

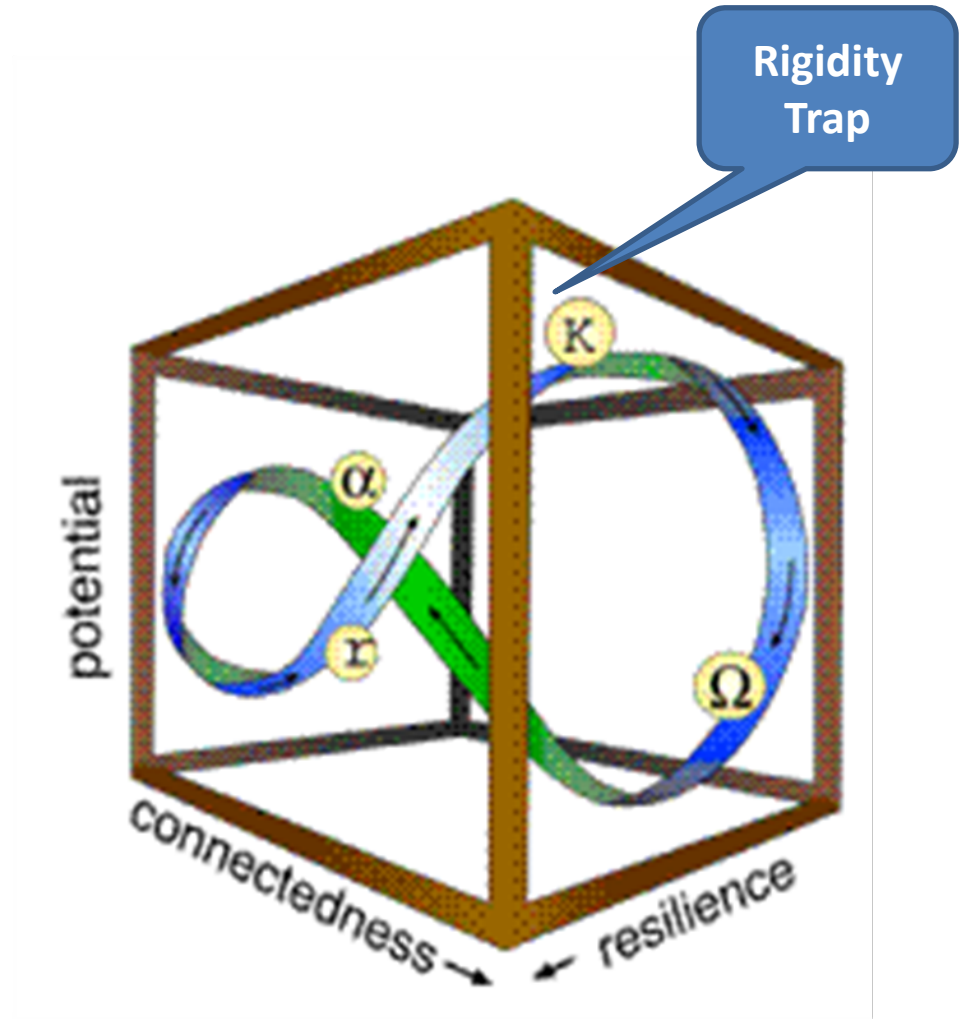
# Prospects for Transformative Social Change

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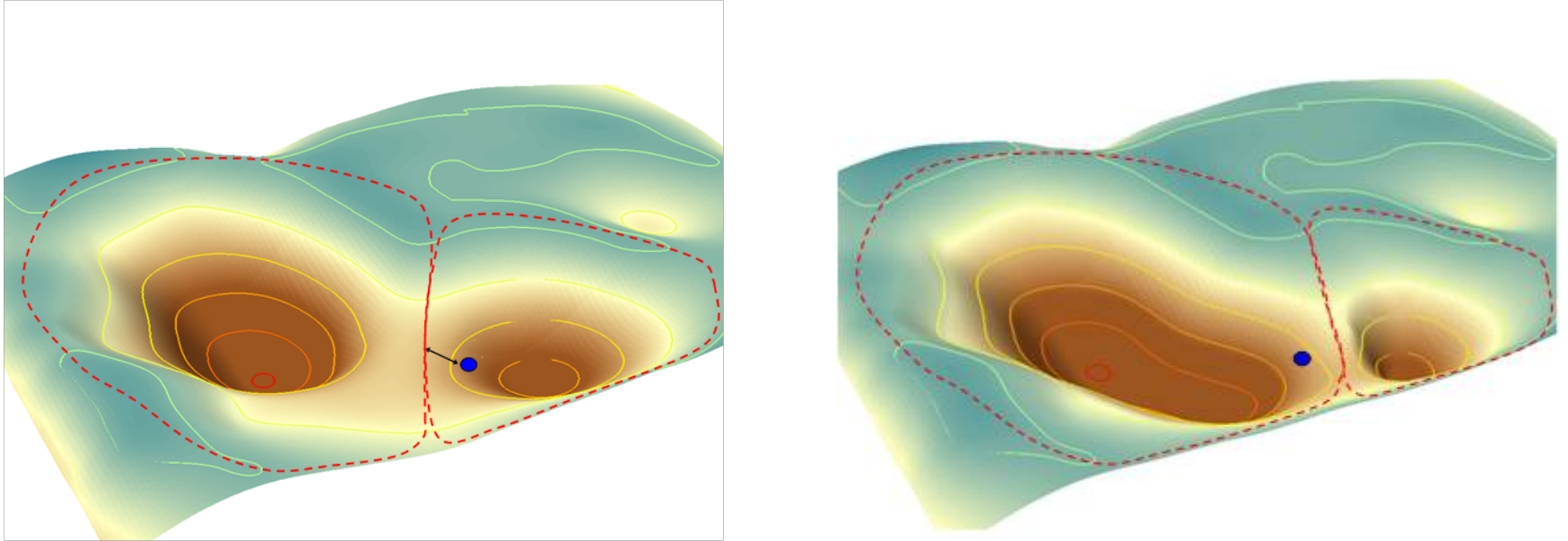


# The Dynamics of SES: Maladaptation

- Potential is equivalent to social and ecological capital, or the “wealth” of a system
- Connectedness is equivalent to internal controllability of variables and processes, their flexibility or rigidity
- Resilience is adaptive capacity or ability to withstand shock and is the opposite of vulnerability



# Properties of SES: Resilience & Regime Shifts



*The 3D stability landscape and basin of attraction metaphor (Walker et al 2004)*

**Resilience:** the capacity of a system to absorb disturbance and reorganize while undergoing change so that it remains essentially the same system.

**Regime Shift:** the components of the system remain essentially the same but relationships and feedbacks between them change.

# Regime Shifts: Some Preliminary Findings (Biggs, 2008)



Indicators may be useful for detecting and avoiding regime shifts that can be reversed where the shift is driven by factors that can be quickly and drastically changed (i.e., fast variables)

Slow decision making processes are a challenge

**Example: Fisheries quotas**



In many cases the signal in the indicators may occur too late to avert a regime shift because the driver pressure cannot be quickly and drastically changed (i.e., slow variables)

**Example: Peak Oil**



# Resilient People Lead to Resilient Societies

<b>RESPONSE</b>	<b>TRAINING</b>	<b>CHARACTERISTICS</b>	<b>TRANSFORMABLE</b>
Acceptance	Relatively little expertise	Innovators, change agents or entrepreneurs, ordinary people	Yes
Skepticism	Trained generalists or specialists	Scholars and practitioners	Maybe
Cynicism	Highly trained specialists	Bureaucrats and expert consultants concerned with status quo; command and control	Rigid; over-resilient

# Biological Basis For Resistance to Change

Increased differentiation and specialisation is a biological feature found at all levels of scale and organisation from individual cells to society (Scheffer & Westley, 2006)

Selective pressure for specialisation is exerted through efficient resource use creating a positive feedback loop that promotes further efficiency and specialisation. Specialisation confers “Darwinian fitness”

Adaptability also confers “Darwinian fitness” enabling species to occupy a wide variety of niches as opposed to specialisation that confines a species to a particular niche. Humans are perhaps the most adaptable of all species

Efficiency and specialisation are achieved at a cost of adaptability: i.e., there is a trade-off between efficiency and adaptability that is manifest in times of failure

Specialists are vulnerable to environmental change and, within human systems, will adopt behavior to resist that change.

# The Trap of The Expert

(Holling, Gunderson & Ludwig, 2002)

## The symptoms:

- ❖ Failure to identify a handful of critical variables and processes operating at different scales in space and time
- ❖ Leading to crisis and political gridlock
- ❖ Giving science a bad name

## The underlying causes:

- ❖ Competing scientific perspectives
- ❖ Disciplinary hubris

## The remedy:

- ❖ An inter-disciplinary approach combining ecological and social sciences
- ❖ Value local knowledge
- ❖ Manage adaptively
- ❖ Expect surprise



# An Ethic for Sustainable Development and The Essence of Resilience

*“All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts.*

*His instincts prompt him to compete for his place in that community, but his ethics prompt him also to cooperate. ...the land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively, land.”-*

***Aldo Leopold (1949) The Land Ethic***

***Adaptability is the essence of resilience and will define the balance between competition and cooperation within the land community***



# The Un-Holy Trinity: Ignorance, Greed & Poverty

**Ignorance, poverty and greed three drivers of un-sustainable development: (Walker & Salt, 2006)**

**Ignorance:** is there any excuse when better methods are available? Resilience thinking addresses the problems of efficiency, optimisation and maximum sustainable yield

**Poverty:** is caused in part by greed, exploitation and destruction of natural and social capital AND by ignorance. People have values and can exercise choices so poverty is not inevitable but will continue as long as there is patronage and dependency

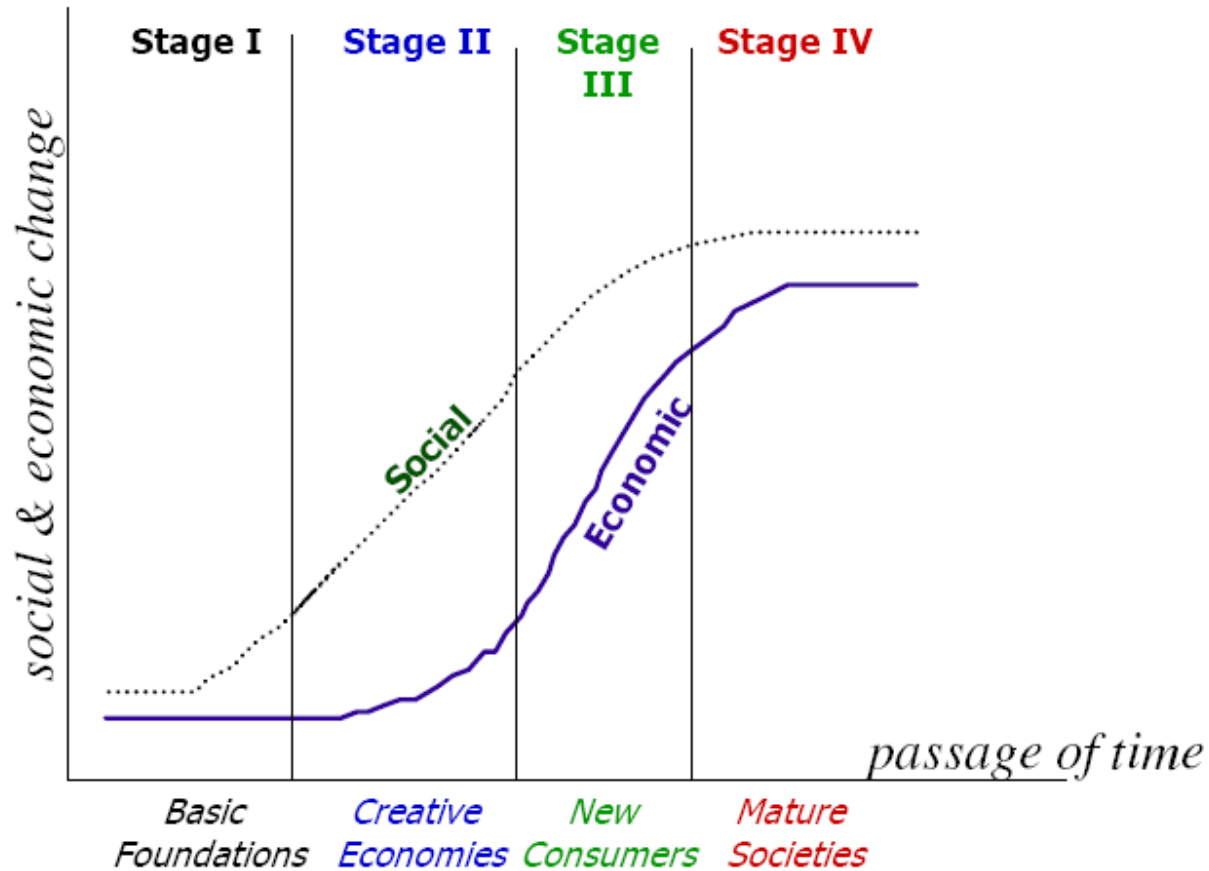
**Greed:** is a fundamental driver of human behaviour inextricably linked to the three F's (feeding, fighting and f...ing). It can only be addressed through individual awareness and personal responsibility.

**In complex systems outcomes are determined by the interactions between individual agents and their environment. Sustainability is a matter of personal choice and responsibility**



# Social Learning

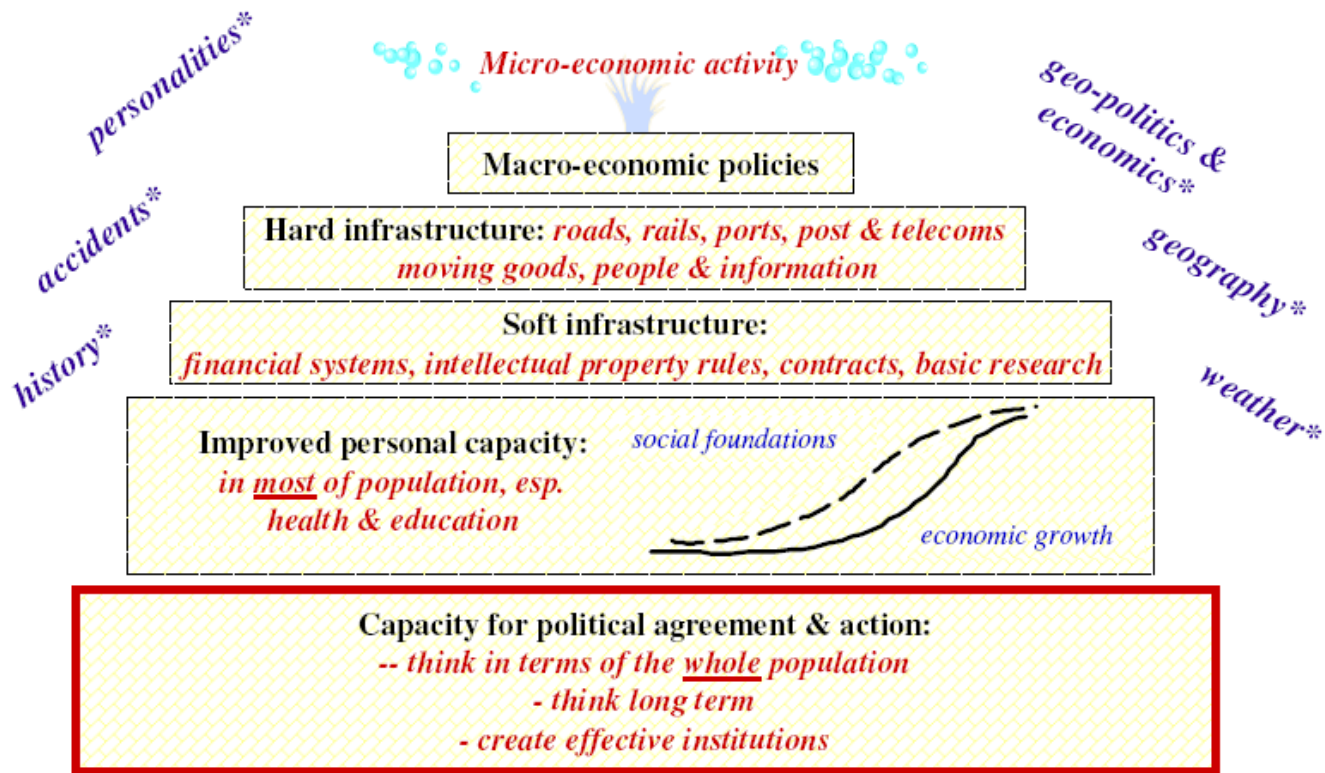
## Late 20<sup>th</sup> Century Development Stages



Heinzen (unpublished 1984)

# Social Learning

## Development's Building Blocks



Heinzen (unpublished graphical notes 2000)



# Social Learning

Heinzen (in Prep)

## Inhibitors

- Fear, anger, intimidation and violence
- Isolation of leaders from communities (lack of feedback & “Yes Men”);
- Stigmatic stereotyping;
- Hunger and want;
- Narrow definition of who matters;
- Rigidity and arrogance;
- Inertia of comfort; and
- Abdication of personal responsibility

## Methods

- Protracted dialogue
- Community process (Ostrom’s “cheap talk”) to resolve shared issues
- A physical experience that links concepts with reality
- Learning which fosters curiosity and self-determination vs. teaching which fosters obedience and conformity



# Building a Resilient World

Walker & Salt, 2006.

Values for a resilient world:

1. Promote and sustain diversity in all forms (biological, landscape, social, and economic).
2. Embrace ecological variability rather than control it.
3. Maintain a degree of modularity or disconnectedness.
4. Recognise the importance of slow variables like nutrient, carbon and water cycles.
5. Create tighter feedback loops between human actions and environmental outcomes.
6. Promote trust, well-developed social networks, and leadership.
7. Emphasise experimentation, learning, locally developed rules, and change.
8. Develop overlapping institutions to increase response diversity and flexibility to change.
9. Include all the un-priced ecosystem services in development proposals and assessments.

# Leadership; Local Innovation; & Learning

As crises loom large, most people and organisations will either deny the problem or apply another temporary fix based on partial understanding of complex systems.



Local leadership, innovation and learning build resilience and provide the raw material for adaptability and transformation

**What Strategies  
Are Needed For  
Effective  
Transition?**