestation Across Cultures*. Lanham, MD: Rowman and Littlefield.

Cabral, Linda. 2000-2001. "Manufacturing Builds Jobs." *Careers.Post News Classified*. Available at http:// www. postnewsads.com/Linda/.

Glasser, Barney & Anselem Strauss. 1967. *The Discovery of Grounded Theory*. Chicago: Aldine.

Grunwald, Joseph, & Kenneth Flamm. 1985. *The Global Factory: Foreign Assembly in International Trade*. Washington, DC: The Brookings Institute.

Kopinak, Kathy. 2003. *Social Costs of Industrial Growth in Northern Mexico*. San Diego, CA: Center for U.S.-Mexican Studies

Instituto Nacional de Estadística, Geografia e Informática (INEGI). 1997. *Estadísticas de Educación*. México City: INEGI.

Instituto Nacional de Estadística, Geografia e Informática (INEGI). 2002. *Employment and Unemployment: In-bond Export Industry*. Mexico City: INEGI. Available at: http://dgcnesyp. INEGI.gob.mx/ pubcoy/ short-term/empleo/poimaqi.html.

Jordan, Mary. 2002. "Maquiladora Employees Are Paying for Success." *The News Mexico*, June 24, 2002.

Kuehn, Larry. 1999. "Responding to Globalization of Education in the Americas — Strategies to Support Public Education." *Civil Society Network for Public Education in the Americas* [electronic journal 1999]. Available at: http://www.vcn.bc.ca/ idea/kuehn.htm.

Kourous, George. 1998. "Occupational Health and Safety in the Maquiladoras." *Borderlines* 6 (6) August: 1-2.

Leedy, Pual D., & Jeanne Ellis Ormrod. 2001. *Practical Research Planning and Design*. Upper Saddle River, NJ: Merrill Prentice Hall.

Mexican Intelligence Report 5(3) (electronic journal, March 2002). Available at: http:/ /www.Mex-i-co.com.

Stromquist, Nellie. 2003. *Education in a Globalized World: The Connectivity of Economic Power, Technology, and Knowledge*. New York: Rowman & Littlefield.

Stromquist, Nellie & Karen Monkman. 2000. "Defining Globalization and Assessing Its Implications on Knowledge and Education." In Stromquist and Monkman (Eds). *Globalization and Education: Integration and Contestation Across Cultures*. Lanham, MD: Rowman & Littlefield.

Thompson, Ginger. "Chasing Mexico's Dream into Squalor." *The New York Times*, February 11, 2001.

United Nations Development Programme. 1999. *Human Development Report*. New York: Oxford University Press.

Vargas, Lucinda. 1999. "The Binational Importance of the Maquiladora Industry." *Southwest Economy*, November/December:1-5.