

APPROPRIATE TECHNOLOGY LESSONS FROM CUBA

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I. INTRODUCTION

On Sunday, March 16, 2003, sixteen students and three faculty members from Howard University, members of the Howard University Program on Appropriate Technology (HUPAT), embarked on their first organized venture overseas. The trip was to Havana, Cuba. The purpose was to get an understanding of the role of technology in Cuba's social and economic development. Cuba's complex socio-political history combined with its relatively strong standing amongst developing nations, made a visit to the island an intriguing choice.

Over a period of one week comprised of lectures, site visits, and discussions, our group caught an insightful glimpse into a dramatically different world than we had left. Even our most enlightened gained a new understanding. America's next-door neighbor, our old "playground" located just 112 miles from Florida, is a nation poles apart from our world in many ways.

We were mesmerized and intrigued as our exposure to Cuba's history, culture, health care system, education, economics, and race relations brought us to new levels of awareness. At a visit to a lowly, urban neighborhood, we were warmly greeted with vocal performances by young students at La Casa de los Ninos y Ninas. At the venerable halls of the Academy of Sciences, founded in 1793, a lecture by the founder of the Center of Biotechnology impressed us with the story of biotechnology's birth in Cuba. On a leisurely evening stroll along the Malecon, the seawall regarded as Havana's living room, we saw the diversity of Cuban urban life and witnessed the warmth of their friendship, to us and to each other. At a community environmental project located on the outskirts of Havana, we observed the fruit of reclaimed urban wastelands being transformed into productive producers of organic crops; an effort repeated throughout the city to feed its citizens. From a computer club at the Universidad de la Havana to a community computer lab nestled in a busy side street of central Havana; from a tour of a rural sugar mill, still operating since 1865, to dialogues with representatives of the prestigious faculty of CUJAE, the nation's premier center for science and technology education, our exposure to Cuban society was intense, broad-based and endearing. And yes, we came to a greater understanding of how technology can be appropriately integrated for positive social and economic development.

This report details the lessons learned on appropriate technology from our seven days in Havana and shares comparisons with life in the U.S.

Preconceived Notions: As Americans, we are generally proud of our democratic government. Our system of capitalism forms the foundation of much of our worldview. Cuba was a culture shock for us. Prior notions were immediately challenged by a new reality. Our naïve inquiries were received with patience and poise by our hosts. The responses we received challenged us to dismantle decades-old walls of ignorance, which had relegated Cuba to the realm of an undeveloped banana republic with a communist

legacy and a well-known, bearded dictator who never seemed to go away. To connoisseurs of music, cigars, and boxing, Cuba has a well-known legacy. However, on the world stage of social progress and technological advancement, the country is generally not perceived as a real contributor. We were wrong!

“Dependent, Disheartened, and Depressed” were just a few words that symbolized one student’s preconceptions about the Cuban people and their society. By the end of the week, her words had transformed to “Captivating, Inspiring, Dignity, and Unconquerable Spirit”.

Opinions of Cuba were received by a diversity of people before and after the trip. Two letters received in response to our request for financial support serve to highlight some of them. One letter saluted our efforts. The writer, whose wife was Cuban, shared very positive memories of his own recent visit to the island with his family. Another letter, written by a Cuban immigrant now a successful businessman, related the bitter experiences his family suffered as a consequence of the Cuban Revolution in 1959. Another acquaintance, a former leader within the Communist Party of the Soviet Union and now a U.S. citizen, related to me the “state of fear” in which he lived in Moscow. There, his family lived a lie of loyalty to the Communist Party while, each day, secretly hoping and planning for their escape. His views of communist Cuba were shaped by that difficult experience.

Over the past decade, Cuba has witnessed a close alignment between its needs and the solutions to those needs which integrate technology, public policy and the “spirit of the revolution”. The priorities identified by the government are: adequate education for all, adequate health care for all, and economic self-sufficiency which maximizes the human and natural resources of the nation. This report hopes to shed some light on how these priorities are being addressed.

II. TRIP ITINERARY

This trip was an invaluable and unique experience. Most of the students were on the verge of concluding their undergraduate program at Howard University. Diverse roads to their future lay ahead. Far from a Caribbean vacation, one week in Cuba represented a quantum leap in their education and world view, clearly leaving an impact on their future direction.

Date	Activity
Saturday, March 5, 2003	Arrival in Havana, Cuba
Sunday, March 6, 2003	“Survey of the Cuban Revolution” Video; Bus tour of Havana and Walking Tour of old Havana
Monday, March 7, 2003	Visit to the Museum of the Revolution; Visit to a Community Environmental Project; Lecture: “Role of Technology in Revolutionary Change;” Lecture: “Multiculturalism: Race Relations in Cuba”

Tuesday, March 8, 2003	Visit to a community computer club; Visit to University of Havana- meet students and faculty; Visit to CUJAE- meet students and faculty
Wednesday, March 9, 2003	Visit an urban agricultural project and a sugar mill; Lecture: "Cuba's Health Care System"
Thursday, March 10, 2003	Meeting with former Director of Biotechnology Center; Meeting with Official of Ministry of Science & Technology; Lecture: "Role of Technology in Cuba's Education System"
Friday, March 11, 2003	Lecture: "Economic Development in Cuba"; Visit to the Beach;
Saturday, March 12, 2003	Departure from Havana Cuba

Planning for this trip was courtesy of the Havana office of the Center for Cross Cultural Study, which is based in Seville, Spain.

III. A BRIEF HISTORY OF CUBA

- 1492** Columbus lands in Cuba. The island is occupied by the Tainos and Cibongs, Indian refugees from Florida, Puerto Rico, and South America.
- 1510** Rumors of gold. King Ferdinand of Spain gives orders to conquer the island. Chief Hatuey of Hispaniola warns the Tainos of the Spaniards intent and organizes an effective resistance. The Indians, they are defeated.
- 1524** African slaves are introduced to the island.
- 1535** Less than 2000 Indians remain in Cuba. Most have died from murder, starvation, and disease by the Spaniards.
- 1774** Blacks and mulattoes number forty-four percent of the Cuban population
- 1791** Toussaint L'Ouverture leads slaves to a successful revolt of the French colonists on the neighboring island of Hispaniola (Haiti). The impact is far reaching.
- 1819** Era of the Independence movement in Latin America led by Simon Bolivar and Jose San Martin
- 1823** John Quincy Adams recognizes Cuba and Puerto Rico as "natural appendages of the North American Continent" and "...an object of transcendent importance to the commercial and political interests of our view." The Monroe Doctrine is announced in December 1823.

- 1850** Movement by the U.S. to annex Cuba. “Cuba is already ours, I feel it in my finger ends,” states Secretary of State, James Buchanan. All efforts to annex Cuba cease with the start of the U.S. Civil War.
- 1868** A 30-year struggle begins for Cuba’s Independence from Spain, led by Carlos Manuel de Cespedes and Antonio Maceo.
- 1892** Jose Marti, writer and poet, organizes the Cuban Revolutionary Party with the goal of Independence. Spain is almost defeated by the Cuban Liberating Army.
- 1895** “By the beginning of the year 1895, Cuba had definitely been converted into an economic colony of the United States.” 70 to 90 percent of all sugar goes to the U.S..
- 1898** The U.S. declares war on Spain with the purpose of capturing Cuba. The Spanish-American War nets the U.S., the islands of Cuba, Puerto Rico, Guam and the Philippines.
- 1901** Passage of the Platt Amendment – the amendment to the Cuban constitution by the U.S. mandates total U.S. control over Cuban affairs.
- 1955** The July 26 Movement is formed to break the oppressive strangle-hold maintained by the U.S. and the sucocracy.
- 1956** Ernesto ‘Che’ Guevara, Fidel Castro, Camilo Cienfuegas, and Frank Pais spearhead the revolutionary movement using guerilla warfare to overthrow the government.
- 1959** The Revolution is a success. President Batista flees to the U.S. Fidel Castro states, “Winning the War was not the Revolution. It gave us the right to make the Revolution,”

The Revolution of 1959 in Cuba began a process of continuous examination of values and government policies to institutionalize success for its citizens. First, it had to eliminate all vestiges of the old socio-political and economic order (its government, its economic and social base, and its national alliances) before it could implement something new.

Today, the Revolution is still alive. Human development through egalitarianism remains a national priority. The conditions and strategies have changed since 1959. The ideology has, however, remained constant. Fidel Castro has been a constant. Yet, he too has changed. He has made mistakes and he has seen victory. He has learned to bend on old ideas, but remain true to the big idea of “the Revolution.” This process of self-analysis and improvement is celebrated in Cuba as “the Battle of Ideas”.

With the fall of Soviet communism in 1991, the socialist experiment in Europe, which so engaged world politics for nearly a century came to an end. In a move to appease its “new friends” in the west, the Soviets cut its long-standing trade with Cuba in 1991. Within a few months, 85% of Cuba’s foreign trade was eliminated. Cuba’s GDP dropped by over 35 percent. The USSR oil-for-sugar trade was worth over \$5 billion annually to Cuba.

Economic instability leads to social unrest, which in turn, leads to political upheaval. Beginning in 1993, a series of reforms began to quell the looming crisis. Referred to as “The Special Period In a Time of Peace,” the state began to let go of controls and implement a series of austerity measures imposed on all Cubans in an effort to regain control of the deteriorating national welfare.

The trauma, which ensued to the island’s economy, triggered social chaos. Cuban citizens unable to make ends meet and unwilling to make the personal sacrifices demanded, left the island any way they could. During this period, Cuba maintained the priority of pushing advancements in science and technology for the direct benefit of its citizens as well as in and for the benefit of those in Latin America and Africa.

Today, Cuba is still in its Special Period, although the daily challenges have significantly eased. The appropriate integration of technology along with the “will” of the people to lift up themselves, has bred success.

“Capitalism appeared to reign supreme throughout the planet with the market presented as the only viable economic system for human kind”, notes Peter Taafe in his book *Socialism and Democracy*. Cuba has remained a steadfast exception to this wave of capitalism. Yet, the dollar is now widely accepted currency in Cuba while the peso has dramatically declined in value. Fearful of capitalism’s consequences, they compromise but they hold on. This is evident in the three need areas identified as national priorities: education, health care, and economic self-sufficiency.

IV. U.N. HUMAN DEVELOPMENT INDICATORS - 2003

After our overwhelmingly positive introduction to Cuban society, it was reasonable to expect that, maybe, we were exceedingly exuberant with our findings. Maybe, the real picture of Cuba had eluded us. After all, it was only a seven day visit to one city on a big island. What additional information could be provided to “uncloud” our perspectives?

The following table notes Cuba’s ranking on the world stage as measured by the United Nations Human Development Index (High Score = 80+; Mid = 50 – 79; Low Score = 50 and below). The index, developed by the United Nations Development Program (UNDP), is a composite of a universal applied social system to measure social and human development. Information on the criteria may be obtained directly from their website at: www.undp.org

Human Development Indicators 2003

(U.N. Development Program, Human Development Report)

Human Development Category	Cuba Score (Highest)	Top Ten (Nations in order of rank)	Cuba's Rank out of 175 Nations
I. Life Expectancy	76.5 (81.3)	Norway, Iceland, Sweden, Australia, Netherlands, Belgium, U.S., Canada, Japan, Switzerland	11
II. Adult Literacy Rate (% age 15 and above)	96.8 (100)	Same as I.	56
III. Combined Primary, Secondary & Tertiary Gross Enrollment Ratio (%)	76 (114)	Australia, Sweden, UK, Belgium, Finland, Netherlands, New Zealand, Denmark, Norway, Canada	57
IV. GDP per capita	\$5,259 (\$34,320)	U.S., Iceland, Norway, Denmark, Switzerland, Netherlands, Canada, Austria, Australia, Germany	84
V. Life Expectancy Index	0.86 (0.94)	Japan, Iceland, Sweden, Hong Kong, Norway, Australia, Canada, Switzerland, France, Spain	28
VI. Education Index	0.90 (0.99)	Norway, Sweden, Australia, Netherlands, Belgium, Denmark, UK, Finland, New Zealand, US	38
VII. HDI Human Development Index	0.806 (0.944)	Norway, Iceland, Sweden, Australia, Netherlands, Belgium, U.S., Canada, Japan, Switzerland	52

The UNDP views development in terms of building human capabilities to their full potential (The range of things that people can do or be in life). Cuba's standing on the world stage has been relatively strong in several UNDP indicators. What is most remarkable is that its high marks in health and education comes from a nation where the per capita GDP is only \$5,259. The integration of technology with public policy has clearly produced lots of 'bang for a small buck'.

V. APPROPRIATE TECHNOLOGY AND IDEOLOGY

Technology (or science applied) represents both the current and future applications of engineering and science to meet a society's needs and/or desires for development. Its primary purpose is to reduce the work required to meet these societal needs. In the U.S., where the latest technology is in grand abundance, work has been significantly reduced. But, to what end? The direct relationship of more leisure to less work is not apparent in proportional measure. We produce more and create great revenue as a nation. Yet, job stress remains high and leisure remains fixed. Wealth distribution flows downward at a trickle. Technological efficiency reduces or eliminates the skillful, productive work of human hands. It recognizes no self-limiting principle.

Appropriate technology, as defined in this report, is the management of technology and its outcomes to be responsive to the needs of the society it serves and be in the balance with the natural environment impacted by it. Appropriate technology also tries to preserve the dignity of meaningful work. How a society regards these objectives dictates its sociological outcomes.

Appropriate technology's link to ideology and public policy is inseparable. When ideology (capitalism, democracy, communism, socialism, or any other "ism") is contaminated by self-interest, the foundation erodes and the quality of life declines. The Cuban government attempts to guide foreign direct investment into alignment with its ideological framework. For example, firms whose primary approach to business is exploitative in nature are not welcomed. Many U.S. multi-national companies, or their subsidiaries, are actively involved in six of the seven "black-listed" nations accused by the U.S. Department of State of state-sponsored terrorism. Cuba is the only nation where these companies are not engaged in business activities. The U.S. corporate presence in communist China is thriving because the door for profit generation is open. In Cuba, that door is closed.

Sustainable development and betterment of human welfare in developing nations begins with ideology. The U.S. remains at odds with the ideology of Cuba! Democracy versus Cuban socialism! Each nation embraces its ideology as the path to social progress and economic development. It shapes the direction of their technology.

Adversity tests the depth of ideology. Removal of the economic "crutch" provided by the Soviet-Cuban relationship forced Cuba to test and re-examine the rationale of "The Revolution." I believe that the initiatives of the Special Period, combined with US embargo, have indirectly resulted in the overall betterment for Cubans. How so? The adversity of the Special Period and Cuba's response to it has led to diversification with the economy, organically grown crops provide for a healthier diet, there is greater life expectancy, and high marks for overall human development. All this, without completely abandoning their ideology! The people of Cuba are sustained by an empowering. Their future appears to be brighter than their past.

The story of Cuba's experiment in socialism includes the horror of violence against those who seek their individual rights over others. On the other hand, Cuba boasts significant contributions to humanity within many sectors of our global village. Photographer, Adam Kufeld in his book *Cuba*, notes, "Cubans look out for others, whether the stranger is down the block or halfway around the world. Their ethos gives them a consciousness that makes them part of a human family." Cuba's socialism, like American democracy, was born out of revolt against the oppression of a foreign government and the dignity of independence. In the case of Cuba, the enemy was "us".

The Revolution in Cuba, therefore, remains a work in progress. How did they survive? The answer rests in Cuba's national pride and its tight clutch to its socialist ideology. Technology in this Special Period has been submissive to and inseparable for ideology. Virtually all applications of technology in Cuba were focused on improving the quality of life using available human and natural resources. People are productive, wealth is distributed evenly, and leisure is in balance.

VI. APPROPRIATE TECHNOLOGY IN EDUCATION

Cuba desires to develop its citizens into the most educated people of the world. While this may seem like a far-fetched goal to most U.S. citizens, upon closer examination the goal may have merit. Cubans have at least a ninth grade education. In the US, eighty-four percent of the population has a high school diploma. Twenty-four percent has four or more years of college education. However, within the U.S. there are high levels of disparity across racial, gender, and class lines.

How has technology contributed to Cuba's priority of educating its people? The following points help to answer this question:

1. Regardless of location within the country, each student has access to a computer, TV, and VCR. Where access to electricity is absent, solar energy and other alternative power solutions have been implemented. Television programming includes strong educational components to viewers. Since education is free for all Cubans, this medium serves as a powerful tool for instruction. Daily instruction options include English, Mathematics, and Science.
2. With a national goal of universalization of education to ensure a consistent level of instruction everywhere within the country, universities such as CUJAE and Universidad de la Habana are developing curriculum standards and putting them onto CD's. At the beginning of an academic year, a student will be given a CD containing all the instruction for the semester. Teachers will be available to guide the students through the independent study material. They will meet with the child regularly for clarification and evaluation of their progress. Both college and elementary/secondary education will be addressed in this fashion
3. Cuba is one big university. Cuba's center for science and technology education (CUJAE) is leading the effort to take the university "out of the walls." Innovations for distance learning are fully developed and are being implemented. There are 50 campuses and 217 research centers for all aspects of the economy;

- affiliated distance learning sites have full access to the “digital campus” of CUJAE from the basic and exact sciences to the social sciences. Career selection is guided by the current and future needs of the country. University students are ensured employment in their technical fields with the satisfaction that their skill and training are aligned with the real needs of the nation. Almost all CUJAE students volunteer to do projects within local communities keeping their education relevant to the society.
4. Computer clubs are sprouting in most communities around the country and book fairs are held on a regular basis.
 5. A National System of Innovation was organized where workers interface with scientists to develop solutions to production problems. Enterprise incubators are another outcome of this national priority on education.

VII. APPROPRIATE TECHNOLOGY IN HEALTH CARE

Cuba ranks second in the world in the number of doctors per person. The Cuban model for health care is a Soviet model. Health care is administered by the government. It is a privilege of all Cuban citizens and is disbursed without charge. The government’s commitment to carrying out these aims is reflected in its spending patterns. The budget for public health and research has steadily increased, regardless of the nation’s economic circumstances.

Cuba’s National Health Care program includes the following aims:

- To increase the quality of medical care to all its citizens
- To improve performance in all relevant health care indicators
- To improve the economic efficiency of its health care delivery system
- To increase the population’s level of satisfaction with the quality of health care delivery

Since the 1960’s, Cuba has been building the infrastructure for its current health care system. Starting with a community medicine model in the 1970’s and transitioning to a family medicine model in the 1980’s, each individual is assigned a basic health care work team.

Technology is directed towards the priorities and aims identified above. With a decentralized health care system, (there are over 15,000 family doctors’ offices) quality control processes are focused on ensuring that there is no disparity. The need for continuous training, assessment, and research is met by technological innovation. Cuba’s holistic approach to health care and preventive medicine integrates multiple socio-biological, clinical-epidemiological and environmental factors. For each disease, there is a national program for diagnosis and treatment.

Cuba shares the world stage with other developed nations as a leader in the areas of health and biotechnology. Active projects include: gene therapy, therapeutic cloning to reproduce any type of tissue, and the development of a growth factor capable of

developing blood vessels to strengthen those damaged by arteriosclerosis, thus aiding in recovery from cardiac injury. One lecture related from personal experience the development of Cuba's biotechnology industry. It was interesting to discover that recombinant Streptokinase "Heberkinasa", a thrombolytic inducing agent that causes the degradation and dissolution of fibrin, is of widespread use in Cuban clinical medicine, particularly in the management of cardiovascular diseases. This agent is excessively expensive to Americans and is not readily available to all. Even more inspiring was learning of the challenges faced by the research team as they raced against the clock to be the first in the world to produce the drug.

The integrity of Cuba's health care, biotechnology, and medical teaching program inspired one student in our group to apply for and receive admission to medical school in Cuba.

PERSONAL REFLECTIONS: A Comparative Analysis

By: Brian A. Stephenson

Competition and Preference

The U.S. is, without question, the most technologically advanced nation in the world. Our commitment to pushing the frontiers of science and technology is largely responsible for our highly regarded quality of life. At the root of our strength is our spirit of competition. The ability to compete on an individual, corporate, and institutional level is a perceived inalienable right in which we all share great national pride.

Competition inherently thrives on inequality in search of an “edge”. Our global claim to superior military and economic power was bred in sustaining an economic imbalance between race and class. At all points of our history, our competitive spirit has sought to establish an “un-level” playing field in order to succeed. Our great achievements, on every scale, have often resulted from the introduction of an advantage. Slavery, bolstered by a supportive governmental and legal system, empowered the rapid rise of the south into a very wealthy confederacy. During the industrial age, with cheap labor in high demand and our cities exploding with immigrants, and un-level playing field in labor regulations was a critical fuel to rapid economic our growth. Even in our highly regulated economic order, the veiled alliance between government and industry has engendered the global domination of multi-national companies. With the masterful control of a puppeteer’s hand, governments everywhere, including our own, execute directives in the interest of private enterprise.

The vestiges of economic imbalance, developed from the infancy of our republic, remain firm and steadfast today, preserving a status quo, in spite of gains in women’s rights, affirmative action, and our acclaimed democratic process. The unwritten qualification for the Office of the President of the U.S. is still wealth. In all sectors of life, (education, health, employment, government, housing, and commerce) preferential advantage as a means to success remains overriding national character.

A different socio-political-economic model was observed in Cuba. The results are worthy of consideration and speak volumes by themselves. From the first day of our visit, it became clear that “The Revolution” was not an event of the past but an ever-present state of mind. It continues to critique and refine itself in the minds of all Cubans. The ideas of the Revolution were noted to bear a striking resemblance to veritable Christian values: For example, “bearing one another’s burdens”, “seeking the good of my neighbor over myself”, and “setting free those who have been held captive (economically, mentally, and politically)” are all strong themes. Cuba is in the midst of change but the idea of the Revolution remains constant in all its endeavors.

The past decade of Cuba’s development (1993 to 2003) has synthesized the Cuban brand of socialism, which began in 1959, with technological innovation for positive economic performance and human development. The gains achieved by the “little island” have

been in spite of a forty-four year legacy of U.S. attempts to discredit, dismantle, and disenfranchise the people of Cuba and their government.

The lack of a competitive framework within Cuba's educational system facilitates the goal of equal access to information. It creates a positive environment from which Cuba is able to develop its human resources to their fullest potential. This emphasis on education ultimately contributes to their economic, political, and social stability. Where disparities are identified, additional resources are provided to eliminate the imbalance. Competition is not at the expense of one's neighbor. All benefit and rise together. As an example, the government recently legalized the euro and the dollar to neutralize the detrimental impacts of a bourgeoisie black market. Tourism had begun to create unwanted disparities in the society.

Cuba's relationship with Russia from 1960-1980 accomplished several protectionist objectives for the Castro government. What it did not do was restructure or strengthen its economic machinery, thereby enabling the country to be a strategic player in the global marketplace. Possibly the same conclusion may be drawn for any of the other former Warsaw pact nations.

The initiatives of the Special Period in Cuba appear to be less a natural development of Cuban socialist thought and more a reaction to the difficult economic constraints experienced after the loss of Soviet trade and subsidies. A combination of forced, coerced, and voluntary measures required Cuban citizens to sacrifice to ensure their survival. To their credit, Cuba's solutions to economic viability in the global marketplace are anchored in the most positive aspects of socialist thought: to provide for the needs of all citizens, without bias as to race, class, creed, or sex.

Examples of their social and economic policies are:

- **Diversification of revenue from a 90% sugar-based economy in 1980 to 40 % by 2000.** Cuba's economic tie to Russia did nothing to alter this dependency.
- **Commitment to the long-term development of its human capital in spite of short-term economic deficits.** Cuba's investment in education and health care never wavered throughout its most difficult years. The wisdom of that priority has already showed positive returns. A recent trade agreement with Venezuela exchanged Cuba's medical expertise and intellectual know-how for oil.
- **Commitment to the integration of technology aligned the long and short-term needs of the population.**

The direction of research and innovation begins with motive. Cheaper, faster, and more efficient are common goals in the technological world. The question to be asked is: For whose benefit and to what end? This critical question makes all the difference in the outcomes produced. A study of technology and world history reveals a most telling fact. Technological development has been overwhelmingly prompted by the military interest

of the state. Military power in turn, dictates economic power. In the present era of the super-corporation, national boundaries dissolve in relevance and the corporate interest begins to dictate military action and the priorities of development.

COMPARISONS: CUBA –UNITED STATES, 2003

Reference: UN Development Program

The following chart presents selected comparative statistics for the two nations. Though significantly smaller in population and economic strength, Cuba rivals the United States in several important measures of quality of life. Notably, one questions the dramatically high spending per person on health care in the U.S. relative to Cuba. Both nations are achieving similar levels of performance for vastly different per person costs. The difference may be due to the profit-centered, competition-based health care market of the U.S.

Large US pharmaceutical firms routinely invest large sums of money seeking newer and better solutions to the nation's health care problems. However, since then driver is profitability, and market dominance the process is subject to inefficiencies and misplaced priorities. Consequently, the costs are passed on to the consumer regardless of their ability to afford it. Those who can't, simply go without.

Characteristics	U.S.	Cuba
1. Total Population (millions), 2001	288.0	11.2
2. Probability at birth of not surviving to age 40 (%of cohort) 2000-05	4.2	4.1
3. Urban Population (as % of total) 2001	77.4	75.5
4. Population with access to improved sanitation (%), 2000	100.0	98.0
5. Births attended by skilled health personnel (%), 1995-2000	99.0	100.0
6. Public expenditure on education (as % of GDP), 1998-2000	4.8	8.5
7. Public expenditure on health (as % of GDP), 1998-2000	5.8	6.1
8. Physicians per 100,000 people (1990-2002)	276	590
9. Spending in health per capita	\$4,499	\$193
10. Gender Empowerment, Seats in Parliament held by women (as % of total)	14.0	36.0

Mis-Information

In Cuba, the media is state-controlled. The state has, however, been kind enough to present its citizens with a free and open flow of accurate information. Television in Cuba, for example, operates in a commercial-free arena. Although state-run, the character of the news was not “indoctrination”, as was expected, but a multi-faceted presentation of the facts from reporters around the world. It is used as a routinely as a medium for local and international news, entertainment, and distance learning. Quite the opposite was apparent as we returned home in time to witness the U.S. “Shock and Awe Campaign” against Iraq. Our media at home seemed to have evolved into a ‘state-run’ organization, freely embedded with our military, and speaking with one sugar-coated voice.

At our present peak in the “information revolution”, the forces, which dominate and control information quality and accuracy in the U.S. appear biased and unreliable. “The many are kept in order by the few through Opinion”, quoted David Hume. The imperative of business and industry to promote itself and enhance its competitive position through the media, in all its forms, is the number one driver of information flow to citizens. Mis-Information and political positioning U.S. media coverage of Cuba has a long and well-documented past. U.S. policy with respect to Cuba, in particular the maintenance of the embargo, seems directly tied to appeasing the Florida electorate, regardless of the political party in office. The recent referral to Castro’s Cuba as part of the “axis of evil” by President Bush was frightening to many Cubans. It, in itself, is a testimony to the desired image sought by the U.S. of Cuba; propaganda setting the stage for future aggression and/or votes; the bitterness of our pride clashing against the logic of free trade.

The media is also a tool of American politics. Writer Gore Vidal aptly points out, “He who can raise the most money to buy time on television is apt to be elected President by half of the electorate that bothers to vote.” He also notes, “Our presidents, now prisoners of security have been for a generation, two-dimensional figures on a screen. In a sense, captives of the empire they created. Essentially, they are men hired to give commercials for a state, which more and more resembles a conglomerate like General Electric.”

Are these comments relevant to our larger discussion of appropriate technology? Certainly! Technology in the media remains subject to ideology. It is used to shape and reinforce ideology for the benefit of the state.

Shortly after our return, the Bush administration made a decision to stop granting educational licenses for travel to Cuba. The program initiated by President Clinton in 1999, had enabled as many as 100,000 U.S. citizens to visit Cuba legally. The rationale has been human rights violations of the Castro regime (a popular label used by the media to identify the “bad guys”). A thorough examination of the truth would show a different reality.

Economic Development Under an Embargo

Compared to the United States where capitalism defines the economic architecture, Cuba's evolving brand of socialism has produced leadership gains on the world stage in many areas.

Our exposure to Cuba was focused on health, education, and commerce. Ironically, part of their success has been a by-product of the U.S. economic embargo on the island. For example, because the embargo limits access to fertilizer and food imports, the task of feeding its citizens became more difficult. The quality of crops produced and consumed by Cubans is now arguably superior to that consumed by those in the US because of their lack of preservatives and pesticide contaminants. In contrast, 90% of US farmland is currently owned roughly by six powerful corporations. The quality of foods we consume and export becomes more and more questionable. Only the U.S. Food and Drug Administration stands guard against unhealthy foodstuffs by this powerful corporate bloc. The profit-motive, when in the hands of a powerful few, has its limitations. Organically grown, disease-resistant crops are being produced using genetically engineered plants.

Conclusion

Prior to my trip to Cuba, I wondered what lessons I could learned about appropriate technology which could not be merely "looked up on the internet". I have visited other undeveloped countries and was already sensitive to their challenges. The language barrier of Spanish was among my significant insecurities.

Now, several months since my return, my one week in Havana was an experience I will forever value. It has changed and impacted me in a powerful way. In spite of the multiple failures evident in the political and economic systems here in the U.S., the trip has help make me a better citizen. To passively sit and accept the 'status quo' of our democracy gone out of control is easy but irresponsible. We all have to have a part to play in the stewardship of our global village. It requires that we be diligent in several areas: to seek out and demand accurate news and information; to impact the motives and priorities of technological development; to use the power of our vote and our voice; to keep the ideas of our own rehabilitation active.

On behalf of the students and faculty of the HUPAT organization, I thank you for your support.

Brian Stephenson
August 19, 2003

CUBA: A PHOTO ESSAY



Figure 1 - "We all became inventors; there was no alternative"



Figure 2 - A computer community center in Havana.

"If you don't know, Learn; if you know, Teach"



Figure 3 - Lunch Break at the Environmental Education Center



Figure 4 - Students at Universidad de la Habana design interactive computer programs to teach secondary students



Figure 5 - Sunday afternoon entertainment for all



Figure 6 - Che' Guevara, Ministry of Internal Affairs National Hero



Figure 7 - Concrete beams to renovate some of Havana's magnificent architecture



Figure 8 - The Next Generation of Cubans



Figure 9 - Group Photo with Faculty at Universidad de la Habana



Figure 10 - CUJAE - Center for Science and Technology



Figure 11 - Universidad de la Habana,