RPI Takes the High Tech Road

Rensselaer bets on advanced technology to promote local economy, own institutional aims

The Hudson River city of Troy, New York, still shows vestiges of the old prosperity earned by its iron works in the 19th century as well as the more recent scars of economic decline shared with most northeast industrial cities. Today, Troy is the center of an effort to spark a regional economic resurgence through advanced technology.

Currently, the main initiative is coming from Rensselaer Polytechnic Institute (RPI) in Troy. RPI aspires to do for the so-called Capital District, which includes Albany and Schenectady, what MIT did for the electronics enclave on Route 128 outside Boston and what Stanford did for "Silicon Valley" south of San Francisco.

RPI's boldest stroke so far is a decision to invest $3 million of its own funds toward development of a research park on 1200 acres of RPI-owned premium riverfront land on the eastern shore of the Hudson between Troy and Albany. Prime mover in the project is RPI president George M. Low, a former NASA career official who in his 5 years at RPI has made major changes in the institute's program and priorities.

RPI leaders make no bones about their high tech missionary zeal being rooted in institutional self-interest. As the "Rensselaer 2000" plan puts it, RPI has set its sights on being "one of a small number of first rank, internationally renowned technological universities." To achieve the goal, Low says it is necessary to be part of the kind of "high-technology environment" that exists around Boston and in Silicon Valley. It does not now exist in sufficient degree in the Capital District. Therefore, says Low, "we decided to build our own environment around us."

RPI hardly looks out on a technological wasteland. Schenectady is the site of major General Electric manufacturing plants and the site of GE's Research and Development Center, probably the oldest and certainly one of the largest industrial research laboratories in the country. A major addition to the center is now under construction at an estimated cost of $50 million. The investment represents a convincing vote of confidence by GE for the research environment in the region.

Several research-intensive enterprises have spun off from the GE R & D center, and other high tech operations, such as the Fairchild Test Systems group, have been drawn to the region. Albany is the capital of New York State, and the buildup of state government has attracted many technically trained professionals to the region. Higher education institutions in the area, including the State University of New York at Albany as well as RPI, enroll 50,000 students.

At this point, however, the Capital District is a long way from being an electronics Eldorado. The go-ahead on the research park was only recently given by the RPI trustees, and not a spadeful of earth has been turned nor a contract signed. And Low acknowledges that the ingredients for success in such a venture are complex.

Business climate is obviously important, and for some time New York's has been chilled by a reputation for high taxes and hostile regulatory attitudes. Governor Hugh Carey's policies are now being credited with improvements in the state's finances and employment situation. Carey is emphasizing high-technology industry in his economic development program and was on hand to offer encouragement and possible help when RPI announced its research park.

The other sort of climate also counts in the competition with the Sunbelt. But snow notwithstanding, opportunities for outdoor activities in the area are attractive, water resources are abundant, and housing is available at perhaps half the cost prevailing in Silicon Valley. The place has always been at a communications crossroad and today has access to an unusually wide variety of highway, rail, airline, and river transport.

At this point it is difficult to judge the region's chances in the high-technology stakes. A lot, however, obviously depends on Low. An alumnus of RPI, Low followed an unusual path to its presidency. He left RPI in 1949 after earning a master's degree in aeronautical engineering and spent the next 25 years in federal service, all of it in NASA or its predecessor agency.

Low earned a reputation as a hard-driving administrator who could master the most difficult assignments. After the demoralizing fatal Apollo fire in 1967, Low was asked to take over as manager of the Apollo spacecraft program and saw it through the first moon landing. As acting administrator of NASA in the early 1970's he played a key role in guiding the agency through the difficult post-Apollo transition.

When he took over as RPI president, relations between institute and town were strained. Troy was going through difficult times, and RPI on its hilltop was resented as rich and indifferent. With efforts on both sides, relations have improved. Low and his lieutenants have cultivated rapport by emphasizing consultation and cooperation. Perhaps surprisingly, there appear to be few hard feelings about establishment of the research park in adjacent North Greenbush where Troy will not collect property taxes. Nor did Troy officials object to fledgling high-technology firms occupying "incubator" space on the RPI campus before striking out on their own. Troy with its hilly terrain currently has no space available for major industrial development. More to the point, RPI is cooperating in a project to convert a downtown hotel into incubator space and is committed to helping turn Troy into a "technology town."

Has Low's NASA background influenced his strategy as RPI president? "What I did learn at NASA," says Low, "was to bring things into being." The NASA experience "conditioned me to believe that technology and technological improvement lead to economic growth."

RPI has always been industry oriented, but the "Rensselaer 2000" plan makes clear Low's determination to strengthen the linkage both inside and outside the institute. Typical of efforts to attract industry interest and investment to the campus is RPI's Center for Manufacturing Productivity. Teams are formed to solve problems submitted by industry. These teams are headed by project engineers with industrial experience who are employed on the RPI staff. Undergraduates and graduate students do the work with faculty members acting as consultants. No government money has been sought and funding has come from companies that are supporting members or pay for particular projects.

Before launching RPI beyond campus

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in the cause of advanced technology, Low says it was necessary "to get equipped first with buildings and people." Graduate education is being strengthened. RPI borrowed to build a new computer center in a converted chapel on land purchased from the Catholic Church. And major funds were channeled into creation of a computer graphics center that has proved a magnet to industry interest.

As for the research park, the hope is that it will attract research-intensive companies complementary to RPI's research capabilities in computer graphics and other high-technology areas.

—JOHN WALSH

The Hmong: Dying of Culture Shock?

Misfortune fell upon the Hmong, a large tribe of mountain people in Laos, several years after they became allies of the United States in the war against the North Vietnamese and the Pathet Lao. They were reputed to be tough warriors, loyal friends, and helpful collaborators in hiding downed U.S. airmen. When the United States withdrew from Indochina, the Hmong became the victims of a brutal revenge campaign by the victors. Survivors report that the North Vietnamese and Pathet Lao used toxic chemicals against them, including possibly a nerve gas manufactured by the Soviets. The same gas is thought to have been used against mountain people in Afghanistan as well (*Science*, 30 May 1980, p. 1016).

Joel M. Halpern

Hmong tribesmen in Laos

Many of the Hmong escaped to refugee camps in Thailand, and from there they have been emigrating slowly to the United States. According to one estimate, there may be 35,000 in the country today, living mainly in large cities. Here the Hmong have become the victims of another scourge, a strange malady that kills healthy young men in their sleep and leaves no physical traces.

The problem was first noticed by an assistant medical examiner in Minneapolis, a city with the largest concentration of Hmong in the country. Two mysterious deaths occurred there last summer. Then another occurred in Portland, Oregon, in January. Alerted that something odd was happening, officials at the federal Center for Disease Control (CDC) in Atlanta called a conference in late February and began a national investigation. One of the coordinators, Andrew Vernon, says that the entry of CDC was irregular since the agency normally must be invited in by a state before it may launch an investigation. But the usual standards did not seem to apply because the epidemic was not localized, and no single health department could coordinate research involving Hmong in 20 states.

Vernon reports that the CDC has come up with only sketchy information so far. Investigators are collecting specimens from postmortems on 20 Hmong and six non-Hmong Indochinese who have died mysteriously since 1977. About 15 have died since January 1980, Vernon says; the rising number of deaths roughly matches the rise in the Hmong population here. Nineteen of the Hmong victims were male and one was female. Their ages ranged from 20 to 62 years, with the average in the early 30's. All were in good health before death and all died between the hours of 11 p.m. and 8 a.m.

The pattern, Vernon says, somewhat resembles a series of deaths among young Filipinos and Hawaiians reported in the 1940's and 1950's. That phenomenon was called "bangangut," after the Filipino word for nightmare. Several theories were proposed, but none confirmed the cause of death. It is possible, Vernon says, that the Hmong are particularly susceptible to stress and are dying of fright, homesickness, and grief. He notes that the native culture, while not primitive, has little in common with America of 1981. For example, the Hmong have only had an alphabet for 30 years. The culture shock of relocating from the mountain jungles of Laos to the high-rises of Minneapolis must be intense.

In addition to the theory of death by stress or nightmare fright, the CDC is looking into the possibility that the Hmong may have been weakened by exposure to chemical warfare agents. It is also possible that the Hmong are congenitally susceptible to cardiac arrhythmia or sudden death in sleep (sleep apnea), or may suffer from subtle infections that damage the heart.

Unexplained sudden deaths are rare, but not unheard of, says one of the nation's experts in the field, Joseph Davis, medical examiner of Miami. He mentions hex deaths, in which susceptible people are scared into paroxysms of asthma or cardiac arrhythmia with voodoo techniques. And he cites a more mundane phenomenon, exemplified by two recent cases in Miami. In one, a 17-year-old bridesmaid dropped dead during the processional from the wedding altar, and in the second, a 15-year-old contestant in a Miss Teenage America contest keeled over before an audience in a department store. Neither had a history of poor health or drug use.

Although Davis has not been able to establish the precise cause of death in cases such as these, he does know that the heart, in these two cases at least, was in fibrillation. This and some clinical research done at the University of Texas led him to believe that the victims probably suffered from a congenital weakness of the autonomic system that caused the heart to beat irregularly and even fibrillate in moments of intense emotional stress. Davis suspects that the Hmong may have developed a similar weakness, probably congenital, through inbreeding. But, he adds, the theory is purely speculative. —ELIOT MARSHALL

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