Urban Hierarchy or Local Buzz?

High-order Producer Service and (or) Knowledge-intensive Business Service Location in Canada, 1991-2001

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High order services and KIBS

- The same economic sectors (Wood, 2006)
- Different conceptualisations:
  - HOS: Service/manufacture dichotomy.
    - create an information product, sell it to producers.
  - KIBS: Knowledge Intensive/Knowledge poor dichotomy
    - Act as vectors of knowledge transmission; contribute to innovative activities of firms.
Geography

• **HOS**: locate towards top of urban hierarchy.
  – Are perceived as potential exporters
  – Hence some hope for regional development?
  – Local growth effect due to export capacity.

• **KIBS**: have been studied principally with respect to their interactions with other firms and sectors.
  – The local presence of KIBS may enable local knowledge diffusion and innovation
  – Hence some hope for regional development?
  – Local growth effect due to local interactions and knowledge exchange.
Is there evidence of systematic local interaction between KIBS and other sectors?

- In this study we do not look directly at interactions.

- We try to see whether KIBS locate:
  - purely according to the urban hierarchy.
  - closer to economic sectors with which they may interact.
  - closer to certain types of labour
An aside

- Geography and innovation studies have so far had rather different conceptualisations of space.

  - **Innovation**: buzz and pipelines. Considers *place* and *a-spatial social and business connections*.

  - **Geography**: space is continuous. Considers *space* and *spatial diffusion and connection*. It is not only *place* but relative *proximity* that matters.
In other words...

- From a geographic perspective there is no reason for KIBS to be *local* in order for them to play their role in innovation and knowledge diffusion.

- For KIBS to play their role in innovation systems they merely need to be *reasonably accessible* to the firms with which they interact.

- ‘*Reasonable accessibility*’ may differ depending on the sectors and type of knowledge exchange involved.
Data

- 2001: 3 digit NAICS, 152 urban areas, 230 rural areas, covering whole of Canada.
- 1991: aggregations of 3 digit SIC
- How do we define KIBS?

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1150</td>
<td>Support activities for farms (1151 to 1152)</td>
</tr>
<tr>
<td>1153</td>
<td>Support activities for forestry</td>
</tr>
<tr>
<td>2131</td>
<td>Support activities for mining and oil and gas extraction</td>
</tr>
<tr>
<td>4881</td>
<td>Support activities for air transportation</td>
</tr>
<tr>
<td>4882</td>
<td>Support activities for rail transportation</td>
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<tr>
<td>4883</td>
<td>Support activities for water transportation</td>
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<tr>
<td>4884</td>
<td>Support activities for road transportation</td>
</tr>
<tr>
<td>5112</td>
<td>Software publishers</td>
</tr>
<tr>
<td>5133</td>
<td>Telecommunications</td>
</tr>
<tr>
<td>5141</td>
<td>Information services</td>
</tr>
<tr>
<td>5142</td>
<td>Data processing services</td>
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<tr>
<td>5413</td>
<td>Architectural engineering and related services</td>
</tr>
<tr>
<td>5414</td>
<td>Specialized design services</td>
</tr>
<tr>
<td>5415</td>
<td>Computer systems design and related services</td>
</tr>
<tr>
<td>5416</td>
<td>Management scientific and technical consulting services</td>
</tr>
<tr>
<td>5417</td>
<td>Scientific research and development services</td>
</tr>
<tr>
<td>5419</td>
<td>Other professional scientific and technical services</td>
</tr>
</tbody>
</table>
Where do KIBS locate and grow?

KIBS location quotients (controlled for regions) 1991 and 2001

R2 1991= 24%; R2 2001= 54%
Do all KIBS co-locate?

<table>
<thead>
<tr>
<th>Sector names and NAICS (1997) codes</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>Communalities</th>
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<tbody>
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<td>0.19</td>
<td>-0.12</td>
<td>0.07</td>
<td>0.80</td>
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<tr>
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<td>-0.14</td>
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<td>0.12</td>
<td>-0.12</td>
<td>-0.08</td>
<td>0.63</td>
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<tr>
<td>5414 Specialized design services</td>
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<td>0.14</td>
<td>0.00</td>
<td>-0.16</td>
<td>0.06</td>
<td>-0.09</td>
<td>0.61</td>
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<tr>
<td>5416 Management, scientific &amp; technical consulting services</td>
<td>0.73</td>
<td>0.35</td>
<td>-0.02</td>
<td>0.28</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.74</td>
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<tr>
<td>5417 Scientific research and development services</td>
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<td>-0.05</td>
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<tr>
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<td>0.37</td>
<td>-0.04</td>
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<td>0.15</td>
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<tr>
<td>2131 Support activities for mining &amp; oil &amp; gas extraction</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.07</td>
<td>0.00</td>
<td>0.64</td>
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<tr>
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<td>0.77</td>
<td>-0.01</td>
<td>0.04</td>
<td>-0.01</td>
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<td>-0.03</td>
<td>-0.07</td>
<td>0.01</td>
<td>0.67</td>
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<td>4881 Support activities for air transportation</td>
<td>-0.16</td>
<td>-0.06</td>
<td>-0.19</td>
<td>0.71</td>
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<td>-0.27</td>
<td>0.67</td>
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<tr>
<td>5141 Information services</td>
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<td>0.00</td>
<td>0.48</td>
<td>-0.03</td>
<td>0.22</td>
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<tr>
<td>5133 Telecommunications</td>
<td>0.29</td>
<td>0.15</td>
<td>0.14</td>
<td>0.58</td>
<td>-0.11</td>
<td>0.16</td>
<td>0.50</td>
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<tr>
<td>4883 Support activities for water transportation</td>
<td>0.03</td>
<td>-0.35</td>
<td>0.14</td>
<td>0.15</td>
<td>-0.65</td>
<td>0.02</td>
<td>0.59</td>
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<tr>
<td>1150 Support activities for farms</td>
<td>-0.04</td>
<td>-0.24</td>
<td>0.11</td>
<td>0.15</td>
<td>0.80</td>
<td>0.11</td>
<td>0.74</td>
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<tr>
<td>4882 Support activities for rail transportation</td>
<td>-0.09</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.09</td>
<td>0.90</td>
<td>0.82</td>
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<tr>
<td>Variance explained by each factor</td>
<td>3.92</td>
<td>1.52</td>
<td>1.50</td>
<td>1.31</td>
<td>1.18</td>
<td>1.09</td>
<td></td>
</tr>
</tbody>
</table>
• Core KIBS:

  – Purely hierarchical (no regional differences)
    • Located in major metropolitan areas
  – Locate in places with
    • Educated workforce (all types of qualifications)
    • Only co-locate with other similar sectors (FIRE, professional services)
Core KIBS

Principally large metropolitan areas.
• RESOURCE EXTRACTION KIBS

– Locate in Alberta

– Do NOT locate in immediate proximity to resource extraction industries

– Locate in areas with high proportion of science and engineering qualifications
Resource extraction KIBS (engineering and mining services)

- Urban areas in Alberta
- Some large, some small
- Around Toronto
- Northern Quebec and Ontario
• **FORESTRY; COMMUNICATIONS; FARM / not WATER TRANSPORT**

  – Each follows a regional distribution
    - **Forestry:** British Columbia and Quebec (forestry provinces)
    - **Communications:** Prairies and Atlantic (remotest regions)
    - **Farm / not Water transport:** Alberta and Prairies

  – Each also follows ‘client’ sectors locally
    - **Forestry:** local proximity to wood and forestry products.
    - **Communications:** local proximity to air transportation
    - **Farm / not Water Transport:** local proximity to agricultural producers / distant from Water transporation industry
- British Columbia
- Quebec
- scattered presence elsewhere
In sum, three location patterns

1. Hierarchical KIBS (Metro areas)
   - Maximise general accessibility and access to labour with high levels of *general* qualifications.
   - No apparent connection with any particular sectors either at the regional or at the local scale.
   - *If these KIBS participate in knowledge transfers outside metropolitan areas, they do so over distance: they do NOT locate outside metro areas.*
   - *Don’t expect these KIBS to generate local ‘buzz’ outside metro areas.*
2. Regional market KIBS (larger and smaller urban areas)

- These KIBS locate in the same region as their client sectors.
- They DO NOT necessarily locate in or near the same localities as their client sectors.
- They seek out a specialised labour force.

- These KIBS may help to generate a regional (or provincial) level ‘buzz’
- These KIBS DO NOT seem to participate in any specifically local interactions
3. Local market KIBS

- These KIBS locate in regions where their client sectors can be found
- **Furthermore, these KIBS locate in immediate proximity to their client sectors**
- *These KIBS may contribute to local buzz*
- *But are these specialised sectors (support to forestry, support to road transport, support to air transport etc..) KIBS?*
CORE KIBS: General accessibility
and
Qualified labour force

Regional KIBS: Regional accessibility
and
Specialised qualifications

Local KIBS: Immediate accessibility.
But are they KIBS?

Christallerian model (KIBS follow the urban hierarchy)
Weberian model (KIBS are attracted to inputs – qualified labour - and markets)

Location theory has something to say about KIBS, buzz and pipelines
To conclude

- Cities tend to have specific economic functions (urban systems theory).
- Core KIBS functions tend to be at the top of the urban hierarchy.
- How do innovative companies in smaller cities and remoter regions access these KIBS functions? (assuming that KIBS are important vectors of information and know-how for innovation)
• Space is **not** a blank slate upon which social processes play out.

• Space incorporates great inertia (population distribution, cities, infrastructure, transport routes) that current social processes only partly overcome.

• However, existing configurations of space are **used** in different ways by different actors, and this usage may change, sometimes rapidly.

• It is important to incorporate some elements of *spatial theory* in innovation studies.

• This theory can provide a framework for understanding how space is used (and how this use may evolve over time) (e.g. large cities/small cities; central areas/remote areas)
Some more general remarks:

- From the perspective of spatial and geographic analysis, the treatment of space (as opposed to place) in innovation studies remains basic.

- There is thus much potential for investigating innovation through a spatial prism...

- ...though detailed geographic data (such as the Quebec manufacturing innovation census of 2005) are very difficult to access.