



CANDLE IN THE DARK

A R M E N I A N S P I R I T P R E V A I L S

Dr. John Gleason, professor of decision sciences in Creighton's College of Business Administration, was a visiting scholar at the American University of Armenia last fall. There he served as visiting professor of industrial engineering, director of the Environmental Research Center and visiting scientist in the Engineering Research Center. The graduate degree engineering program is administered through the University of California—Berkeley. One of Dr. Gleason's courses, Management of Environmental Risk, is believed to have been the first of its kind to be taught in the entire former Soviet Union. Located in the capital Yerevan, one of the oldest cities in the world, the American University of Armenia is decidedly new, having been established in 1991 as the first American-style university in the Soviet Union. It is a joint undertaking of the University of California and the Ministry of Higher Education and Science of the Armenian Republic. In the following article, Dr. Gleason focuses on his Armenian experience, taking

into account some of the more recent events that have shaken this ancient Christian outpost, bounded by Georgia, Azerbaijan, Iran and Turkey.

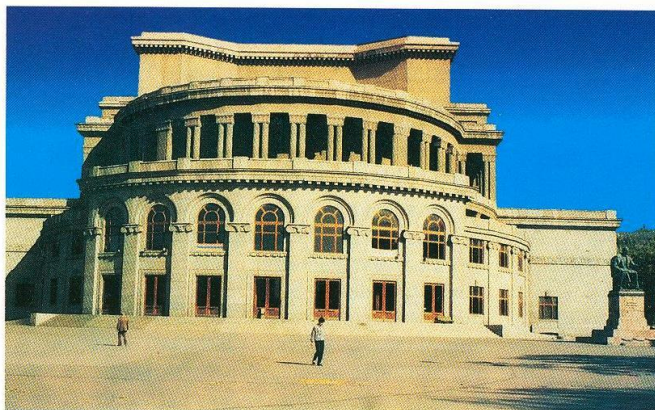
WHEN A POWER
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By Dr. John M. Gleason
Professor of Decision Sciences

During my stay in Armenia, I visited with a wide spectrum of people, including farm workers, assembly line workers, engineers, scientists, business leaders, government ministers and even a former member of the Supreme Soviet. Such associations gave me a general sense of Armenian and Soviet life.

However, of all my experiences in Armenia, one evening stands out. A crowd was gathered at the Yerevan Opera House and the performance was under way. (Cultural activities in Armenia are well-attended, perhaps as a respite from the hardships of daily life.)

When a power outage plunged the cavernous opera house into darkness, the audience refused to be deprived of its entertainment. Instead of the indignation that Americans



The Yerevan Opera House, where Dr. Gleason saw a demonstration of the Armenian spirit, as a flashlight and a candle lit the darkness.

could be expected to exhibit under those conditions, the Armenians simply laughed.

Then a few flashlights were turned on (most people carry flashlights at night because the streets are unlighted due to power shortages). Two members of the audience went to the stage. One directed his light on the pianist's keyboard, and the other lit a candle to illuminate the conductor so that the musicians could see him.

I will never forget that concert, in a hall blackened except for the illumination of a flashlight and a candle. This experience is an example of the resiliency of the Armenian spirit, a spirit being severely tested now by harsh economic and political times.

Before the collapse of the Soviet Union, the quality of life in this country of 3.3 million was among the best in the Soviet world. Although their standard of living was not equal to that of the United States, Armenians certainly would not have envisioned recent living conditions without electricity, heat, water or telephones.

Today, economic conditions in Armenia are the worst among the former Soviet states. These hardships are rooted in ethnic and separatist problems similar to those which grip much of the former Soviet Union. Both ethnic unrest and economic hardships have intensified this past winter.

Crime, including organized crime, is a growing concern. Gunfire, mostly from handguns, is frequently heard in the streets at night, punctuated by occasional automatic weapon fire.

Armenian militia groups are fighting in Azerbaijan, and it is not uncommon to hear and feel the shock of artillery explosions. Long-standing enmity exists with Turkey, and there is ethnic and separatist fighting in neighboring Georgia.

The latter conflict frequently interrupts the gas supply (the source of fuel for electrical generators), telephone communications and rail transportation. Electricity is available only for short periods, and fuel shortages limit supplies of hot water and heat.

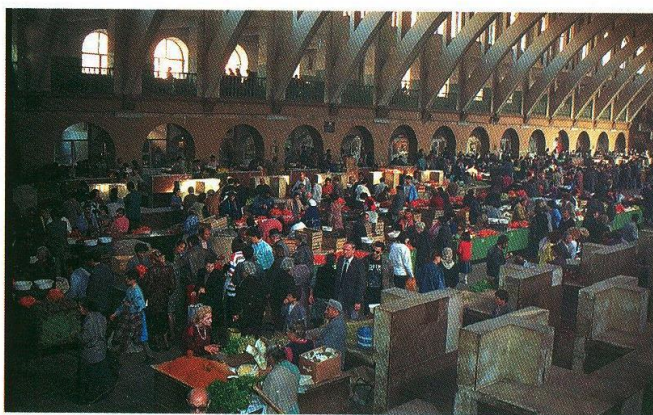
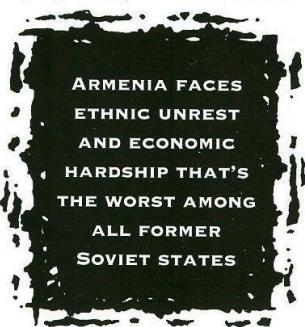
Although I was in Armenia during the best time of the year, life was more difficult than I had expected. Conditions further deteriorated during the winter following my departure, when fuel blockades resulted in no electricity, heat or water. In Yerevan and elsewhere, books were burned for fuel.

Due to efforts of its Western supporters, the American University of Armenia was provided a generator, which enabled the building to be heated to about 40 degrees during the winter. Students attended classes dressed in coats, hats and gloves. Many faculty members lived in their offices in order to avoid the harsher conditions in their apartments, and the trials of walking to work through dark, snow-covered streets. (Public and private transportation had been suspended because of the fuel crisis.)

Ethnic and other hostilities in the surrounding region have created more economic problems. There is little construction activity in Armenia, for example, and fuel shortages have brought to a standstill many business and manufacturing facilities.

The Armenian economy is a cash economy; there are no checking accounts, and neither credit cards nor travelers' checks are accepted. While money can be deposited in a bank, 24-hour notice is necessary prior to withdrawal. Even then, there is no guarantee that the bank will have the funds necessary for the transaction.

Food was plentiful during my autumn visit, and one could enjoy a steak meal for a price ranging from 30 to 50 cents,



In Armenia, a central marketplace provides a gathering point for merchants to hawk their wares, when they are available to sell.



This, says Dr. Gleason (who took all the photographs), is the Armenian version of a gas station. People bring buckets to the tanker to collect a small amount of gasoline.

depending on the exchange rate. The availability of food worsened with the onset of winter, and famine conditions occurred in some areas.

While lack of electricity, heat, water and food places significant burdens on the population, hyperinflation has created even more difficulties. The exchange rate increased from 200 rubles per dollar in September to 400 rubles per dollar by November, and inflation continues at more than 30 percent per month. There are lengthy bread lines day and night, and the price of a loaf of bread increased from 6 to 24 rubles during my short stay.

While inflation in Armenia continues to take its toll, under-utilization of human resources is also common. For example, the person who served as my teaching assistant holds a doctoral degree in chemistry and a master's degree in environmental engineering. The administrative assistant to the university provost holds a doctoral degree in laser physics. One of the service workers at the hotel was the sole source of income for her family, although her husband holds a doctoral degree in computer science.

Why such underemployment? The Soviet system discouraged capital investment and preferred to invest in people. Thus, there was little effort to update plant and equipment. For example, my research with a scientist at the Yerevan Physics Institute (established by Stalin in the 1940s) reintroduced me to vacuum-tube technology! Furthermore, one of the main pieces of research equipment, the 200-meter (circumference) electron accelerator, was inoperative due to the unreliable electric power system. Moreover, in touring the accelerator facility, I observed large pieces of plastic that covered sections of the accelerator. Lack of funding precluded

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roof maintenance, and water was dripping on this costly equipment.

On the other hand, the Soviet system willingly invested in the workforce, educating and employing highly-qualified scientists and engineers in a variety of research and manufacturing facilities. With the collapse of the system, many of these facilities — and jobs — ceased to exist.

The lack of an appropriate work ethic is also a significant detriment to an improved Armenian economy. Under the Soviet system, everyone was guaranteed employment. Consequently, there is a failure to recognize that a job, or a task, has an objective. Thus, workers often believe that simply going through the motions associated with a job is satisfactory job performance.

It will be years before problems related to the work ethic are solved, and the solution to such problems will come only from a growing exposure to free-world economic systems. In the short term, many joint ventures

between Western and former-Soviet interests can be expected to lead to disappointing results for the West. In the longer term, however, it is the growing competitiveness of these ventures, and the benefits to the former-Soviet interests, that will result in a changing attitude toward work.

Breakdowns in infrastructure, brought on by hostilities in surrounding countries, often bring Armenian business to a standstill.

A 540,000 square-foot machine tool manufacturing plant I visited was operating with a skeleton workforce even though the plant had a backlog of orders. Transportation

blockades and sabotage in neighboring countries had made it impossible to obtain reliable supplies of materials necessary

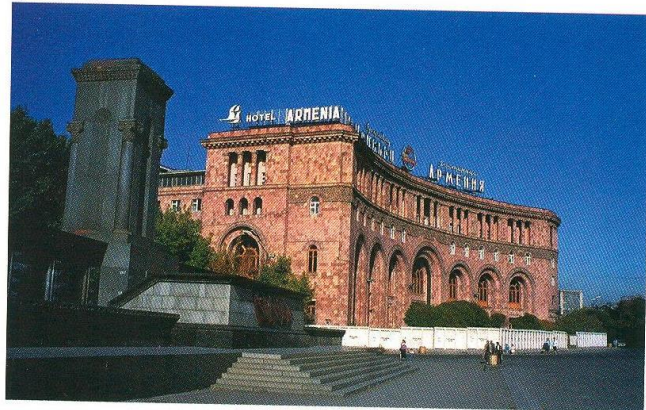


In Armenia, a long line often forms when bread is offered at low government-sponsored prices.

for production. Furthermore, the plant had a large inventory of finished product — some dating from 1991 — for which they had orders but no method of distribution. Again, transportation difficulties were related to regional hostilities. However, the plant's recent delivery of one machine to Iran was viewed as a godsend. The \$6,000 they received for the machine (only about one-fourth of the amount for which a similar machine would sell in the United States) paid the salaries of all plant workers for a three-month period.

Elsewhere, workers were using outdated equipment to produce goods from limited supplies. An automobile assembly plant featured equipment more antiquated than that which I had used when I worked on the assembly line for General Motors 25 years ago. Employees were producing vans — all of them blue — based on a 1960s design. (Blue was the only color of paint available at the time.) That plant, too, was operating with a skeleton workforce because regional hostilities limit the area in which vans can be distributed. Quality control was non-existent, and many of the limited number of van engines imported from Russia were inoperable.

While much of Armenia's industrial base is antiquated and



Beside the Hotel Armenia is the pedestal at left. A statue of Lenin rested atop it in the heyday of Soviet communism.

yields low productivity under even the best of conditions, there are also examples of promise.

A world-class manufacturing facility is nearing completion under a joint venture agreement between a British firm and the former Soviet government. The plant, which will produce numerical control manufacturing equipment, includes

MACHISMO, RHETORIC PREVAIL IN CLASSROOM

My teaching assignment in this former Soviet state featured two courses in the Industrial Engineering Program — Operations Research and Management of Environmental Risk. As I came to know the students, both classes provided a window on Armenian culture, including some of its past as well as its present struggles.

Students find it a novelty to be asked to express their opinions, and they sometimes find it difficult to place self-imposed limits on that freedom of expression. My first experience with a class discussion started with the typical respectful interaction between students, but degenerated into rather explosive student reactions to two students who refused to admit their explanation of a mathematical formulation was in error.

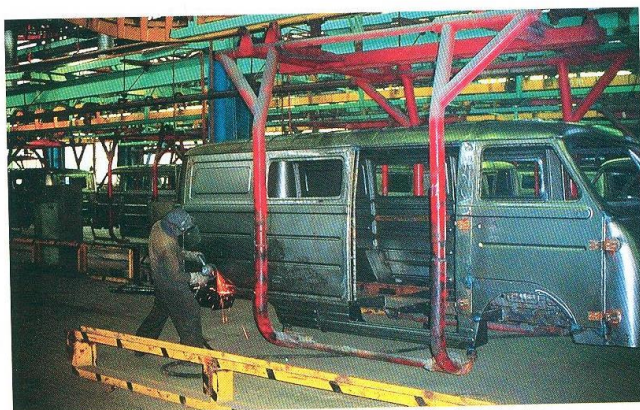
After class, one of the two came to see me. She indicated that, while she was supposed to have worked as part of a two-person team, the other student had refused to discuss the issues with her because she is a woman; consequently, they had worked separately. While women are provided access to higher education in Armenia, they often are not taken seriously; machismo prevails.

Sometimes, Armenia's political situation intruded unexpectedly in the classroom. One of my students,

a physician, went to neighboring Georgia to attend his sister's wedding. When he crossed the border on his return to Armenia, he was immediately conscripted for short-term military service because of heavy fighting between Armenia and Azerbaijan. He missed more than a week of class.

Armenians have a great affinity for Americans, and, in general, they treat Americans better than they treat fellow Armenians. However, the strident anti-capitalism that formed a foundation of the Soviet educational process, and the propaganda-type rhetoric that was encouraged under that system, are not far beneath the surface even today, especially for older people who feel they have lost status with the collapse of the Communist social structure.

This was evident in the closing comments of a short paper which one of the students wrote about an environmental problem in the United States: "Thus, the greed of capitalists and (the) heartlessness of bureaucrats crashed (crushed) the lives of hundreds of people under the iron heel of (the) modern capitalist state." In fairness, it should be noted that the student used similar rhetoric when discussing environmental problems in the former Soviet Union.



Using antiquated facilities, the Armenians continue to build vans based on old designs, painted with whatever color of paint is available.

high technology equipment from virtually all of the major industrialized nations. The plant is, without exception, the finest production facility I have ever seen.

Important problems will have to be solved, however, before the plant will become competitive with those of the Western nations that equipped it. These problems relate not only to work ethic, but also to ethnic and other hostilities, and to a limited power supply. (Plant construction began when Yerevan relied upon power from a nuclear power plant which has since been deactivated.)

This high-tech facility reflects the kinds of challenges which U.S. — and global — industry will have to confront. For example, efforts by U.S. industry to provide high-tech equipment to plants of this type will generate many of the jobs that are expected to result from proposed trade agreements. Thus, there will be a short-term boom in our manufacturing sector as U.S. industry produces equipment and machinery for such plants.

However, when these plants become operational, they have the potential to cripple our manufacturing base. Because of the high-tech nature of the facilities, many of the factors which limited productivity in more antiquated facilities will be absent.

The chief labor expenses in these newer plants will be concentrated in the salaries of Armenian engineers who receive the equivalent of approximately \$20 U.S. dollars per month. Thus, labor costs will be inconsequential compared to those in the United States.

Therefore, when we consider trade agreements, we need to take a long-term view. The short-term mentality reflected in business and government decision making in the United States, particularly with respect to the benefits of these agreements (that is the short-term economic boom), may have profound

future negative effects on the manufacturing sector in the United States, and ultimately on our children's standard of living.

The desperate state of the economy also affects the capability of the country to convert excellent scientific talent into meaningful benefits for the Armenian Republic. This became especially clear in my work with scientists in the Ministry of Nature and Environmental Protection.

For example, a specific chemical plant is known to be one of the major polluters in the Yerevan region. However, the level of pollution generated by that plant is unknown. Because funds were not available to properly maintain required pollution control equipment, the plant simply reported pollution at levels consistent with the design characteristics of the pollution control devices.

The government's environmental protection officials and scientists knew the reports were not accurate, but they were unable to mount challenges to the reported results because much of their own monitoring equipment was also inoperative due to lack of maintenance funds.

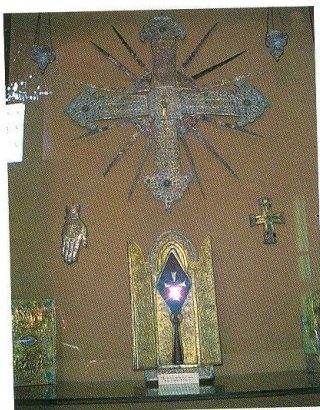
In another case, a small alabaster production facility had violated an agreement with the government and had released more than 1,000 tons per year of particulate pollutants into the atmosphere for over five years. Thus, while Yerevan and four other Armenian cities are listed among the most polluted cities in the former Soviet Union, the true extent of the environmental damage will not be known for decades. However, a recent study of workers at the aforementioned chemical

plant provides a grim example of potential health problems. Gynecological diseases were found among 75.8% of the

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This is an Armenian meat market, Dr. Gleason says. The reason it is short on shoppers is that its shelves are virtually empty.



At the center (bottom) is the head of a spear revered by the Armenian church as one which pierced the side of Christ on the crucifix.

women who had direct exposure to chloroprene (Phillip P. Ketchian, "Nayirit: Politics, History, Environmental Impact," *Asbarez English Weekly*, August 17, 1991).

Consequently, although Soviet environmental regulations are more strict than those in the United States, the lack of ability to enforce the regulations makes them practically meaningless. Moreover, because the environmental ministry and

the economic ministry are part of the same governmental entity, environmental recommendations are often subordinated to economic interests.

In that same vein, because of the severe economic hardships caused by fuel blockades of Armenia, efforts are now under way to reactivate the nuclear power plant in Yerevan. The plant was deactivated because of environmental concerns, and it would be the first ever to be reactivated after such a long period of disuse. The economic concerns prompting the reactivation efforts have the potential to result in an environmental catastrophe of unparalleled proportions.

Armenia has become the focus of interest for many Westerners. I stayed at the major hotel designated for foreign visitors, and a very large proportion of the visitors were Westerners volunteering their time and talents to help Armenian society. Although many were there under the auspices of the Armenian General Benevolent Union, others were volunteering their services at their own expense. Among them were American physicians assisting with Armenia's faltering health care system and scientists helping with environmental problems.

Given this type of Western support, education seems to be Armenia's brightest hope. I have never before experienced the dedication to learning exhibited by some of my students. It was not unusual, after I had made tangential references to something in class, for a student to ask if I had more material on the subject which I could allow him or her to take home to read (often by candlelight).

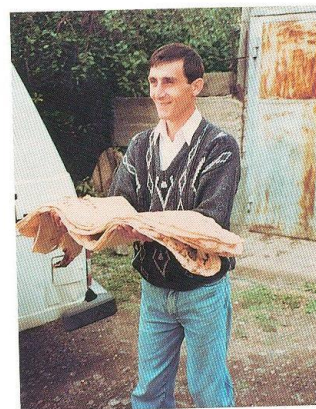
My Armenian experience also helped me recognize that even minor efforts can have a significant impact. On the last day of class, I distributed my Creighton business card and indicated that the

students should feel free to contact me if I could be of assistance to them at any time in the future.

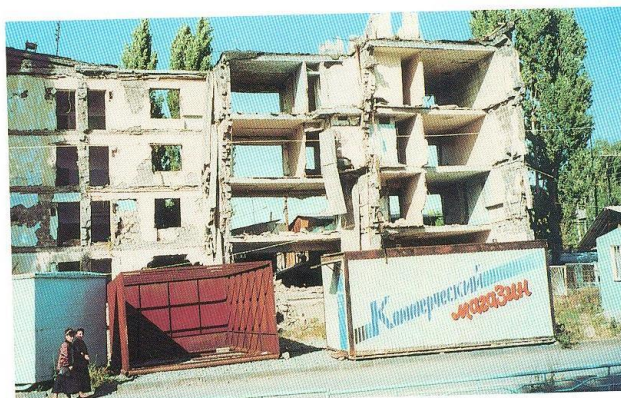
Later that day, one of the best students in the class came to see me and said, "I have lived for over three decades, and life has been very difficult. I can count on one hand the very few nice things that have happened to me—things that I will remember for the rest of my life. One of those occasions was today in class, when you distributed your business card and told us you would be available if we ever needed your assistance in the future. You will never know what that gesture meant to me..."

While there are significant problems to be overcome in Armenia, there are also great potential and opportunity. Education, together with the growing involvement by foreigners in joint ventures, may help this society come to grips with cataclysmic change.

In turn, efforts to develop this former Soviet state can be expected to provide increased employment opportunities in the global economy. However, short-term decision-making on the part of business and/or government in certain countries—including our own—could compromise the long-term interests of all. **W**



An Armenian offers freshly baked bread to visitors.



The horror of this picture, says Dr. Gleason, is that the box at right in the foreground replaces as an apartment the building in ruins behind it.