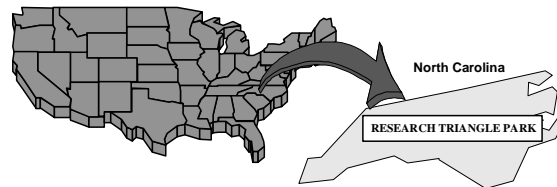


Appendix C - Research Triangle Park, North Carolina



The Role of SMEs in Research Triangle Park, North Carolina

Research Triangle Park (RTP) is the largest-planned research and development park in the United States. It encompasses 6,800 wooded acres and is home to 94 different companies employing 36,000 people, of which nearly 1,800 are Ph.D.'s. This pleasant working environment has contributed to one of the highest growth rates and lowest unemployment rates in the country. The jobless rate of 2.4 percent is far below the national average and below North Carolina's rate of about 4.2 percent. In 1995, \$112 million of venture capital poured into North Carolina, mostly into the Triangle, up from \$82 million in 1994.

In 1994, nearly half of North Carolina's electronics and computers cluster (in terms of output) and nearly 40 percent of statewide employment was concentrated in RTP.¹ More than a quarter of the region's manufacturing employees are in the electronics and computer cluster. In 1994, slightly more than 60 percent of firms in the region were small enterprises with less than 50 employees.² More than 80 percent of firms in this cluster were single plants (versus branch plants) indicating a high proportion of entrepreneurs. Output in the cluster is dominated by telephone and telegraph apparatus (SIC 3661) and computer peripherals (SIC 3572, 75, 77). Miscellaneous plastic products (SIC 308) is also a major output.

¹ As defined in *Targeting North Carolina Manufacturing: Understanding the State's Economy Through Industrial Cluster Analysis*, Vol. 1: Summary, Institute for Economic Development, March 1996, this cluster includes most major high-tech goods producers in SIC categories 35, 36 and 38, and includes computers, telephones and other communications equipment, X-rays, surgical and medical instruments, and laboratory instruments. Much of the data does not represent the output of services firms especially those offering Internet, intranet and other communications software.

² Ibid.

North Carolina has been the number one recipient of foreign investment among the fifty states for the past three years.³ North Carolina's foreign-owned businesses employ more than 60,000 state residents (4.2 percent of the workforce) and have invested up to \$6.9 billion in the state. At present, 680 foreign-owned companies reside in North Carolina, 320 of which have their headquarters here.

History: The RTP Story

In the 1950s, North Carolina had the second-lowest per capita income in the United States. It was dependent on three industries which today still remain important: textiles, tobacco and furniture. The airport was small and regional. Graduates from the three primary local educational research institutions, the University of North Carolina at Chapel Hill, Duke University in Durham and the North Carolina State University in Raleigh, were leaving the area in a classic case of brain drain.

The establishment of a research and development park, with a research institute owned by the three universities to provide the initial impetus for bringing companies to the park, was conceived as a solution to help the state economically. The term "Research Triangle" was derived from location of these three academic institutions which have a combined enrollment of 60,000 students. Their goals were the following:

- ◆ attract research to the Triangle area, diversifying the economy and lead to the additional location of industrial and production facilities within the state.
- ◆ help reverse brain drain.

The committee utilized the proposal for a research institute, owned by the three universities, to provide the initial impetus for bringing companies to the Park.

In December 1958 the three educational research institutions founded the Research Triangle Institute (RTI), which was provided with a 157-acre campus in the middle of the park and a \$500,000 start-up fund to cover projected operating deficits for the first three years. Today RTI is a not-for-profit contract research organization with annual revenues of \$150 million. RTI conducts applied and basic research in the United States and abroad for clients in government, industry, and public service. RTI employs more than 1,500 staff with backgrounds in more than 115 areas of research. Some 60 percent of RTI's full-time employees are professionally trained research personnel. Of these, 30 percent hold doctoral degrees and 30 percent hold master's degrees.

In the late 1980s with a downturn in real estate, the three counties of Raleigh, Durham and Chapel Hill decided to cooperate in their regional development efforts, and this association was gradually expanded to 13 counties and at the end 1994 became known as the Research Triangle Regional Partnership (RTRP). RTRP is a private, non-profit corporation funded by the state and counties.

³ North Carolina Department of Commerce.

Occupants of RTP must be organizations engaged in research, development, and scientifically-oriented production. RTP was initially conceived as an R&D center for large companies. In addition to well-funded research facilities, the park offers occupants relief from municipal taxes.

Today RTP is widely regarded as one of the nation's most successful industrial and government research centers. Industries and research currently represented in the park include: pharmaceuticals, microelectronics, semiconductors, telecommunications, instrumentation, medical devices, biotechnology, environmental science, chemistry and textiles.

The integration between Park residents and the universities provide a key factor in the Park's continued growth and development. There are more than twenty-five joint scientific projects underway involving Park companies and one or more of the universities. Faculty members serve as consultants and park employees hold adjunct professorships at the universities.

The Transition from Large Firms to SME Dynamism

Though initially designed to attract large companies, the community is now increasingly luring high-tech SME entrepreneurs. Layoffs by the large anchor firms in the Park such as IBM and Burroughs created a pool of potential entrepreneurs. In the last five years, spin-offs and start-ups in software, communications, semiconductors, drugs and biotech have sprouted in RTP and its surroundings. The once moribund local society of entrepreneurs now has 900 members.

The Role of Clustering

While big business and academia lent a strong foundation to the Triangle, its more entrepreneurial side is only now emerging. The huge labor pool that has consequently been created now bring in even more companies, which in turn attract more people. Employees see more opportunities for career change when there is a pool of firms to choose from. The clustering effect is now being manifested as companies move into the Triangle because their customers, suppliers and competitors are moving there too.

General SME Support Institutions

Support for Entrepreneurs by Entrepreneurs

The Council for Entrepreneurial Development (CED) was founded by a group of entrepreneurs in 1984 "to stimulate the creation and growth of high impact companies in the greater Research Triangle area." The focus on high-growth firms is borne of a belief that mom-and-pop small businesses or lifestyle entrepreneurs are supported by community colleges and small business development centers sponsored by the public sector. Furthermore, high-growth firms will engender spillovers to other firms. Totally

funded by membership, CED has grown from its original 26-member base to nearly 2000 active members, representing over 900 companies. Membership dues of \$110 per year were designed primarily for start-ups and small entrepreneurial companies, individuals, government or economic development agencies, academics, and non-profit organizations while larger firms and successful entrepreneurs become grantors through a three-year commitment of \$1,000 per year.

CED itself was designed to be an entrepreneurial organization with appropriate leadership and staff to ensure its continued success as an organization for entrepreneurs. Efforts elsewhere to emulate CED have failed and this is believed to be largely due to inappropriate leadership. Small business development centers (SBDC), supported by the SBA and operating out of universities, are not viewed as true entrepreneurial support systems. CED's mentoring program was started when its members failed to receive good advice or assistance from the SBDCs.

The Role of the University

The three universities are a source of labor from entry and post-doctoral positions for firms in RTP. North Carolina State is highly regarded as a source of software programmers at both undergraduate and graduate levels. Of the 100 employees at Embrex, Inc. one of the first biotech firms to go public in the state, a third are graduates of NC State University and other North Carolina schools. The universities' internship programs are actively placing students in the region's firms.

Though the three universities are crucial to the labor pool, and the Biotechnology Center aims to commercialize university research, RTP has not seen the extent of university spin-offs experienced by the other states with high-tech clusters such as Massachusetts or California.⁴ Unlike other universities such as University of Minnesota, Stanford and Cambridge University, the University of North Carolina is only just getting going with recently establishing a new position focusing on technology transfer. Efforts are also underway to support firms in applying for SBIR loans.

The same holds true for federally-funded laboratories. North Carolina is home to several federal laboratories but until recently, few showed significant activities with North Carolina firms in entering into cooperative research and development agreements and it only recently announced that one patent had been licensed to a North Carolina firm.

⁴ Corporation for Enterprise Development; *1995 Development Report Card for the States*.

Fiscal Incentives

North Carolina's business benefits have long made the state the number one choice for new and expanding domestic and international businesses. Many companies have reported⁵ locating to North Carolina because of the state's:

- ◆ Productive manufacturing workforce, the largest in the southeastern U.S.
- ◆ Number one status in attracting new research and development facilities. From 1990 to 1991, North Carolina was foremost in attracting new research and development facilities, bringing in eighteen new facilities. In 1992, North Carolina was ranked as the number one state with new facilities and expansions, offering 405 new or expanded facilities. It also was first in new manufacturing plants, offering 129 new plants that year.
- ◆ Per capita state and local tax rates that rank 34th among the 50 states.
- ◆ Sound fiscal policy that results from a legislatively-mandated balanced budget. North Carolina is one of only five states with a AAA bond rating. The others are Virginia, Maryland, Utah and Missouri.
- ◆ Nationally-acclaimed community college system, which offers customized training skills to new and expanding industries. All North Carolina residents are within one-half hour of a community college. The Community College Industrial Training program was enacted in 1958 and provides for instructors' wages and travel expenses (even if the instructor is a company employee), for classroom materials, and for a suitable facility. The state has appropriated \$6.4 million for fiscal year 1993 to 1994 to the North Carolina community college system to train workers in any new and expanding industry that creates a minimum of 12 new jobs in North Carolina.

Conclusion

Raleigh-Durham's economic success is due in no small part to the collaboration between the public and private sectors that have encouraged the innovative creation of the RTP in the late 1950s. Clearly, a vital role has been played by the academic institutions that form the foundational backbone of the region, not only as a major source of attraction for outside investors, but also as a source of human resources, technology, and innovative cross-seeding. Private-sector growth, most recently among SMEs, has been driven by the combination of the above-mentioned powerful forces to make the Raleigh-Durham area one of the most successful U.S. case studies.

⁵ KPMG Peat Marwick, North Carolina Department of Commerce; *1993 Inbound Investors Study of Foreign-Owned Companies with US Headquarters in North Carolina*, p. 26.