Developing new vocabulary in regional studies for changing worlds

Anu Manickam

share your talent. move the world.
- aim of study
- underlying theories & framework
- complexity epistemology & research
- understanding new complexity in clusters
- cluster model - vocabulary for analysis and intervention strategies
Creating new ecosystems

“We cannot address societal challenges through minor adjustments and conventional management methods.”

Committee of the Regions, 2013
Objective of study:

Contextual changes and cluster systems developments
Developing the framework: theories & concepts

**COMPLEX ADAPTIVE SYSTEMS**
- Organizations (Axelrod & Cohen, Olsen & Eoyang)
- Human Dynamics (Stacey, Eoyang)
- Development & aid (Ramalingam, Jones)

**INNOVATION SYSTEMS**
- National/Regional/Sectoral (Asheim, Cooke, Edquist, Geels, Gertler, Lundvall, Tøndel, Tripi)

**EVOLUTIONARY ECONOMICS**
- Regional studies (Andersen, Boxhuma, Frenken, Lambooy, Martin, Sunley, Uyarro)

**NON-LINEARITY**
- Sensitivity to initial conditions
- Schema
- Sensemaking
- Agents
- Selection
- Container
- Significant differences
- Strange attractor
- Fitness landscape
- Variety
- History
- Transforming interactions
- Fractals/self-similarity
- Emergence
- Self-organizing

**CLUSTER DYNAMICS**
- Path dependency
- Container
- Stakeholders
- Attractor
- Fitness to landscape
- Significant differences
- Transforming interactions
- Emerging patterns
- Self-organizing

**CONTEXT – EXISTING LANDSCAPE**
- Drivers of change
- Complex problems
Epistemology of Complexity approaches
- ontology of connected entities, changing links, nodes that change internally, capabilities develop and change over time
- ‘open systems’ interacting with environment → ‘interpretation systems’
- ‘actor’s’ interpretation of system → as part of system
- ‘modeller’ and ‘model’ are part of system → system evolves through interactions

Case study: Energy Valley
Supplementary:
Karlstad – Paper Province
Silicon Valley
complexity of challenges faced
- different perspectives on challenges
- different ideas on solutions
Drivers of change and new complexity

quadruple-helix

different perceptions

different priorities

different solutions
Epistemology of interconnected systems changes interacting with its environment

- Different dynamics in different parts of the systems
- Held together by system constraints
- Initial conditions and interactions shaping systems changes
Cluster conditions

path dependency
stakeholders
container

energy transition
profits
local welfare

STAKEHOLDERS
Key players
- Gas corporations
- National government
- Provinces
  (Research centres & education institutions)

PATH DEPENDENCY
Dominant factor of past
- Gas history & relevance to economy

CONTAINER
Defining features
- Energy Valley Cluster
- Frames – economics; ‘energy transition’ & ‘regional development’
- Gas roundabout, (later energy roundabout)
- Gas dominant in energy mix & energy transition
Cluster dynamics

**Attractor**

**Fitness to landscape**

**Significant differences**

<table>
<thead>
<tr>
<th>Attractor</th>
<th>Shared attractors in all 3 levels - examples:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>- Sustainable economic growth</td>
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<tr>
<td></td>
<td>- Energy efficiency, decentralized energy and demand side focus</td>
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<tr>
<td>Differences</td>
<td>- NL and EV – focus on future of gas in energy transition and innovations vs. EU with a broad range of energy sources</td>
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<td>- EU pull to be independent from external energy sources vs. NL/EV connecting to EU and global energy markets</td>
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<table>
<thead>
<tr>
<th>Fitness to Landscape</th>
<th>Shared at all levels</th>
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<tbody>
<tr>
<td></td>
<td>- Longer term policy and investment perspectives needed</td>
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<tr>
<td></td>
<td>- Compliance structures, and dialogues to seek solutions for complex problems and differences</td>
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<td></td>
<td>- Collective energy vision and commitments, 'EU thinking' where needed</td>
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<td></td>
<td>- Need for multi-disciplinary competences, cross-sectoral value chain innovations, new business models, new governance models, trans-regional and international collaborations and new infrastructure</td>
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<table>
<thead>
<tr>
<th>Significant Differences</th>
<th>Shared Collaborative and consensus practice in dealing with conflicts of interests</th>
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<tbody>
<tr>
<td>Differences</td>
<td>- Most important difference in EU is that of the MS and regions with their individual politics and energy mix</td>
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<td></td>
<td>- Difference in innovation capacity in different energy arenas vs. NL more focused on biomass, bio-gas and on gas innovations and off-shore developments</td>
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<td></td>
<td>- Differences in own specialization, interests, etc. as seen in the lobby culture and organization vs. NL, collaborations of large and small corporations, industry and universities, fossil and renewables, etc.</td>
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**Energy landscape more complex & unpredictable**

- New, varied & decentralized energy sources & players
- More connectedness, demand-side & international focus
- Increasing grassroots movements

**Differences that could transform developments**

- Differences in interests, roles & capabilities of big & small companies, & stakeholder groups, between the provinces (landscape, vision, frames, issues, drivers, focus, strategy and scope), & in levels (local, regional, national, EU, global)

**New strategies for future – enlarged scope**

- New infrastructure, multi-disciplinary approach beyond technology for energy transition
- More systems & cross-sector value chain approach, including new innovation platforms, approaches, business models & partners (EnTranCe)
- Different education & skill sets, including international focus (Energy Academy Europe)
- Different scales needed in Energy Valley (no consensus), from local to global, including community engagement & inclusion
Cluster transformations

**transforming interactions**

**emergent systems patterns**

<table>
<thead>
<tr>
<th>Existing landscape</th>
<th>New landscape</th>
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<tbody>
<tr>
<td>‘Simple &amp; complicated’ – technology,</td>
<td>The ‘many’ &amp; the ‘complexity’ – distributed agency</td>
</tr>
<tr>
<td>economics, policy</td>
<td></td>
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<tr>
<td>One or two frames of reference in</td>
<td>Multiple frames &amp; sensemaking – new ‘voices’ and dialogue</td>
</tr>
<tr>
<td>policy/strategy</td>
<td></td>
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<tr>
<td>Slow change – ‘homogeneous’ future</td>
<td>Uncertainty and change – unpredictable future scenarios</td>
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<tr>
<td>scenarios</td>
<td></td>
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<tr>
<td>Latent trust in authorities and</td>
<td>Trust is conditional – varying (tolerance, engagement, alienation)</td>
</tr>
<tr>
<td>specialists</td>
<td></td>
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<tr>
<td>Knowledge development - exclusive &amp;</td>
<td>‘Learning’ &amp; ‘being open’ as norm (inclusive, experimentation)</td>
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<tr>
<td>internally organized (traditional)</td>
<td></td>
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<tr>
<td>Collaboration – fragmented &amp;</td>
<td>Different collaborations needed (sharing &amp; cross-border)</td>
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<tr>
<td>segmentations</td>
<td></td>
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<tr>
<td>Decision-making – centralized</td>
<td>‘Multi’ governance – new players &amp; new norms</td>
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<tr>
<td>Problems &amp; solutions – linear thinking</td>
<td>System &amp; context – ecosystems thinking</td>
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<tr>
<td>(modelling &amp; scenarios)</td>
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Cluster Emergence Model

- Epistemology of interconnected systems changes interacting with its environment

- Different dynamics in different parts of the systems
- Held together by system constraints
- Interactions rather than inherent properties shaping systems changes
- Sensemaking is an integral part of systems change
Cluster emergence model: a whole systems approach to describe qualitative systems shifts & design collective interventions.
What is ‘new’ about this approach?

– combines concepts from evolutionary and complexity sciences for regional studies
– offers an extensive whole-systems approach to study regional developments in their changing context
– brings sensemaking processes to the foreground
– offers a systemic analysis tool that facilitates new thinking and dialogues
– offers new interventions based on complex adaptive systems approach
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