THE WALL STREET JOURNAL
SEPT 24, 1986 - SECTION 2

Bangalore Goes High-Tech, Becoming The Answer in India to Silicon Valley

By MATT MILLER
Staff Reporter of THE WALL STREET JOURNAL

BANGALORE, India—Like many Silicon Valley whiz kids, V.K. Ravindran, a software designer, dreamed of striking out on his own.

But instead of setting up shop in Silicon Valley, the high-technology center in California, Mr. Ravindran returned to his native India. In 1974, he settled in Bangalore. Three years later, Mr. Ravindran, a Stanford University Ph.D., was making computers.

"In those days, there were no computer manufacturers here," he recalls.

Changing Times

Times have changed. Now, high-tech graduates here have dozens of companies from which to choose. Bangalore has not only attracted domestic computer and electronics manufacturers, but multinationals, too.

Texas Instruments Inc. of the U.S. is beginning to export software manufactured here. An Indian company will begin to make computers of another U.S. concern, Hewlett-Packard Co., next year. And, according to government officials, Data General Corp. of the U.S., N.V. Philips of the Netherlands, L.M. Ericsson Telefon AB of Sweden and Yokogawa Hokushin Electric Corp. of Japan are awaiting government approval to set up operations in Bangalore.

"All good foreign companies choose Bangalore," says S. Srikantan, managing director of the state development corporation, which is promoting a new high-technology industrial park on the outskirts of the city.

Trees are being felled. Satellite dishes are sprouting up. New hotels host foreign technicians. A city that was once known as a pensioner's paradise is now a center for electronics, computers, aviation and space development and defense research.

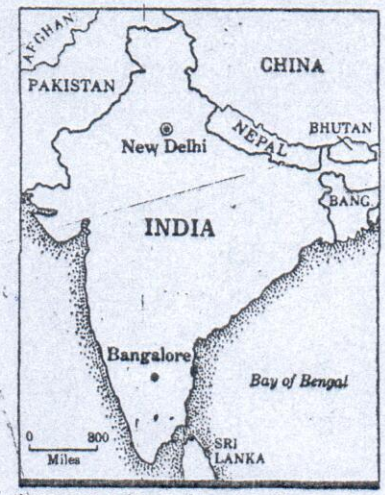
Bangalore is India's fastest-growing major city, with a population of about 3.5 million. By the year 2000 it will have six million people, according to estimates by demographers at the Bangalore-based Institute of Social and Economic Change.

Services Are Strained

Not all the new immigrants are attuned to the latest advances in microcircuitry. In fact, there are far more poor refugees pouring in from the countryside than there are budding engineers or computer programmers. For the first time in its history, Bangalore has a sizable slum population, and city services are being sorely strained.

Bangalore suffers from the same transportation and communications difficulties that torment other Indian cities. "To keep in step with what's happening in Silicon Valley, I need communication," says N.R. Narayana Murthy, managing director of Infosys Consultants Pvt. Ltd., a software house. "But I can't even get someone across Bangalore on the telephone."

Simon, who is heading Texas Instruments operations in Bangalore, says he applied for telephone and telex facilities a year ago—and he's still waiting. "If the city planners don't stay ahead of growth, there are going to be a lot of very frustrated people in the city," he says.



Still, Bangalore has several advantages over other Indian cities. Because it's situated on a high plateau, the city escapes the heat, dust and humidity that plague much of India. Housing isn't a problem, and labor unrest is minimal. The city also remains free of the kinds of religious and linguistic tensions that regularly affect much of the rest of India.

It isn't a surprise that Bangalore should house India's Silicon Valley. The Indian Institute of Science has been widely considered the country's premier scientific university for decades. Karanataka state, of which Bangalore is the capital, also boasts more than one-third of the country's engineering colleges.

Bangalore has long been a center for research and development. At the 45-year-old Hindustan Aeronautics Ltd., on the edge of the city, engineers are tackling new designs for helicopters and a light combat aircraft. Nearby, the Department of Space is developing indigenous rockets and satellites. Even the much-maligned Indian Telephone Industries Ltd., begun after World War II, is now experimenting with fiber optics and lasers.

"I imagine you'll see a lot more Silicon Valley culture," says Ashok Soota, president of Wipro Information Technology Ltd., a computer company.

'Place of Opportunity'

"This is a place of opportunity," says G.P. Ravikumar, a computer-systems analyst who two years ago left a Silicon Valley company to return to Bangalore.

Mr. Ravikumar established a computer-consultancy company here and last October opened one of India's first schools to teach computers at the primary level. It also teaches yoga. "It's an attempt at balancing Indian culture with American technology," he says.

In a reversal of traditional technology-transfer roles, PSI, the company set up by Mr. Ravindran, the Stanford graduate, recently helped design and develop a specialized computer for a Japanese company, Software Consultant Corp. Before that, PSI undertook software projects for Mr. Ravindran's old Silicon Valley employer, Halcyon Communications Inc.

Among other things, the conventions on early notification and mutual assistance would trigger containment actions by governments under whose control accidents releasing major doses of radiation occur, whether on land, at sea or even in outer space.

In case of an accident, the convention imposes the obligation for a nation to immediately inform all neighboring states of the danger and provide an estimate of the amount of radiation expected.

Last April, when the Chernobyl incident took place, Soviet authorities said nothing for 48 hours, leaving countries such as Sweden, Norway, Denmark, West Germany and France unaware of the source and nature of radiation they were detecting.

The convention also calls for the international mobilization of radiation experts, doctors and other medical personnel and civil authorities, who would be allowed to move freely across national borders to evacuate affected areas and tend victims. Delegates expect the Soviet Union, which supports the conventions, to share the information it has acquired on how to deal with victims and affected land and water.

It is also widely expected that new information will come out at the meeting about the causes and consequences of the Chernobyl accident.

The speed with which the accord has been handled was in contrast to the tedious and extremely contentious normal deliberations at the IAEA, which involve nuclear secrets that nations are eager to keep private. The fear of many governments that negative popular reaction to Chernobyl would slow their nuclear-power programs had much to do with the fast action, experts attending the conference said.

Yet the experts who drafted the accords were unable to win inclusion of accidents "connected with nuclear weapons and nuclear-weapons tests," according to the text of the convention. They said the best they could do is invite "voluntary" notification about such accidents.