

Sustainability Transitions *in science and education*



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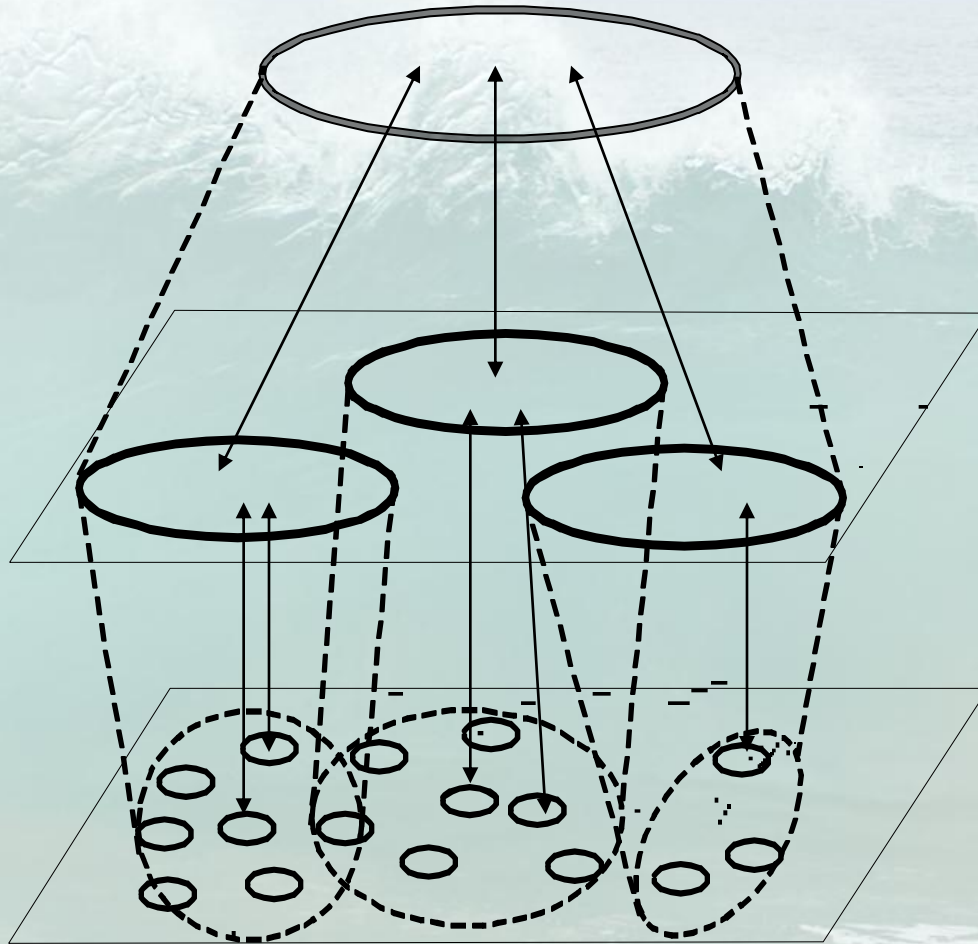
Transitions

fundamental change of structure, culture and practices in a societal (sub)system

- **culture:** collective set of values, norms, perspectives (shared orientation), paradigms
- **structure:** physical infrastructure, economic infrastructure, institutions, rules, regulations, collective routines
- **practices:** behaviour, operation, implementation

→ *Shared discourse and language for multi-actor learning and innovation processes*

Transition levels



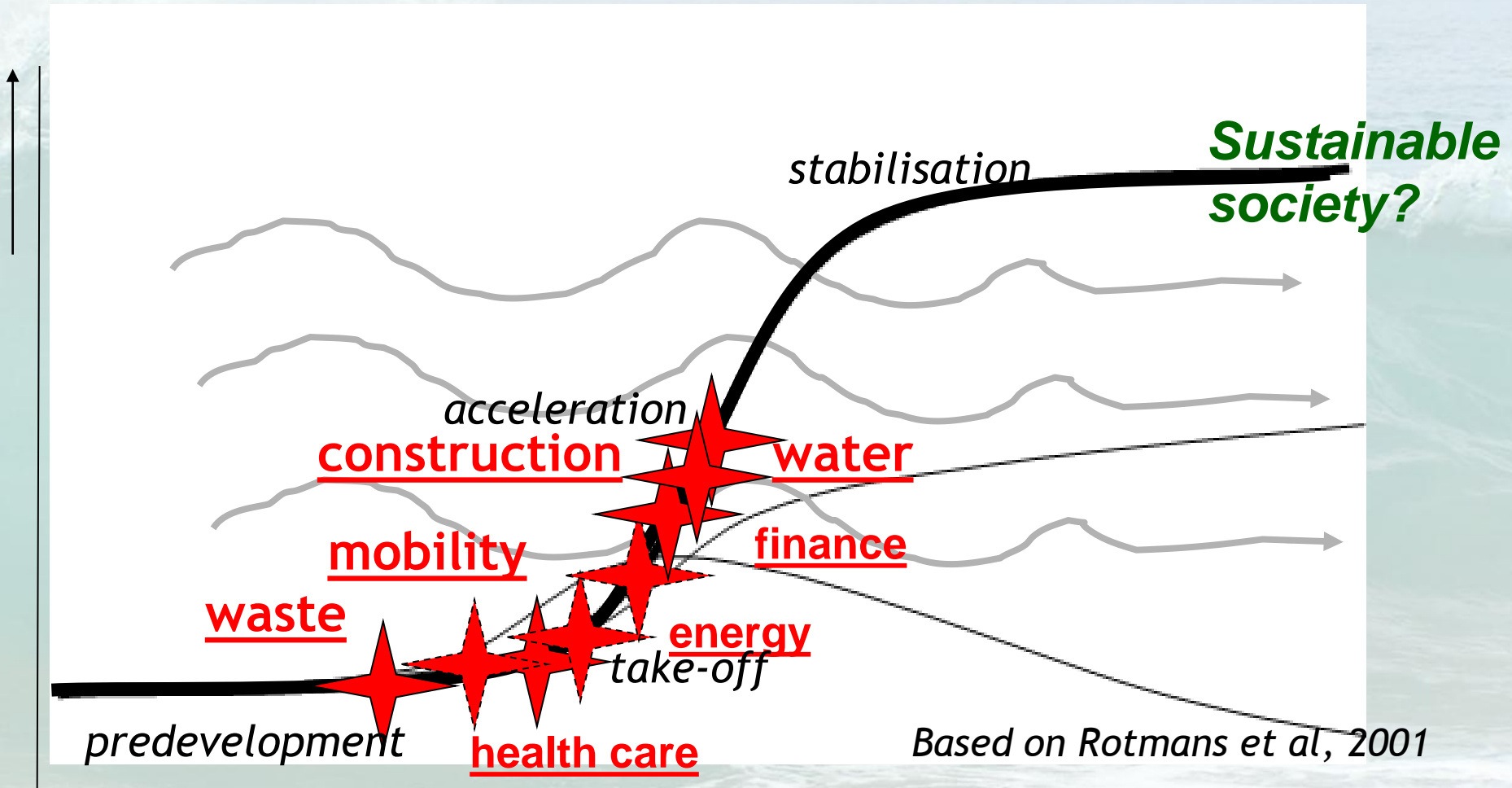
Macro-level: landscape
autonomous trends, paradigms,
slow changes

Meso-level: regime
Dominant structure, culture
and practices

Micro-level: niches
innovative ideas, projects,
technologies, niche actors

Based on Geels and Kemp, 2001

Transition phases



A phase shift in transitions?

- Number of landscape developments pressure regimes
 - Resources, climate, food, economic crises, demography ...
- Number of alternatives becoming competitive
 - Renewables, ecological approaches, community initiatives, new financial models, self-organisation, ...
- Regimes start to defend, get into crises or open up
 - Protectionism, spreading doubt, control strategies, ...
- Multiple pathways start to emerge and compete

Proposition 1

Increasingly, transitions are
entering take-off and
acceleration

Transition in science and education

- Science: less authority, more uncertainty
 - Scientists: knowledge brokers, co-creators, reflectors and observers
 - *Transition from mode 1 to mode 2 to mode 3 (sustainability) science*
- Education: less disciplinary, more skills
 - Teachers: guides, knowledge providers, facilitators
 - *Transition from 1st to 2nd to 3rd order learning*

Transition dynamics and challenge...

- Existing regimes: faculties, peer reviewed system, disciplinary funding, lack of social innovation incentives, neutrality and objectivity of science
- Lots of niches and experiments, but no broader acceleration yet
- Crucial part of achieving a sustainable society: inter- and transdisciplinary science and adaptive professionals

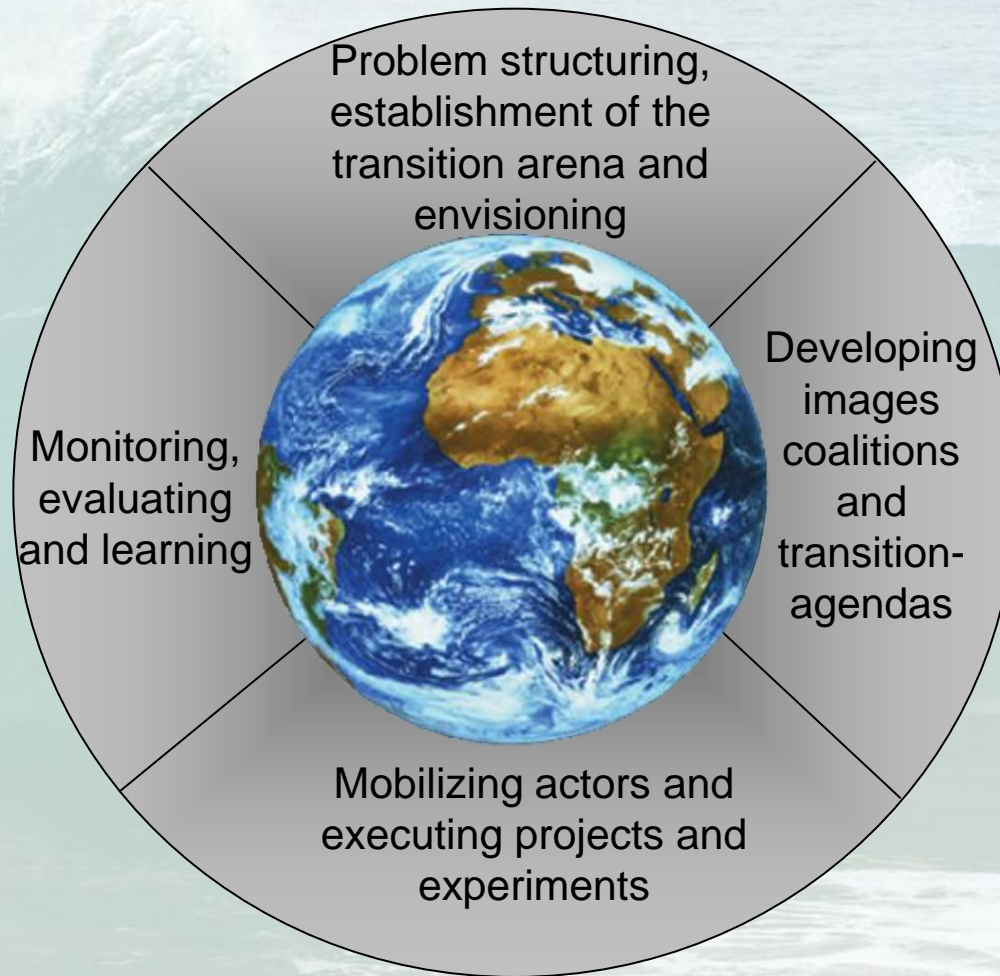
Proposition 2

Societal transitions produce and require transitions in science and education

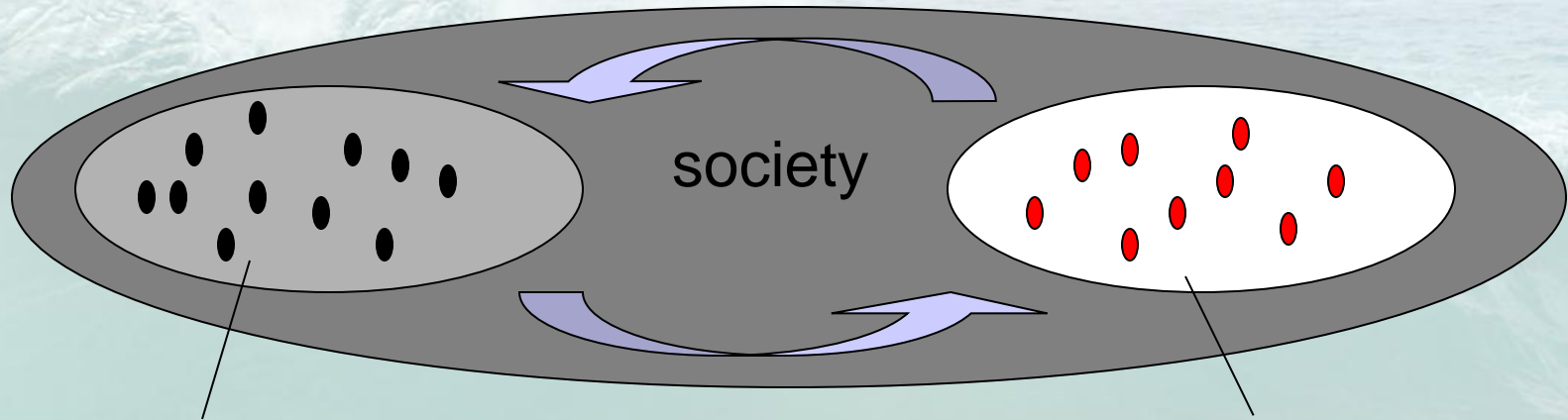
Transition governance principles (predev.)

- long-term thinking as the basis for short term policy
 - thinking in terms of multiple domains (multi-domain), different actors (multi-actor), different levels (multi-level)
 - learning as an important aim for policy ('learning-by-doing' and 'doing-by-learning')
 - orient governance towards system innovation besides system improvement
 - keeping options open, exploring multiple pathways
 - selective participation focusing on frontrunners
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Transition Governance Framework



Transition arenas



Regular policy arena

- *Short term*
- *Peloton*
- *Incremental change*
- *Problem- and goal*

Transition arena

- *Long term*
 - *Frontrunners*
 - *System-innovation*
 - *Problem- and goal*
- searching*

Proposition 3

We need to systematically
exchange, learn and scale up
sustainability science

Examples?

- Sustainability science journal, transition networks
- Measuring/awarding societal impact
- New roles for universities (Leuphana, ASU)
- New types of science/practice institutes (DRIFT)

Urban sustainability course

- Urban planners, architects, policy scientist, sociologist, business students
- Education at location in problematic neighbourhood
- Confrontation classes: local citizens, business and policy
- Science track: transitions, sustainability, urban change and methodologies

Output: multi-disciplinary transition strategies for local challenges

Governance of the transition

- Strategic: redefining the role of science/education in sustainability
- Tactical: developing novel (infra)structures, criteria for sustainability science
- Operational: new types of courses & practices
- Reflexive: structuring debates on succes, progress, methodology

Thank you for your attention

For more information and publications:

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