How Cities Network, Learn and Innovate

Woodrow Wilson Center

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Tim Campbell, PhD
Chairman, Urban Age Institute
Content

- Beyond Smart Cities Project
- A shadow market--Why City Learning?
- Gaps in the Literature
- Survey of City Learners
- Working Hypotheses
- Findings and Conclusions
TIM CAMPBELL

BEYOND SMART CITIES

HOW CITIES NETWORK, LEARN AND INNOVATE
Why Shadow? Why Learning?

Single city actions-- observed high and increasing volume of exchange. Anecdotal evidence from Seattle, Barcelona, Denver, Portland, other cities.

Global cities NGOs-- unions, Metropolis, EuroCities, ICLEI, Healthy cities. 57 city exchange organizations, up from 8 in 1982 (Keiner 2007).
Why Learning?

- Shrinking role of nation states, cities rising
  - Decentralization and Globalization
  - Higher exposure to competition
  - Emerging features on geo-political landscape
  - Cities as first point of contact

- Growth of number of cities—1000

- Efficiency gains Freire and Polese

- Reduce risks of change
Not number of urban people, number of cities— the learning units

<table>
<thead>
<tr>
<th>Size Range (mils)</th>
<th>World Total</th>
<th>Less Developed</th>
<th>Developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10</td>
<td>13 21 29 9 15 22 4 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 to 10</td>
<td>19 33 46 14 26 36 5 7 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 5</td>
<td>263 385 502 170 282 393 93 103 109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.5 to 1</td>
<td>337 512 664 222 388 531 115 124 133</td>
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<td></td>
</tr>
<tr>
<td>.1 to .5</td>
<td>2507 2717 2741 1614 1783 1769 893 934 972</td>
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<td>Total</td>
<td>3139 3668 3982 2029 2494 2751 1110 1174 1231</td>
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</tr>
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</table>
Gaps in the literature

- Organizational learning
  - tacit to explicit. Schon, Nonaka, Polyani, Easterby-Smith
- Capacity building and governance
  - social capital, embeddedness, networks participation. Putnam, Uphoff, Ostrom
- Regional competitiveness
  - external factors of success—clusters, trust, innovative milieu, Porter, Camagni, Polenske
- Knowledge economies
  - Archibugi and Lundvall
- Creative cities
  - Landry, Kostaininen city “ba”
- Social Network Analysis (Watts, Reagans, Centola, Lazer)
- Where are Learning cities? What framework?
Web Survey-- Methods

- Questionnaire field tested
- Intermediaries disseminate
  - CityNet, UCLG Platforms (e.g. LAC, Asia), Administrative Staff College (Hyderabad), National League of Cities
- Two waves via Metropolis
- Survey went to list of about 300
- 44 Responses
Responses by Region and Size

<table>
<thead>
<tr>
<th>Region</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia</td>
<td>11</td>
</tr>
<tr>
<td>N. America</td>
<td>8</td>
</tr>
<tr>
<td>Europe</td>
<td>6</td>
</tr>
<tr>
<td>L. America</td>
<td>7</td>
</tr>
<tr>
<td>South Asia</td>
<td>4</td>
</tr>
<tr>
<td>W. Asia</td>
<td>4</td>
</tr>
<tr>
<td>Africa</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
</tr>
<tr>
<td>M. East</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City Size</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10</td>
<td>5</td>
</tr>
<tr>
<td>5-10M</td>
<td>7</td>
</tr>
<tr>
<td>1-5M</td>
<td>18</td>
</tr>
<tr>
<td>500-1M</td>
<td>7</td>
</tr>
<tr>
<td>50-100</td>
<td>6</td>
</tr>
</tbody>
</table>
Selected City Visits
(n=43; total cities = 165)
## Number of Study Tours and Exchanges
**Per year by City Type**

(Percent)

<table>
<thead>
<tr>
<th>Number</th>
<th>Total</th>
<th>Reform</th>
<th>Non</th>
<th>OEC</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4-6</td>
<td>8</td>
<td>7</td>
<td>20</td>
<td>0</td>
<td>0</td>
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<tr>
<td>7-10</td>
<td>16</td>
<td>14</td>
<td>60</td>
<td>0</td>
<td>0</td>
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<tr>
<td>&gt;10</td>
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<td>71</td>
<td>20</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>DN</td>
<td>8</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

Over a 5 year period, big city exchanges number in the thousands.
### Table 4 Visitors and Hosts by City Size

<table>
<thead>
<tr>
<th>Population Range</th>
<th>Visitors (millions)</th>
<th>.05 to .5</th>
<th>.5 to 1</th>
<th>1 to 5</th>
<th>5 to 10</th>
<th>10 +</th>
<th>Totals by Host Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hosts (millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.05 to .5</td>
<td></td>
<td>44</td>
<td>6</td>
<td>33</td>
<td>11</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>.5 to 1</td>
<td></td>
<td>5</td>
<td>0</td>
<td>67</td>
<td>24</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>1 to 5</td>
<td></td>
<td>14</td>
<td>6</td>
<td>40</td>
<td>29</td>
<td>11</td>
<td>63</td>
</tr>
<tr>
<td>5 to 10</td>
<td></td>
<td>5</td>
<td>5</td>
<td>42</td>
<td>25</td>
<td>22</td>
<td>40</td>
</tr>
<tr>
<td>10 +</td>
<td></td>
<td>0</td>
<td>13</td>
<td>52</td>
<td>17</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>20</td>
<td>10</td>
<td>74</td>
<td>39</td>
<td>22</td>
<td>165</td>
</tr>
</tbody>
</table>
Number of Study Tours by City Size

Size of Visitors

- .05 to .5
- .5 to 1
- 1 to 5
- 5 to 10
- 10 +

Number of visits

Size of City Visited
<table>
<thead>
<tr>
<th>Income Level</th>
<th>Hosts</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>(percent by visitor)</td>
<td></td>
</tr>
<tr>
<td>High (13 cities)</td>
<td>74.2</td>
<td>24.2</td>
</tr>
<tr>
<td>Medium (9 cities)</td>
<td>73.3</td>
<td>24.4</td>
</tr>
<tr>
<td>Low (15 cities)</td>
<td>37.5</td>
<td>30.4</td>
</tr>
<tr>
<td>Totals Visits</td>
<td>103</td>
<td>44</td>
</tr>
<tr>
<td>Weeks</td>
<td>Respondents</td>
<td>None</td>
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<tr>
<td>-------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>Total (43)</td>
<td>4.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Reformers (22)</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Non-reformers (21)</td>
<td>4.5</td>
<td>13.6</td>
</tr>
</tbody>
</table>

Table 6  Time Spent in City Learning (percent)
Investment in Learning
(time spent by individual respondents)

Average time spent on learning is equivalent to 4-12 %

- Benchmarks
  - EU investment 3-6 % of GDP in OECD
  - World Bank 5% of admin budget
  - US Corporations 5-7 % (O’Leonard)
### Table 7 Substantive Areas

<table>
<thead>
<tr>
<th>Topic</th>
<th>Non-Reformers</th>
<th>Reformers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=67</td>
<td>N=72</td>
</tr>
<tr>
<td>Urban renewal</td>
<td>11.9</td>
<td>11.1</td>
</tr>
<tr>
<td>Urban Planning</td>
<td>17.9</td>
<td>13.8</td>
</tr>
<tr>
<td>Water and Waste</td>
<td>7.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Solid Waste</td>
<td>7.5</td>
<td>9.7</td>
</tr>
<tr>
<td>Land Use and Planning</td>
<td>7.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Transport</td>
<td>19.4</td>
<td>20.8</td>
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<tr>
<td>Climate</td>
<td>11.9</td>
<td>6.9</td>
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<tr>
<td>HIV</td>
<td>0</td>
<td>1.4</td>
</tr>
<tr>
<td>LED</td>
<td>7.5</td>
<td>18.1</td>
</tr>
<tr>
<td>Housing</td>
<td>9.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.1</td>
<td>99.7</td>
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</table>
## Table 8 Management Areas

<table>
<thead>
<tr>
<th>Topic</th>
<th>Non Reformers N=66</th>
<th>Reformers N=67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy analysis</td>
<td>12.1</td>
<td>20.9</td>
</tr>
<tr>
<td>Methods/Tools</td>
<td>16.7</td>
<td>16.4</td>
</tr>
<tr>
<td>Project Eval</td>
<td>16.7</td>
<td>10.4</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>10.6</td>
<td>10.4</td>
</tr>
<tr>
<td>Metro Governance</td>
<td>16.7</td>
<td>19.4</td>
</tr>
<tr>
<td>Negotiation</td>
<td>4.5</td>
<td>9.0</td>
</tr>
<tr>
<td>Financial Management</td>
<td>19.7</td>
<td>13.4</td>
</tr>
<tr>
<td>Other*</td>
<td>3.0</td>
<td>0</td>
</tr>
</tbody>
</table>

* Security, disaster management
### Source of Learning: impact
(90 cities named)

<table>
<thead>
<tr>
<th>Modality</th>
<th>Overall</th>
<th>Re-formers</th>
</tr>
</thead>
<tbody>
<tr>
<td>In house</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Consultants</td>
<td>3.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Universities</td>
<td>3.4</td>
<td>3.2</td>
</tr>
<tr>
<td>Prof pubs/rpts</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>City to city</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Associations</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Prof organztns</td>
<td>3.8</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Summing up

- Cities are aware of a new, open environment
- They are seeking cost-effective ways to learn
- They choose learning styles and focusing attention on key areas
- Reformers stand out from the pack
Drill down to Cases
Study concept and method

Web Survey cities
53

Non Reformers 26
Reformers 26

Case Studies 9

Sample City and Issue

Policy Traction/Technical Inputs

Turin Strategic Plan
Curitiba BRT
Bilbao Riverfront

3 Ad Hoc
3 Technical
3 Corporate

Barcelona Seminars
Europe Revenue Sharing
Glasgow “It’s possible”

5/24/2012
Tim Campbell, PhD.
Urban Age Institute
Reformer Cities—Case Timelines and waypoints

- Barcelona
  - Franco “state”
  - Olympics—recession —22@
    - <planning>
- Turin
  - Tangentopolis—reform/elections
  - strategic plans—Olympics
- Portland
  - boundary—no freeways—hi tech—TOD—light rail
    - <Metro planning>
- Charlotte
  - Odell plan—banking—new downtown—
    - <planning>
  - light rail—crisis
- Seattle
  - Boeing
downtown-City Missions—IT—PSRP
Reformer Cities—Issues

- Barcelona  SW, health, education
- Turin  strategic planning, participation, Olympics
- Portland  Bikes, walking, light rail
- Charlotte  downtowns, neighborhoods, forward planning, light rail
- Seattle  Infrastructure and regional capacity
Internal processing
Best practice found, now what?

Survey of 20 participants in each city

- Questions on learning and processing
- Informal deliberations
  - “Where did you learn?”
  - “How do you validate?”
  - “Who do you trust?”
- Produces 20 personal networks
What varies in learning?

- Knowledge search
- Tissue of remembering
- Clouds of trust
- Styles of learning
Variation in knowledge search

- Sponsor civic vs business
- Delegation - business, civic, political
- Scope of focus – narrow-broad
- Destinations – local, regional, global
- Continuity – repeats, themes, one-offs
Tissue of remembering

(Institutional capacity)

- A mandate
- An office
- A database
- A seminar series
- Documented write ups
- Web site
Clouds of Trust
Portland
Clusters of lose ties
Turin Network
Tight cluster
## Coherence measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Turin</th>
<th>Portland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>.10</td>
<td>.08</td>
</tr>
<tr>
<td>Avg. Distance</td>
<td>3.57</td>
<td>4.43</td>
</tr>
<tr>
<td>Diameter</td>
<td>6</td>
<td>8</td>
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</tbody>
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## Comparative view

<table>
<thead>
<tr>
<th>Learning</th>
<th>Torino</th>
<th>Portland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social capital</td>
<td>Segmented by age</td>
<td>Fragmented by sector</td>
</tr>
<tr>
<td>Networks</td>
<td>Tight, but closed</td>
<td>Loose, but open</td>
</tr>
<tr>
<td>Result</td>
<td>High speed, low diversity</td>
<td>Low speed, high diversity</td>
</tr>
</tbody>
</table>

- **Learning**
  - Torino: Segmented by age
  - Portland: Fragmented by sector
- **Networks**
  - Torino: Tight, but closed
  - Portland: Loose, but open
- **Result**
  - Torino: High speed, low diversity
  - Portland: Low speed, high diversity
Other features

- Power positions
  - Sometimes hidden
  - gates

- Isolates
  - Gaps

- Growth of networks
  - breaking in
Styles of learning

- Informal -- Portland
- Technical -- Curitiba
- Corporate -- Bilbao
Styles of learning

Web Survey cities
53

Non Reformers
26

Reformers
26

Case Studies
9

Sample City and Issue

Turin
Strategic Plan

Curitiba
BRT

Bilbao
Riverfront

Policy Traction/Technical Inputs

Barcelona Seminars

Europe Revenue Sharing

Glasgow “It’s possible”

3 Ad Hoc

3 Technical

3 Corporate

9 Case Studies

53 Web Survey cities

5/24/2012

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Urban Age Institute
Concluding Lessons

- Smart cities are deliberate about innovation
- Cities on the prowl, an active hidden market
- It’s in the net, stupid—less risky
- Do more to document conditions and context
- Its collective learning, not technical exchange, leads to transformational change
- Learning strategies can help
  - Improve efficiency of learning; invest in knowledge
  - Build foundations for learning
More than just collaboration

Communities that succeed form a “ba,” an innovative climate of trust

Exceptional effort is required to build and sustain trust

Nonaka’s “Ba”

- Socialization
- Externalization
- Internalization
- Combination
Common features

- Private
- Public
- Civic
- Other
# Orders of learning

<table>
<thead>
<tr>
<th>Learning Type (example)</th>
<th>Activities and Orders of Learning</th>
<th>Knowledge Acquisition (Order Learning)</th>
<th>Agency/Institutional (Second Order)</th>
<th>Trusting Milieu (Third Order)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Threshold (Pateros)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Not Enough Knowledge (Tarragona) Grazers</td>
<td>Undefined</td>
<td>?</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Twinners</td>
<td>Pre-defined</td>
<td></td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Knowledge, No Cohesion (Mumbai)</td>
<td>Partially defined</td>
<td></td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Proactive (Seattle)</td>
<td>Self-defined</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Learning, trust and innovation—working model

Learning

Trust

Innovation
Thanks

- **The Book**
  - [www.routledge.com/](http://www.routledge.com/) **Search > Beyond Smart Cities**
  - [www.beyonddsmartcities.org](http://www.beyonddsmartcities.org)

**The speaker**

- [timcampbell@urbanage.org](mailto:timcampbell@urbanage.org)
Appendices
Web Survey-- Methods

- Questionnaire field tested
- Intermediaries disseminate
  - CityNet, UCLG Platforms (e.g. LAC, Asia), Administrative Staff College (Hyderabad), National League of Cities
- Two waves via Metropolis
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## Responses by Region and Size

### Region
- East Asia: 11
- N. America: 8
- Europe: 6
- L. America: 7
- South Asia: 4
- W. Asia: 4
- Africa: 1
- Australia: 1
- M. East: 1

### City Size
- >10: 5
- 5-10M: 7
- 1-5M: 18
- 500-1M: 7
- 50-100: 6
Cases method

Four reform cities
Panel nominations
Representative players
Interviews
Four pictures of internal, informal networks of trust
Main themes in interviewed cities

- Barcelona  SW, health, education
- Turin  strategic planning, participation, Olympics
- Portland  Bikes, walking, light rail
- Charlotte  downtowns, neighborhoods, forward planning, light rail, leadership