The Research Triangle Park:

A Legacy of Economic Transformation…

Lessons for Regional Economies

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Today’s presentation…

A conversation focusing on three questions:

1. Why and how did The Research Triangle Park happen?
2. What lessons can be learned from the experience?
3. Are any of these lessons relevant to Detroit?
So where are we?

Mega Regions in the US


Detroit – Central to the Great Lakes Region

The Great Lakes Region

The Great Lakes Region is home to 97 million people… one of the largest industrial production centers and consumer market places in the world. The region stands today in a precarious position with diminished economic primacy, leaving its states and communities struggling to find their competitive niche.

With one foot planted in a waning industrial era, the other in the emerging global economy, the region is teetering between a future marked by growth and innovation, and one that conforms to the “Rust Belt” label applied to the region due to the decline of its factory-based economy.

Source: The Brookings Institute Metropolitan Policy Program 2006
Detroit Metro

- Fastest growing city in the US in 1954
- City population around 900,000 or half of what it was in 1950.
- Seven-county region is home to 4.8 million people, just 100,000 more than in 1970.
- Slowest growing of any of the nation's 10 largest metropolitan regions, and the most economically and racially segregated.
- Lost more than 100,000 young adults in the 90s, the highest rate of brain drain of any urban center in the country.
- Suburbs absorbing land six to eight times faster than population growth, faster than almost any other major US metro region.

Source: Michigan Land Use Institute
RTP and North Carolina in the Southeast U.S.

Centrally located on the eastern seaboard
North Carolina and the Research Triangle

• North Carolina and the Triangle – circa 1950
  – Second lowest per capita income in the US
  – An economy tied to 3 failing industries (tobacco, textiles, and furniture)
  – Pronounced brain drain resulting in only 3.3% of employment in high-technology industries compared to 10.3% nationwide

• The Research Triangle Today
  – Fourth ranking region in the US (Public Policy Institute)
  – Sixth US Metro (Beacon Hill Competitive Index)
  – Sixth US Region (Richard Florida Creating Index)
  – Eighth of 125 global regions (World Knowledge Competitiveness Index)
  – First place in the US to live and work (Employment Review)
  – Highest per capita income in NC roughly 5% above the US average
  – Pronounced brain gain with half of its employment in high tech industry
RTP was founded in 1959 by business, government and academic leaders to stem the “brain drain” and shift the agricultural, manufacturing and government economy to a research and technology focus.
Strategically Located at the Region’s Core

Knowledge Assets
- Duke University
- Durham Technical Community College
- Meredith College
- NC Central University
- NC State University
- Peace College
- RTI International
- St. Augustine’s College
- Shaw University
- UNC-Chapel Hill
- Wake Technical Community College

Sources: U.S. Census, Triangle J Council of Governments
The Research Triangle Park

- The Research Triangle Park is the oldest and largest research park in the United States, established in 1959.
- RTP was first mover – created the research park industry.
- Large in scale.
- 7,000 acres.
- Spans 2 x 8 miles.
The Research Triangle Park

“Creating a global movement in science park development”
RTP vs. Typical* North American Research Park


* The “Typical North American Research Park” is defined here as the median research park
RTP Market Share of North American Research Parks

Key ingredients combined to build critical mass over time
Per Capita Income Relative to the U.S. Average

The Triangle, North Carolina and Select Metropolitan Areas

% Above/Below the National Average


-25 -20 -15 -10 -5 0 5 10 15

United States
Raleigh-Cary MSA
Greensboro-Winston Salem-High Point CSA
North Carolina
Durham MSA
Charlotte MSA

Source: United States Bureau of Economic Analysis
Per Capita Personal Income Rank Compared to 361 U.S Regions (MSA), 1969-2004

-Source: United States Bureau of Economic Analysis
Per Capita Personal Income, RTP & Detroit Metros, 1969-2005

Source: U.S. Bureau of Economic Analysis, 2005
RTP Today

Scale: 7,000 acre research park

University Connections: Duke University, North Carolina State University, University of North Carolina-Chapel Hill

Critical Mass: 160 world class firms employ 40,000 full-time workers in 20 million ft\(^2\) of built space; 1,500 start-ups created in the RTP region since 1970

Impact: $2.8 billion in capital investment; $2.7 billion annual payroll
RTP – 10 Largest Companies by Employment

IBM
GlaxoSmithKline
Cisco
Nortel Networks
RTI International
Fidelity Investments
Lenovo
US Environmental Protection Agency
National Institute of Environmental Health Sciences
Sony Ericsson

Number of employees
RTP Diversity – Companies by Industry

- Life Sciences: 29%
- Information Technology: 15%
- Business and Professional Services: 13%
- Materials Sciences and Engineering: 11%
- Scientific Associations, Foundations and Institutes: 5%
- Environmental Sciences: 4%
- Retail Amenities and Service Providers: 2%
- Financial and Insurance Activities: 2%
Incubators in The Research Triangle Park

Park Research Center
- 13-building campus
- 75,000 ft² of office/lab space
- 12 companies

First Flight Venture Center
- Established in 1991
- 16,000 ft² of office/lab space
- 31 start-ups
- “Best Science-Based Incubator 2006” (Science Alliance)

Emerging Technologies Center
- Owned and managed by Pappas Ventures
- 150,000 ft² campus

BD BioVenture Center
- Supported by BD Technologies’ $40 million venture capital fund
- 14 participant companies, raising a total of $400 million in funding
RTP Impact on Urban Growth

Sources: U.S. Census, Triangle J Council of Governments
Sphere of Development Influence

70,000 acres in a 4-mile sphere of influence create an additional:

- 13 million ft$^2$ built space in technology and business parks
- 15,000 acres under development for office, commercial and industrial use
- 14,500 acres in residential development
- 40,550 housing units, planned and existing
Impacts on the human condition

- Inventions and discoveries in The Research Triangle Park have impacted all of mankind

- Four Nobel Prize winners in Physiology or Medicine since 1988

- 4,974 patents and 1,578 trademarks since 1959
Key Success Factors

- Proximity and connection to three research universities
- **Statewide focus** and tradition of collaboration
- **First mover** advantage
- **Private leadership** balanced with public purpose
- A **scale** grand enough to achieve a global brand
- Ability to **adjust and adapt** to changing needs
- **Patience and perseverance** – a long-term view
Some key traction points…

• Our people (or yours) are the greatest asset
• Proactive public policies and investment is required and fundamental to the process
• Don’t underestimate the importance of key firms and catalytic organizations
• Recognize and harness the power of research university contributions
• Be patient but don’t ever sit still
Detroit Region* Socio-demographic Characteristics

Source: United States Census Bureau, 2006

*U.S. Census Defined Detroit-Warren-Flint Combined Statistical Area (CSA)
RTP Region Socio-demographic Characteristics

Source: United States Census Bureau, 2006
North Carolina Community College System

- 58 comprehensive community colleges
- Serves all 100 counties of North Carolina
- Enrolls 800,000 students

Source: North Carolina Community College System web site
Workforce Development in Biotechnology:
Biomanufacturing and Pharmaceutical Training Consortium

**BioNetwork** - statewide initiative to develop a world-class workforce for the biotechnology industry.

**Biomanufacturing Training and Education Center** - BTEC will have an 81,000-square-foot biomanufacturing training and education facility at North Carolina State University. The pilot-scale production plant will provide advanced, hands-on training and education for students and incumbent workers.

**Biomanufacturing Research Institute and Technology Enterprise** - BRITE, located at North Carolina Central University, will provide degree programs and laboratories for scholars conducting research in several areas critical to biotechnology and biomanufacturing.
RTI International

In RTP since 1958

Nation’s second largest independent non-profit research organization, dedicated to conducting research and development that improves the human condition by turning knowledge into practice.

www.rti.org
National Institute of Environmental Health Sciences - NIEHS

In RTP since 1966

One of 27 institutes and centers of the National Institutes of Health, focusing primarily on identifying environmental causes of disease to reduce the burden of human illness and disability by understanding how the environment influences the development and progression of human disease.

www.niehs.nih.gov
US Environmental Protection Agency

In RTP since 1970

US Federal agency that develops analytical tools and models used to assess pollutant exposure; investigate human and ecological effects of environmental pollutants; utilize engineering approaches to mitigate or limit industrial and indoor air pollution develop guidelines for performing human health and ecological risk assessments; and manage national programs for maintaining air quality.

www.epa.gov
Burroughs Wellcome Fund

In RTP since 1970

Independent private foundation dedicated to advancing the medical sciences by supporting research and other scientific and educational activities.

www.bwfund.org
Triangle Universities Center for Advanced Studies, Inc. (TUCASI)

Founded in 1975

A consortium dedicated to the encouragement of advanced studies, TUCASI promotes additional intellectual activity involving joint collaboration among Duke, NC State and UNC-Chapel Hill.
National Humanities Center

In RTP since 1978

Leading independent American institute for advanced study in all fields of the humanities that seeks to insure the continuing strength of the liberal arts and to affirm the importance of the humanities in American life.

www.nhc.rtp.nc.us
MCNC

In RTP since 1980

Independent, non-profit corporation established to advance technology-led economic development and job creation throughout North Carolina by partnering with academia, industry, government and other non-profit institutions.

www.mcnc.org
North Carolina Biotechnology Center

In RTP since 1984
Private, non-profit corporation created by the state to provide long-term economic and societal benefits to North Carolina through support of biotechnology research, business and education statewide.

www.ncbiotech.org
Council for Entrepreneurial Development

In RTP since 1984

Private, non-profit organization that identifies, enables and promotes high-growth, high-impact entrepreneurial companies and accelerates the entrepreneurial culture of the Research Triangle region and North Carolina.

www.cednc.org
Sigma Xi, The Scientific Research Society

In RTP since 1990

Non-profit membership society of approximately 65,000 scientists and engineers who were elected to the society based on their research achievements or potential.

www.sigmaxi.org
National Institute of Statistical Sciences

In RTP since 1991

Independent research institute that conducts and facilitates collaborative research in statistical studies with activities including research projects in areas such as bioinformatics, data confidentiality, data integration, data quality, information technology, the environment, education statistics, large and complex databases, and computer model evaluation.

www.niss.org
Statistical and Applied Mathematical Sciences Institute

In RTP since 2002

Institute that conducts and facilitates collaborative research involving the interaction of statistics and applied mathematics with other disciplines.

www.samsi.info
Figure 2: Timeline of Development for the Research Triangle Park Region

NOTE: NC - North Carolina; UNC-CH - University of North Carolina-Chapel Hill; R&D - Research and Development.

Framework for Development of High-Technology Centers

Talent
Visionary Leadership
(internal)
Entrepreneurs
(external)

Incendiary Event
Mobilization of Business, Academia, Government

Culture for Innovation
Role Models
Tolerance / Diversity
Networks
Capital

Outcomes
Technology Development
Tech Transfer
Job Generation
Wealth Creation
Recognition / Prestige

Figure 1: Framework for Development of High-Technology Centers

Share of $1.2 Billion R&D Funding for Research
Triangle Flagship Universities

Source: National Science Foundation/Division of Science Resource Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY2004
Source of $1.2 Billion R&D Funding for Research Triangle Flagship Universities

Source: National Science Foundation/Division of Science Resource Statistics, Survey of Research and Development Expenditures at Universities and Colleges, FY2004
RTP & Michigan University R&D Funding by Source

Source: National Science Foundation (NSF). Division of Science Resources Statistics (SRS), 2005
R&D Expenditures at RTP & Detroit Metro Universities, FY 2004

Dollars (Millions)

$900
$800
$700
$600
$500
$400
$300
$200
$100
$0

University of North Carolina at Chapel Hill
North Carolina State University
Wayne State University
University of Michigan - All Campuses
Michigan State University

R&D Expenditures Rank (Out of 601 Institutions)

#14
#30
#52
#68
#3
#39

All Other Sources
Institutional Funds
Industry
State & Local Government
Federal Government
Graduate Students & PostDoctorates in Science, Engineering, & Health, FY2004

North Carolina State University (3,389)

University of North Carolina at Chapel Hill (3,060)

Duke University (1,615)

University of Michigan - All Campuses (5,264)

Michigan State University (2,518)

Wayne State University (1,618)

Source: National Science Foundation (NSF), Division of Science Resources Statistics (SRS). 2005
North Carolina’s Emerging Network of World-Class Research Universities and Science Parks

North Carolina knowledge assets for the future
Contributions of NC Research Universities

The Research universities in RTP have played a critical and essential role in accelerating technology development and commercialization, promoting a culture of entrepreneurship and innovation, and advancing the economic development of the region.

Six tangible contributions are:

1. Formulation of human capital.
2. Attraction of funding and financial resources
3. Attraction of students and visitors
4. Development of new technologies
5. Direct creation of jobs
6. Direct purchase of goods and services
RTP as Catalyst – Ensuring a “Virtuous Cycle”

- Identify areas of convergence and/or new/enhanced clusters
- Strengthened Enabling Foundations
- Enhanced/Focused University & Stakeholder Collaboration
- Reputation as the Leader in given convergence area(s)
- Reinvested Capital
- Federal Funding
- Financial Returns
- Venture Funding
- Tools/ingredients that will make RTP an irresistible venue for research
- Cluster Energy & Growth
- Entrepreneurial Activity
- More Partnerships
- Corporate Recruitment Efforts

Red = RTP catalytic efforts
Looking ahead to achieve next era leadership

Impact of Technology
Sectors over Time

Where can North Carolina achieve and sustain a dominant position?
Competing in Today’s Global Economy

What are the lessons learned from RTP that may be relevant to the Detroit region?
Lessons Learned

1. The need for visible, visionary and passionate leadership
2. The power of an incendiary or mobilizing event
3. A catalyst organization that can effect change
4. Acceleration driven by the arrival of key corporations
5. The importance of a positive and progressive global brand
6. The value of compelling role models to promote innovation
7. The impact of increasing financial resources
8. Proactive policies, procedures and investments
9. A tolerant mind set that appreciates and rewards diversity
10. Patience and perseverance realizing success takes time
Where do you go from here?

Alice: Would you tell me, please, which way I ought to go from here?
The Cat: That depends a good deal on where you want to get to.

Alice: I don't much care where.

The Cat: Then it doesn't much matter which way you go.

Alice: …so long as I get somewhere.

The Cat: Oh, you're sure to do that, if only you walk long enough.

Alice and the Cat: From Alice in Wonderland
How do you go from here?

You’ll need a strong bias for action…

Even if you are on the right track, you'll get run over if you just sit there.

Quote: Will Rogers
Whose job is it, anyway?

Collective roles in the triple helix…

1. Government
2. Academia
3. Business

The role for individuals…

“If not me, who? And if not now, when?”

Quote: Mikhail Gorbachev
Questions and Answers

In the time we have remaining…

What would you like to discuss?
Thank you very much!
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