Developing a typology of adaptive learning strategies within coastal institutions affected by climate change extreme events

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Relevance of research

- Increasing pressures on coastal systems

- Nature of extreme events and increasing frequency of events

- Limited understanding of the particular elements and processes for successfully embedding adaptive learning within coastal institutions

Adaptive learning within complex systems

“Sustainability ... is radically a learning process. But learning here means not some potentially one-off performance of mastering facts or acquiring dispositions, which may then change subsequent behaviour (either of individuals or institutions).

Instead, it means permanent adaptive responsiveness to a permanently changing, ever emergent set of circumstances.” (Foster 2008)
Adaptive cycles

Fore loop: relatively slow accumulation of resources - e.g. various capitals

Back loop: relatively fast collapse and release of resources (unpredictability)

Diminishing resilience – e.g. efficiency focus, less flexibility, process focus

Adaptive learning across scales: Panarchy

1. Rapid and slowly unfolding processes;
2. Gradual and episodic (unpredictable) change; and
3. Cross-scale influences

Developing the typology

1. Complex systems thinking
   - Resilience framework - panarchy

2. Changing approaches to science

3. Organisational learning
   - Cognitive (Gestalt theories)
   - Experiential
   - Transformative
   - Single/double/triple loop
   - Social learning
     - Participatory/collaborative action
   - Sustainability learning
Characterising the management environment

1. High degree of complexity
2. Significant uncertainty
3. Multiple scales
4. Multiple values
5. Urgent decision-making
6. High stakes risk
7. Surprise and rapid change

Adaptive learning strategies
Learning context, processes and outcomes

System characteristics
• Complexity
• Uncertainty
• Surprise & rapid change
• High stakes risk
• Multiple scales
• Multiple values
• Urgent decision-making

Scale
• Individual
• Unit
• Organisation
• Institution

Learning processes and strategies
• Cognitive
• Experiential
• Single/double/triple loop
• Collaborative
• Other

Organisational learning outcome
• Prestructural
• Unistructural
• Multistructural
• Systems thinking
• Extended systems thinking

Socio-ecological system outcome
Collapse  Transformation
Additional thoughts

• Limitations of hierarchical typologies – attaining to ‘higher’ levels and devaluing ‘lower’ levels

• Relevance of learning after the fact – short lead-up times
  – Rapid learning within the back loop phase
  – Drawing from resources in the fore loop phase

• Learning ‘bad habits’ – maladaptation; path dependencies
“You cannot solve a problem from the same consciousness that created it. You must learn to see the world anew.”

Albert Einstein