Theme 1: Innovation and knowledge flows in the Saskatoon City Region

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Local Buzz/Global Pipelines

• Local buzz:
  – Economies of scale/scope (labour markets, services)
  – Leadership (stars, entrepreneurs, VCs, angels)
  – Sophisticated local demand via global firms (MNEs)
  – Critical infrastructure (labs, universities)
  – Relationships/culture

• Global pipelines:
  – Access to proprietary IP and contextual knowledge via stars, MNEs, labs, VCs
ISRN hypotheses:

Economy & creativity in city-regions depends on:

• strength of local knowledge flows within individual industries/clusters
• strength of local knowledge flows between individual industries/clusters
• strength of knowledge-based linkages between local and non-local economic actors

Economic performance of city-regions depends on:

• density of local networks
• relative mix of local and non-local ties
• diversity of economic actors belonging to networks
Data

• 1997-99: Phillips & Khachatourians global oilseeds complex in Saskatoon: 30 semi-structured interviews
• 2002-3: ISRN I: 75 in-person, structured interviews of biotechnology cluster
• 2007-8, ISRN II-1: 25 structured interviews
• 2008: Phillips & Webb creatives survey: 109 respondents
• 2009: Webb SNA on social entrepreneurs in Saskatoon: 30 individuals
**H1: Local knowledge flows**

- Firms in ISRN II-1 reported competitive advantage from: innovation (50%); customer service (25%); management responsiveness (12%)
- Sources of IP: 18 firms indicated they owned some IP—16 used patents; 2 used trade secrets—5 indicated that they did not have any unique products or services that could be protected
- Collaboration often only a supply chain relationships
- Appear to be based on common norms and beliefs
## Ways firms track competitors

<table>
<thead>
<tr>
<th>Method</th>
<th># of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conferences and/or meetings</td>
<td>12</td>
</tr>
<tr>
<td>Personal contacts</td>
<td>10</td>
</tr>
<tr>
<td>Networking</td>
<td>9</td>
</tr>
<tr>
<td>Looking on web sites</td>
<td>8</td>
</tr>
<tr>
<td>Publications</td>
<td>6</td>
</tr>
<tr>
<td>Customers</td>
<td>3</td>
</tr>
<tr>
<td>Patent searches</td>
<td>3</td>
</tr>
<tr>
<td>Collaboration</td>
<td>2</td>
</tr>
<tr>
<td>Buy and test products</td>
<td>1</td>
</tr>
</tbody>
</table>

Collaborations

Every firm gained from collaboration:

- Mostly feedback
- Some quantifiable benefits of knowledge flows
- Public institutions critical to knowledge flows (USask, NRC/PBI, POS Pilot Plant, AAFC, NRC/IRAP, Innovation Place and VIDO)
BUT not key to business strategy

- Often shallow: related to single innovation step (e.g. funding or product testing)
- Narrow collaboration in development process:
  - To increase efficiency and cut costs; also to access unique knowledge/expertise to stay at cutting edge of science and technology
  - Smaller firms and start-ups cite need to access specific services, equipment, and infrastructure.
- Supplier collaborations: remedy in-house weaknesses (8), create efficiencies (7) and ease compliance with regulations (2).
Role of local govt & trade associations

- Place to exchange information that not a direct threat to their company
- Default is to share knowledge as the natural order of things
- Most reported knowledgeable acquaintances who could help
- Respondents also likely assist if the roles reversed
- Compensation for brief consultations never mentioned; only expected if extended period
- Interactions mostly local
Rare for respondents to indicate trade associations or government had important influence on their business.
Even if firm worked with trade association, often unable to define benefit; some firms derided organizations for not doing enough.
Local knowledge flows

- Connections mostly informal—often simply picking up phone to call acquaintance at Uni who might be able to lend assistance
- Only ‘buzz’ in Innovation Place; nowhere else (ISRN II-1)
- More often through labour mobility
### Labour mobility within clusters/industries

<table>
<thead>
<tr>
<th>Current Employer</th>
<th>Current</th>
<th>Past employment experience</th>
<th>Uni</th>
<th>Other firms</th>
<th>AAFC</th>
<th>NRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms</td>
<td>189</td>
<td>45</td>
<td>81</td>
<td>13</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>AAFC</td>
<td>162</td>
<td>42</td>
<td>50</td>
<td>--</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>NRC</td>
<td>39</td>
<td>19</td>
<td>9</td>
<td>3</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>390</td>
<td>151</td>
<td>140</td>
<td>16</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>% total</td>
<td>39%</td>
<td>36%</td>
<td>4%</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


~35% of firms’ employees
Mobility within sectors/clusters

- Phillips & Webb: “How open are the social networks in Saskatoon to new people and new ideas?”
  - average response of 6.32 (range 2-10; STDEV 1.85)
  - “growing pockets of very open, innovative and welcoming networks” but some resistance that newcomers experienced

- ISRN II-3: “Do interactions [between various networks, associations and government actors] tend to be collaborative or competitive?”
  - 19/27 with average response 6.95 (range 2-9; STDEV 2.20).
  - social capital investments biased to supporting collaboration and weakly support innovation
H2: Mobility between sectors (Phillips & Webb)

- Does economy enable mobility between sectors?
  - 10 point scale (1=none; 10=high)
  - 58 responses with average of 6.5 (STDEV 1.6) that the economy facilitates mobility

- Does respondent use knowledge gained in other sectors in current work?
  - 10 point scale (0=never; 10=frequently)
  - 62 responded with average 6.6 average (STDEV 2.2)

- No significant correlation between the responses and the talent index.
Cross sectoral learning

• Overwhelming firm response was bafflement at the idea of learning from other sectors
  – Did not happen at all (38% of respondents)
  – Minimal (31%)
  – Noteworthy extent (25%)
  – A lot (1)
  – Larger firms more likely to learn across sectors
  – Usually closely related industry, e.g. gold mining learning from uranium mining.

• Learning from other sectors:
  – Specific methods, such as mining from metal-working and manufacturing
  – Functions, such as HR and exporting
Recruiting

• Common view: workers strictly confined to sector; do not work across fields in any significant way
  – 58% of firms never recruit from other sectors
  – 17% said it happened rarely
  – 20% report cross sectoral hiring important for new perspectives and skills
  – Partly forced by Saskatoon’s limited workforce

• 7 firms commonly recruit directly from competitors; BUT many firms believe it unethical or inappropriate

• Half of firms report special relationship with local education institution (SIAST or Uni); included job fairs, internships and curriculum...
H3: Strength of local-global links

A composite of:

- People: based on hiring practices and migration patterns
- Knowledge: based on flows of codified knowledge and networks to extend know-how
- IP: based on practices and systems
### Sources of new employees in private firms

<table>
<thead>
<tr>
<th>Source</th>
<th>Local</th>
<th>Non-local</th>
<th>% non-local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>11</td>
<td>6</td>
<td>35%</td>
</tr>
<tr>
<td>Sci., Tech., Eng.</td>
<td>17</td>
<td>9</td>
<td>35%</td>
</tr>
<tr>
<td>Design</td>
<td>3</td>
<td>1</td>
<td>25%</td>
</tr>
<tr>
<td>Marketing/Sales</td>
<td>11</td>
<td>9</td>
<td>45%</td>
</tr>
<tr>
<td>Production</td>
<td>15</td>
<td>3</td>
<td>17%</td>
</tr>
<tr>
<td>Freelance/Contract</td>
<td>8</td>
<td>5</td>
<td>38%</td>
</tr>
</tbody>
</table>

Source: Author’s tabulation of ISRN Survey Part D: Q3.
The Saskatoon Biotechnology entrepôt and its global connections

Saskatoon RSI

- Global know-why
  - 100%
- Global know-what
  - 70%
- Global know-who
  - 88%

- Why
- How
- Who

- Assembly of new plant varieties
  - 100%
- Commercialization of new plant varieties
  - 66%
- Production of new varieties
  - 33%
- Commercial services
  - 33%
- Global new plant varieties
  - 33%
- Exports of raw and semi-processed product
  - 80%
- Exports of Varieties
  - 50%
### IP strategies and innovation

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formal IP strategy</strong></td>
<td>yes</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td><strong>Local/non-locally based strategy</strong></td>
<td>local</td>
<td>10</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>non-local</td>
<td>7</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>Local and non-local</td>
<td>3</td>
<td>.15</td>
</tr>
<tr>
<td><strong>Valuing IP</strong></td>
<td>multidisciplinary/team</td>
<td>8</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>market-based</td>
<td>3</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>science-based</td>
<td>1</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>management-based</td>
<td>1</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>customer-based</td>
<td>1</td>
<td>.05</td>
</tr>
<tr>
<td><strong>Local/non-local valuation</strong></td>
<td>local</td>
<td>7</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>non-local</td>
<td>7</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>local and non-local</td>
<td>4</td>
<td>.20</td>
</tr>
</tbody>
</table>
Conclusions:
Economy/creativity depend on strength of:

• H1: local K-flows within industries:
  – Exist but not strong; mostly informal

• H2: local K-flows between industries:
  – Limited; larger firms seek to access

• H3: global pipelines:
  – Evident at cluster and firm level
  – Appear critical in sectors/clusters
  – Not clear whether valued generally
Further analysis

• Role of informal collaboration?
  – Is it cultural (qualitative analysis of survey)?
  – Is it regional (comparison across city-regions)?

• Access to university knowledge: P2P or institutional?
  – Does this vary by region? By sector?

• Qualitative analysis of surveys to extract values and norms?
  – Would it vary by region?