Economic Development and The Role of Clusters: Implications for Policy

David A. Wolfe, Ph.D.

Program on Globalization and Regional Innovation Systems
Munk School of Global Affairs
University of Toronto

Presentation to Canada 2020-PROGRIS Conference on
Ontario’s Aerospace Cluster
Toronto, June 7, 2012
Cluster Definitions

• Defined as:
  – “Clusters are a geographically proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities. Clusters encompass an array of linked industries and other entities important to competition. . . . Including governmental and other institutions – such as universities, standard setting agencies, think tanks, vocational training providers and trade associations.” (Porter)
  – A cluster is a concentration of firms across several industries that create quality jobs, export, share common economic foundation needs, the public sectors of economic development, legislators, universities, community colleges, K-12 educational community, workforce development, support foundations and all community stakeholders.” (Breault)
Critical Factors for Cluster Emergence

- Strong, diverse and tech-savvy talent pool
  - Florida’s three ‘T’s
- Established pillar companies with global reach
- Strong knowledge infrastructure
  - Research university, government labs etc.
- Specialized support services such as
  - Tech-savvy law and accounting firms
- Risk Tolerant Venture Capital and angel investors
- Entrepreneurial culture that nourishes innovation
- Governance regime
  - Civic leadership – ‘civic entrepreneurs’ (Henton)
- Institutions of Collaboration
Benefits of Clustering

• Rationale is distinct advantages that clusters confer on firms and communities
  – Old dichotomies between competition and collaboration no longer apply

• Beneficial outcomes of cluster collaboration
  – Creates trust linkages among firms
  – Facilitates specialization
  – Builds critical mass

• Provides convenient means for streamlining delivery of policy support to local firms
  – Specialized financing, education, policy supports
  – Promote linkages between firms, universities & research institutes
  – Affords opportunity for SMEs to connect with larger partners

• Attracts customers, new investment, skilled talent
ISRN Project on Industrial Clusters
Core Research Questions

• To what extent? — and in what ways? — do local, extra–firm relationships and interaction enable firms to become more innovative and successful?

• What is the relative importance of local, national and global relationships and knowledge flows in spurring the development of regional clusters over time?
# ISRN’s Cluster Life Cycle

<table>
<thead>
<tr>
<th>Cluster Activity</th>
<th>Latent</th>
<th>Developing</th>
<th>Established</th>
<th>Transformational</th>
</tr>
</thead>
<tbody>
<tr>
<td>HQP, Infrastructure, Gov’t R&amp;D funding, Champions, Linkages</td>
<td>Incubators, Innovation assistance, Angel &amp; VC investment, Champions, Linkages</td>
<td>New companies, Expanding markets, Movement of HQP among firms, Private to IPO, International standards, Experts, Private R&amp;D investment</td>
<td>Shrinking margins, Instability, Reinvention or, Government intervention</td>
<td></td>
</tr>
</tbody>
</table>

**Time**
Knowledge and Learning in Clusters

• International knowledge flows
  – Access to global networks
  – Niche clusters – ‘clustering of clusters’
  – Global networks – suppliers and strategic partners

• Local learning dynamics
  – Knowledge spillovers, mentoring, demonstration effects
  – Labour mobility – recombine assets
Local Dynamics

• Local knowledge circulation
  – Intra-cluster knowledge flows
  – Linkages between research infrastructure and cluster firms
  – Learning at three levels
    • Within firm
    • Within cluster
    • At level of broader community

• Strong social networks at community level
  – New institutions of civic governance
  – Value of inclusive civic engagement
Clusters & Research Infrastructure

• In contrast to most celebrated international case studies
  – Research institutions play supporting, not causal role
    • Clusters are not spun-off from research institutions
    • Waterloo and Ottawa ICT are clearest exceptions

• Research (especially PSE) institutions are excellent ‘market readers’
  – Expand research and teaching activities to meet needs and demands of local clusters
  – Contribute to development of a thick labour market
Clustering and Industrial Structure

- ISRN contribution to cluster literature
  - Tendency to generalize from one industrial sector across all others
    - i.e. Silicon Valley and ICT sector
- Tendency to apply one analytic model across wide variety of different geographic settings
  - Clusters are industrially specific
  - Key characteristics determined by
    - Age of cluster
    - Maturity of underlying technology
    - Supply chain linkages and/or disaggregation
    - Production model
    - Links to local labour markets
The Local and the Global

- Key elements of the literature maintain the importance of the local supply network and demand conditions for cluster development.
- ISRN findings contradict this:
  - Both key suppliers and customers are often non-local.
  - Cluster firms are well integrated into global supply chains and knowledge networks.
    - Especially true for ICT, bio-life sciences and mechanical engineering (including aerospace).
    - In multimedia, food and wine clusters, local demand conditions and supply base are more critical.
- Clusters are anchored to their locality by agglomeration economies,
  - especially the labour market.
Cluster Strategies in Canada

- Clusters provide an effective means for policy support at the local and regional level
  - Need for ‘policy alignment’
  - Clusters as ‘focusing device’

- Problem of ‘missed opportunities’ (OECD)
  - Federal/provincial investments in research centres and programs
    - Lack of direct linkages to cluster strategies and policies
  - Lack of integration of science and industrial parks with cluster strategies
  - Lack of coordination of regional with national innovation systems

- Clusters can identify gaps in innovation system
  - Align federal/provincial policy with needs of local industry
Policy Support for Clusters

• Federal Government
  – Invest in foundations of science & technology
  – Improve innovation policy context
    • IP protection
    • Tax incentives to foster R&D and university-industry collaboration
  – Align federal resources with cluster development
    • Current U.S. initiatives
  – Encourage regional economic development strategies
    • EU RIS/RITTS programs
    • Provide federal matching funds for innovation focused provincial & local strategies
Policy Support for Clusters

• Provincial/State Government
  – Invest in foundations of science and technology
  – Sponsor provincial programs to encourage sectoral/cluster development
  – Focus business recruitment around strong clusters
  – Create regional dimension to economic development strategies
Policy Support for Clusters

• Regional and Local Government
  – Strong support for education system
  – Upgrade business infrastructure
    • Transportation infrastructure
    • Communications infrastructure
  – Develop regional strategy that involves all stakeholders
    • Encourage common vision and collaboration among firms, universities and training centres (colleges)
  – Foster cluster development
    • Montreal/Toronto’s cluster/sectoral strategy
Policy Implications

• National policies impact at the local level
• Need for multilevel governance
  – Clusters impact at local level but require support from senior levels of government
• Linkages between elements of the system
  – Especially research infrastructure and clusters
• Growing role of networks and clusters
  – Talent as a key attractor
  – Combination of educational resources and quality of life factors
• Need for strategic planning at the local level
  – Coordinate federal & provincial programs at local level
Magic Bullets?

- Business-led
  - sustain leadership
  - Identify champions
- Clustering is a process not a goal
- Promote networking and interaction
  - Build common vision
- Focus on achievable steps
  - Revise, refocus
- Align institutions and resources
  - Across all three levels of government
  - Clusters focus federal/provincial initiatives
  - Clusters lead workforce development
  - Educational institutions target critical areas