From smart cities to smart learning environments.
A comparative study

Professor Jari Stenvall, University of Tampere
Adjunct professor, PhD Ilpo Laitinen, City of Helsinki
Professor Roberta Piazza, University of Catania
SCHOOL OF MANAGEMENT

03.05.2016

Jari Stenvall
Professor
University of Tampere

• First founded in Helsinki in 1925
• Moved to Tampere in 1960
• Key numbers
  • 15 500 students
  • 1 100 Master’s degrees annually
  • 120 PhD degrees annually
  • 2 000 staff members
3,000 degree programme students
400 doctoral students
220 staff members
School of management
• Prof. Jari Stenvall

• Researcher, research director, University of Tampere 1992-2001; Professor, University of Lapland 2002-2013. Professor, University of Tampere 1.8.2013-
• Visiting professor, University of Glasgow (UK)
• Publications: More than 40 books, more than 70 scientific articles
• Evaluation and development work within Finnish public administration reforms, such as municipal and service structures reform, reform of administrative courts and courts of appeal, management system in the city of Tampere
• Specialist tasks, e.g., as advisor to political decision makers... has been a permanent expert nominated by the Finnish Government in the parliamentary committee
• Teaching and research work and as visiting professor at e.g. Queens University (Belfast), University of Glasgow, University of Edinburgh, Georgia, Vietnam (National academy of public administration, International business school)
• Syväjärvi, A; Kivivirta; V; Stenvall; J; Laitinen; I (2015). Digitalization and Information Management in Smart City Government: Requirements for Organizational and Managerial Project Policy. International Journal of Innovation in the Digital Economy. Volume 6, Issue 4
• Laitinen, I; Nyholm, I; Stenvall, J; Kaivo-oja, J (2015). THE COMPLEX RELATIONAL DYNAMICS IN PUBLIC SECTOR REFORMS. European Integration Studies.9/2015
• Stenvall, Jari, & Laitinen, Ilpo (2015), Higher Education Engagement and Innovation Dynamics.- Comparative Study of Regional Innovative Networks of the City of Helsinki and the City of Chicago. In Carlot, C; Filoque, J-M; Osborne, M; Welsh, P (ed). The Role of Higher Education in Regional and Community Development and in the Time of Economic Crisis. Niace, UK
• Laitinen, I & Stenvall, J (2016). Entering the era of third generation services – a comparative study of reforms in social and health care services. Journal of Adult and Continuing Education (Accepted)
• Laitinen, I & Osborne, M., Stenvall, J (2016). Complex regional innovation networks and HEI engagement – the case of Chicago Int. J. Knowledge-Based Development (Accepted).
• Virtanen P., Kaivo-oja, J., Ishino, Y., Stenvall, J., Jalonen, H. (2016). Ubiquitous revolution, customer needs and business intelligence? Empirical evidence from Japanese healthcare sector has been accepted for publication in the special issue of International Journal of Web Engineering & Technology (Accepted)
Helsinki & Catania

Comparative qualitative study

The material has been gathered from the cities of Helsinki and Catania

The target cities showcase varied successes and models of smart cities
WHY

The developing of smart cities (SC) is a hot topic

At the moment the U.S., Europe and Japan are for instance funding initiatives and implementing smart city technologies to address current urban problems

The smart city concept is especially used to identify a large spectrum of heterogeneous solutions and city programs
The question

Our study concentrates on the issue of challenges to the learning environment within the concept of smart city.

The purpose of our research is focused on highlighting and understanding expert’s learning processes.
The nature of expertise
ADAPTIVE LEARNING

- The concept of adaptive learning has been used in different kinds of contexts.
- From the basic of research literature on adaptive learning, we can draw conclusions that researchers are no clearer about who learns during the process, what they learn about, and what kind of learning outcomes are observed.
The typology might separate Learning into adaptive, anticipatory and action learning:

- Adaptive learning is a reactive, coping form of learning, which usually involves the search for direct solutions to immediate problems.
- Anticipatory learning focuses on avoiding future problems, by identifying potential events and searching for the best ways to prepare for them. It is more creative than adaptive learning.
- Action learning involves turning real problems or tasks into a learning laboratory, where teams seek to resolve problems and simultaneously, learn from their experiences.
• In our article is based on idea that adaptive is a learning process. It is learning process in which cities and city areas try to adapt changed environment. It is related to local context and culture. In might be planned or unplanned due to local actors and activities. This emphasizes the viewpoint that adaptively is related to complexity
• **Pragmatic adaptive learning** means that learning process is based on rapidly from experience, adapting their behavior to prevailing circumstance. Adaptability means that cities adjust to changes in the environment without endangering its core organizational features. According to this adaptively is characterized and fostered by improvement, concentration and discussion. Improvement can be defined as the refinement of existing competences, technologies and paradigms. The one form of pragmatic adaptive learning is for instance learning by doing.

• **Generative adaptive learning** means changing people’s mental models or way of thinking like beliefs and assumptions. Generative adaptive learning might be facilitated and characterized by attention, dialogue and inquiry. Attention is a state in which the mind is open, without a focus, so it implies trying to be aware of the whole picture. Attention seems to be a prerequisite of mindfulness.
Unlearning

- Unlearning is not forgetting (like a dementia patient), or suppressing negations (Freud) or restraining the use of knowledge (Ulysses). Unlearning is the implicit idea in Lewin’s (1935; 1936) famous theory of change management - *freeze-change-refreeze*; brought to prominence by Hedberg (1981) who contests Cyert and March’s (1963) behavioural theory seeking to explain how organisations learn by stressing the importance of *discarding* old knowledge to make way for change and innovation. Whilst accepting the idea of unlearning, Newstrom (1983) viewed it as eradicating barriers to new learning, arguing against a ‘clean slate fallacy.'
What is a smart city?
Characteristics of Smart Cities

1. utilize networked infrastructure to improve its development, efficiency or competitiveness
2. have emphasis on business-led urban development
3. aim to achieve the social inclusion
4. have high-tech and creative industries in a crucial role
5. pay attention to social capital
6. are sustainable
Methodology

Qualitative research techniques

Document analysis, face-to-face interviews, focus groups

City of Helsinki, 2015, 1 in-depth interview and 2 focus groups, 12 people

City of Catania, 2016, in-depth interviews and a focus group, 11 people
Experts involved

<table>
<thead>
<tr>
<th>HELSINKI</th>
<th>CATANIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 interviewees</td>
<td>11 interviewees</td>
</tr>
<tr>
<td>Specialists in ICT</td>
<td>Specialist in ICT (3)</td>
</tr>
<tr>
<td>Specialists in R&amp;D</td>
<td>Consultant for Municipality SC project management programme</td>
</tr>
<tr>
<td></td>
<td>Researchers on cultural heritage (4)</td>
</tr>
<tr>
<td></td>
<td>Manager of IBAM (Cultural heritage research centre)</td>
</tr>
<tr>
<td></td>
<td>Director of CAPITT (University Centre for transfer of innovation)</td>
</tr>
<tr>
<td></td>
<td>Researcher on Urban planning</td>
</tr>
<tr>
<td></td>
<td>Involved in the smart city programme</td>
</tr>
<tr>
<td>Municipality</td>
<td>University and research centres</td>
</tr>
</tbody>
</table>
Results and Discussion.

Catania

Catania, a metropolitan city, includes 58 municipalities and has 1,078,766 inhabitants (2011)

The education level is slightly lower than the national standard (0.12 is the graduation rate - the average rate of 0.16 in the Italian capital cities)

High unemployment rate (27.31%), with a high concentration of unemployed people in the capital municipality itself

Catania is at the 43rd position in the 2014 Smart City Index, (Bologna is the smartest city in Italy, with a score of 100 and 11 top thematic areas out of 12).

Three deficit thematic areas (Education, Government, Energy) and two totally inadequate ones (Health and Natural Resources)

Catania is the only smart Sicilian city in the field of Smart Culture & Travel
Results and Discussion.

Helsinki

Helsinki has approximately 621,000 residents

The City employs a total of around 39,000 people

Helsinki scores high in the European digital city index, being 4th on 2015

The CITIE 2015 index, City initiatives for technology, innovation and entrepreneurship, notes that Helsinki, which was 3rd on that index, has the most consistent profile of any of the top 5.

CITIE describes that Helsinki has a highly collaborative approach to working with local entrepreneurs.
## Comparison (1)

<table>
<thead>
<tr>
<th></th>
<th>Helsinki</th>
<th>Catania</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very comprehensive SC programme</td>
<td>There is lack of coordination of initiatives and the absence of a shared construction of the SC vision</td>
</tr>
<tr>
<td></td>
<td>They have theoretical understanding of learning organization and competence management</td>
<td>Only one researcher had some knowledge of the organizational learning processes</td>
</tr>
<tr>
<td></td>
<td>Quite many of the interviewees referred also to some key thinkers on the field</td>
<td>SC are multi-dimensional systems, and even those of them more focused on a particular dimension do not fail to acknowledge the importance of some other dimensions as well</td>
</tr>
<tr>
<td></td>
<td>Structural rigidity is a big challenge</td>
<td>Structural disconnection between administration and stakeholders</td>
</tr>
<tr>
<td>Helsinki</td>
<td>Catania</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Interviewees shared a ‘big picture’ of smart city, referring to networking, social capital, sustainable city and ecosystemic collaboration with ICT companies and start ups</td>
<td>SC are multi-dimensional systems. Not all respondents have a clear view of the ongoing processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technological changes are necessary but not enough</td>
<td></td>
</tr>
<tr>
<td>Their comments also well addressed information technology and the City’s information and communication technology (ICT) strategy</td>
<td>The city is connected thanks to ICT that makes information available to everybody, facilitates interaction and allow citizens to &quot;live their city in a better way&quot;.</td>
<td></td>
</tr>
<tr>
<td>These were deemed to support development toward the goals of smart city</td>
<td>ICT is a tool used by &quot;Smart&quot; cities to support joint planning and provision of services for the benefit of the urban communities.</td>
<td></td>
</tr>
<tr>
<td>Helsinki</td>
<td>Catania</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>If people are well-educated they typically have a capacity for reflexive learning</td>
<td>Respondents never paid attention to the topic of learning in smart contexts</td>
<td></td>
</tr>
<tr>
<td>Some individuals spoke a great deal about competence management, learning, and a learning organisation as characteristics of smart city</td>
<td>almost everyone preferred to speak about training activities rather than learning ones</td>
<td></td>
</tr>
<tr>
<td>The culture of developing new things is also important in smart cities</td>
<td>SC offered a new vision of cultural heritage</td>
<td></td>
</tr>
<tr>
<td>Smart City program will cause radical changes in the city. Those actors are successful who “have the agility” to learn.</td>
<td>The SC represents a chance to &quot;overcome the antagonism&quot; between PA and citizens and to learn together</td>
<td></td>
</tr>
</tbody>
</table>
Some conclusions

Catania is more characterised by a history push than in Helsinki, whereas the dominant discursion on more based on future pull.

In Catania interviewees referred to history and cultural heritage clearly and notably more often than in Helsinki.

The history-dominant discursion leads to view development through an incremental process rather than a system wide change.
Interviewees in Catania referred to digitalization and technology more often as a supportive system. In Helsinki smart city was more often referred as a holistic system and as a paradigm shift.

In Helsinki the interviewees also referred smart city theories and theorists, to open innovation and the wisdom of crowds align with the smart city process.
Organizations typically improve their competency within quite narrow set of routines until they are somehow forced to explore and co-create new routines.

In Catania’s case there seem to be quite little real need to change patterns of behaviour and routines, whereas in Helsinki very vital and a core part of the dominant discourse is to reinvent itself.

As the interviewees in Catania referred to skills gap, that history dominance seem to link competency traps especially when the existing routines are not seriously challenged.
The interviewee's answers illustrate the challenges of smart city concept showing that the expertise is not a fixed role, but in obtaining and sharing knowledge even experts are both experts and novices or advanced beginners at the same time.
THANK YOU