

# **Adaptive trajectories in the face of sustained climate change**

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# The Global Challenge...



- Not about adapting to the ‘symptoms’ of climate change.
- Is about what it means to adapt in ways that ‘address’ climate change.
- Use ‘response’ and ‘adaptation’ interchangeably

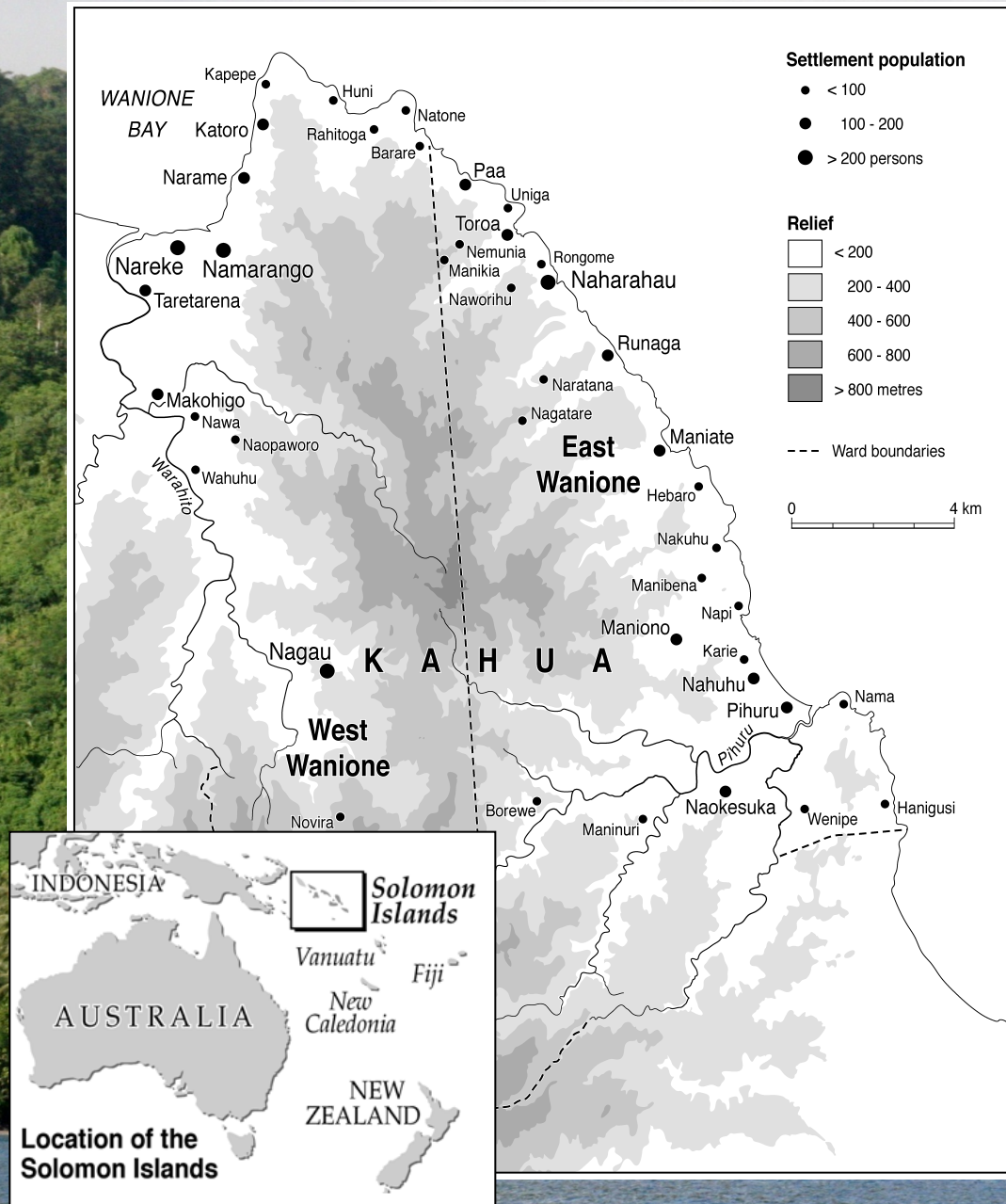
# Outline

- 1. Trajectories of change**
- 2. The Great Acceleration and the Red Queen;**
- 3. How should we respond to change?**





# Part 1: Trajectories of change in Kahua





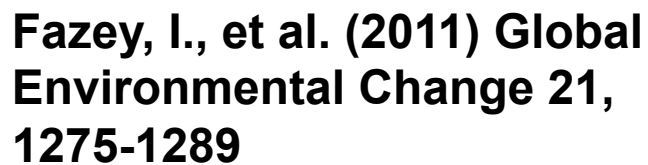




# Perceptions and drivers of change

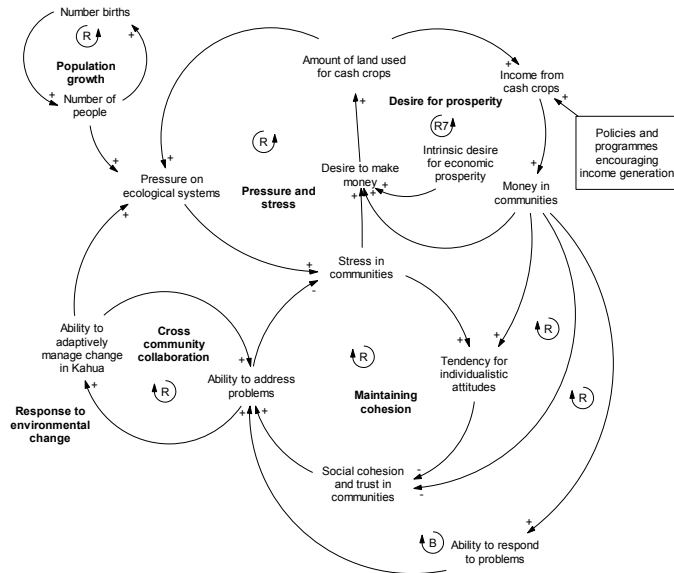


- 12 local RAs trained in basic research & facilitation;
- 38 communities, 76 detailed focus groups, 24% Kahua people directly involved in focus groups. All 600+ households surveyed;
- Large participatory workshops;
- Development of conceptual models of feedback in social-ecological system

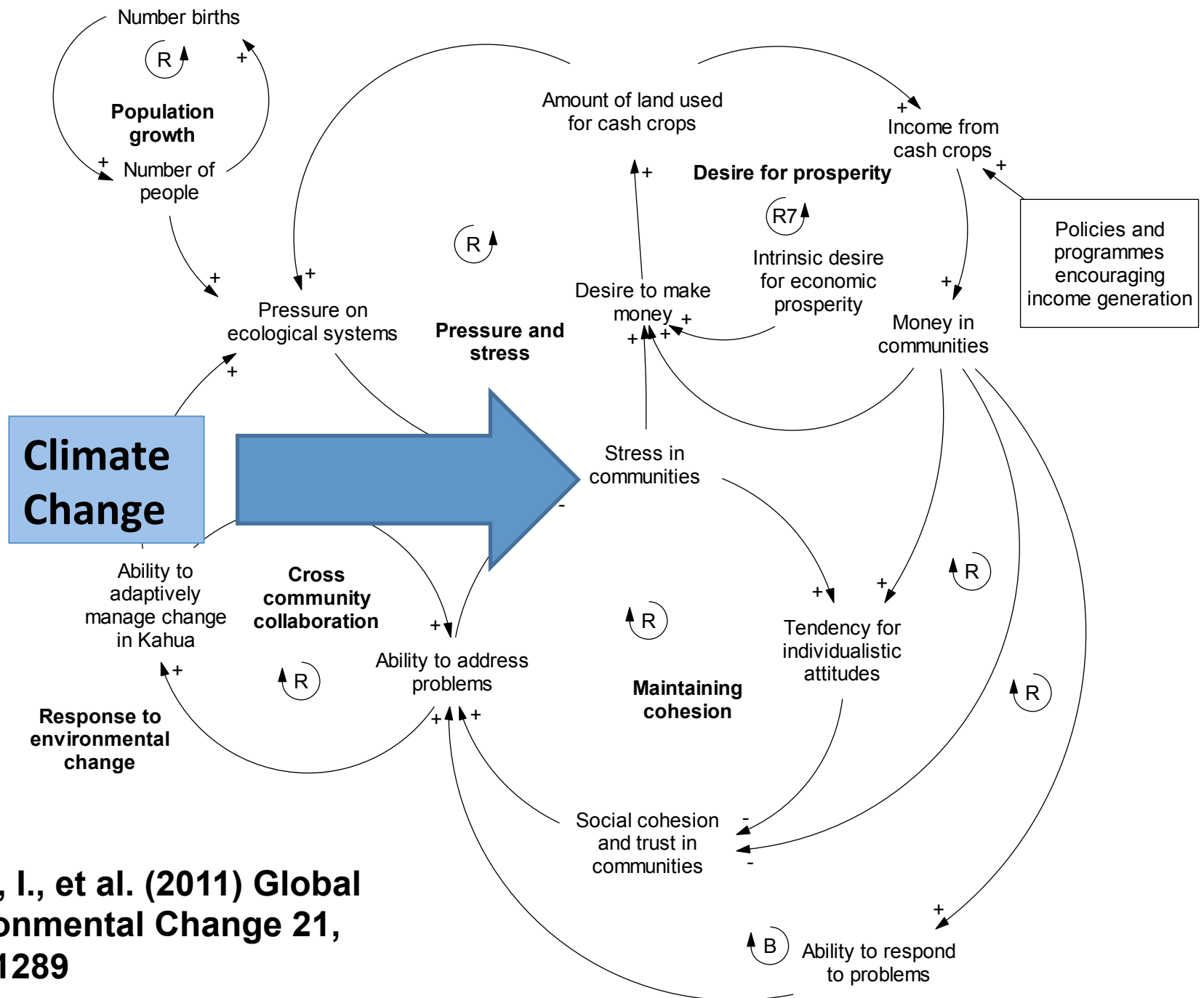


# Trajectories

- Increasing inequality
- Increasing conflict
- Increase resource use per capita
- Loss social cohesion
- Possibly more education
- Increasing change







Fazey, I., et al. (2011) Global Environmental Change 21, 1275-1289

# Trajectories in Kahua highlight:

- Change creates responses which create further change;
- Range of interacting drivers, feedbacks;
- Acceleration of change is enabled by psycho-social desire;
- CC reinforces further change and response

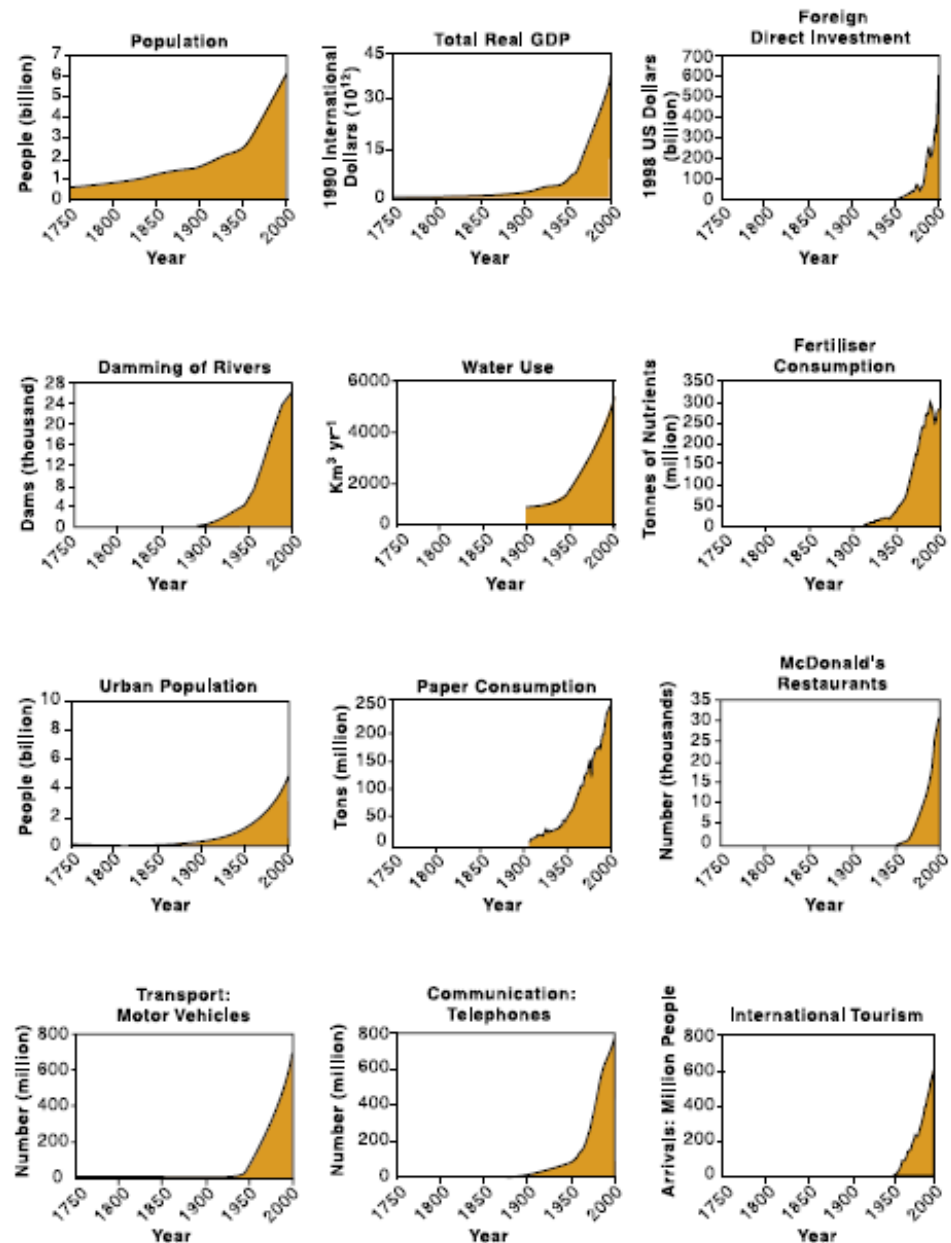




# Part 2: Great Acceleration & the Red Queen

- Human response to change fuels and is fuelled by the great acceleration
- People aren't simply standing by

Steffen, W., et al. (2004) *Global change and the Earth System: A planet under pressure*. Springer



# Red Queen and change

**Alice:** "Well, in our country, you'd generally get to somewhere else - if you run very fast for a long time, as we've been doing. "

**Queen:** "A slow sort of country! Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

*Lewis Carroll , Through the looking glass.*

**CC is a  
symptom and  
a reinforcing  
driver of the  
acceleration**



**Part 3: How should  
we respond?**



## Mitigation (reducing bio-physical causes of CC)

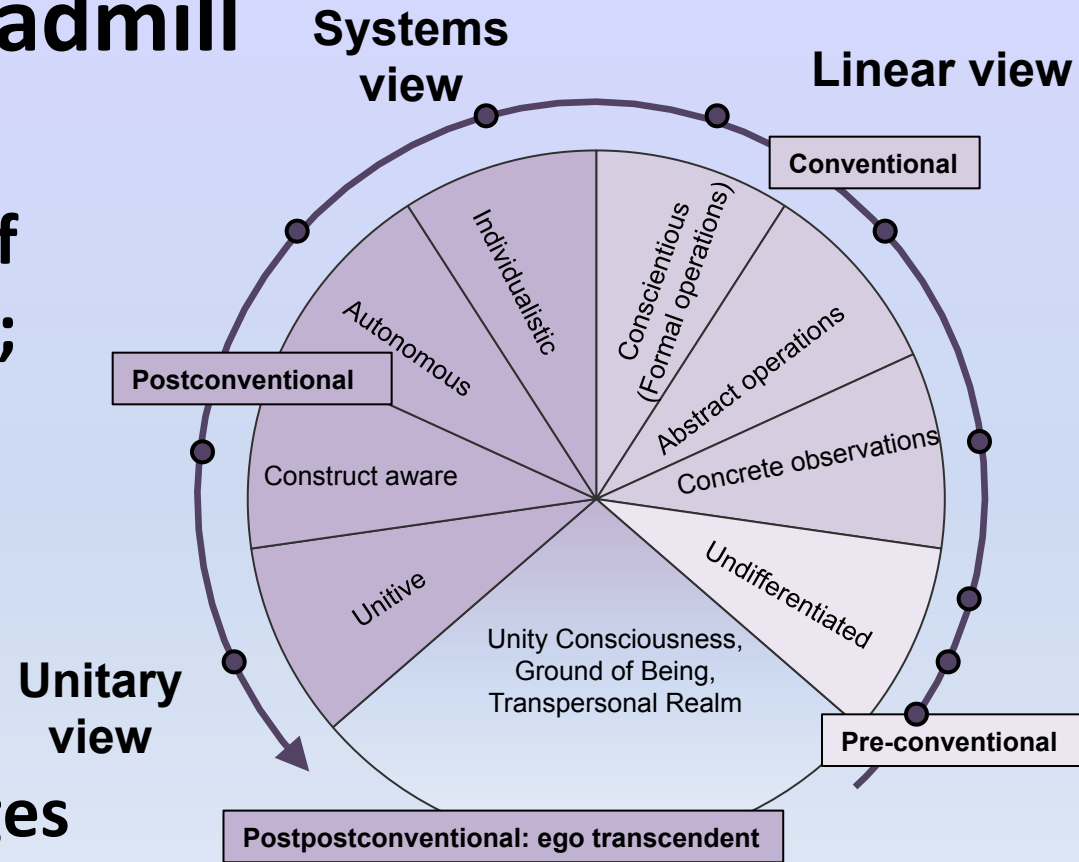
Changing behaviour that generates bio-physical cause			
	No reduction	Reduced	Removed
Change in driving behaviour	<b>MIS-ALIGNMENT</b> Where cars are not used, but alternative forms of transport and behaviour produce same amount of CO <sub>2</sub> emissions.	<b>PARTIAL ALIGNMENT</b> Car-use is reduced closer to sustainable levels of CO <sub>2</sub> emissions	<b>FULL ALIGNMENT</b> Car-use is reduced to sustainable levels of CO <sub>2</sub> emissions
No change in driving behaviour	<b>BUFFERING</b> Where defences against the effects of climate change are built, such as air conditioning, but where there is no change in driving behaviour or types of cars used	<b>PARTIAL MITIGATION</b> A switch is made to using hybrid electric/petrol cars reducing CO <sub>2</sub> emissions	<b>FULL MITIGATION</b> Using cars that produce no emissions

**Responses that have qualitatively very different outcomes**

Fazey, I., et al. (2010) Adaptation strategies for reducing vulnerability to future environmental change. *Frontiers in Ecology and the Environment* 8, 414-422

# Stepping off the treadmill

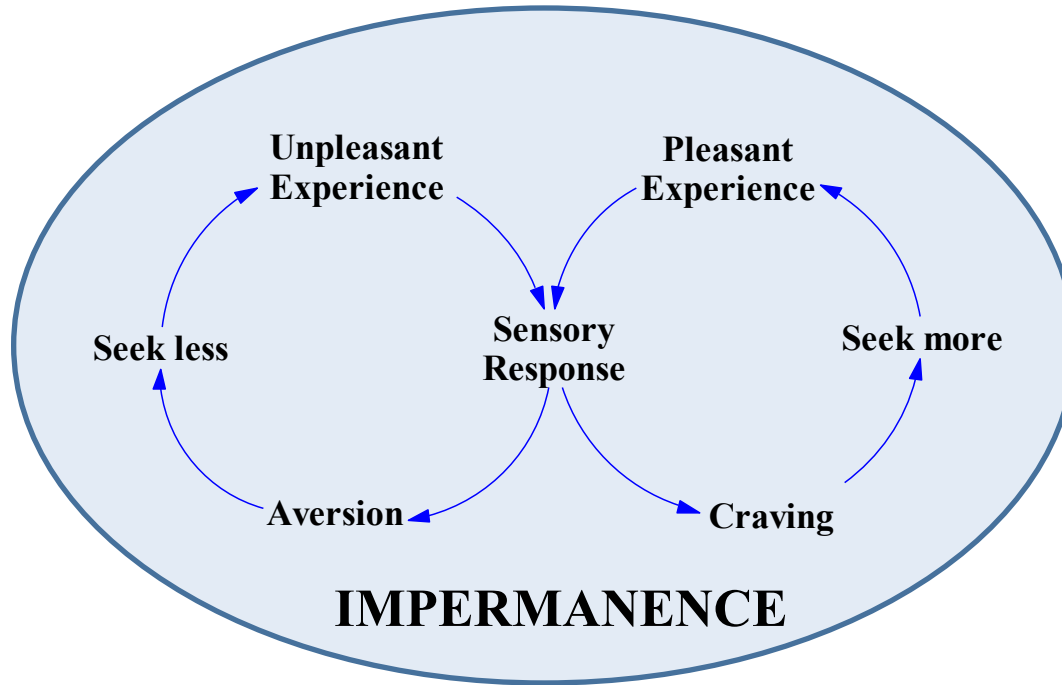
- Adaptive capacity itself doesn't reduce change;
- Need to examine the psycho-social aspects that enable people to not react to change;
- Lots of theories of stages of development...



**Model of Ego Development**



# Can we enhance transformation?



Bowen, S., et al. (2006) *Psychology of Addictive Behaviors* 20, 343-347

## Vipassana

<http://www.dhamma.org/>

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**Changes in  
addictive,  
aggressive  
behaviours**

# **Adaptive Trajectories in the face of Sustained Climate Change**

- **Responses to change (including CC) generate reinforcing trajectories;**
- **Change is always inevitable, but not acceleration of change;**
- **Stepping off the treadmill of change and response is necessary to get to fundamental issues driving unsustainable behaviour;**
- **This is challenging but possible.**



# Stepping off the treadmill...

- Adaptive expertise;
- Exposure to, and learning from, variation is important;
- But learning to be adaptive isn't enough.



Hatano, G., and Inagaki, K. (1986) Two courses of expertise. In *Child Development and Education in Japan*.

Fazey, I., et al. (2005) *Learning more effectively from experience. Ecol. Soc. 10, Art 4*

Cliggett, L., et al. (2007) *Chronic uncertainty and momentary opportunity: A half century of adaptation among Zambia's Gwembe Tonga. Hum. Ecol. 35, 19-31*



# Model of Ego Development

Cook-Greuter, S.R.  
(2000) Mature ego development: A gateway to ego transcendence?  
*Journal of Adult Development* 7, 227-240

## Unitary view

Aware of:

- Illusion of separate self and object world
- Habits of mind (including language and judgment habit)
- Habits of the heart

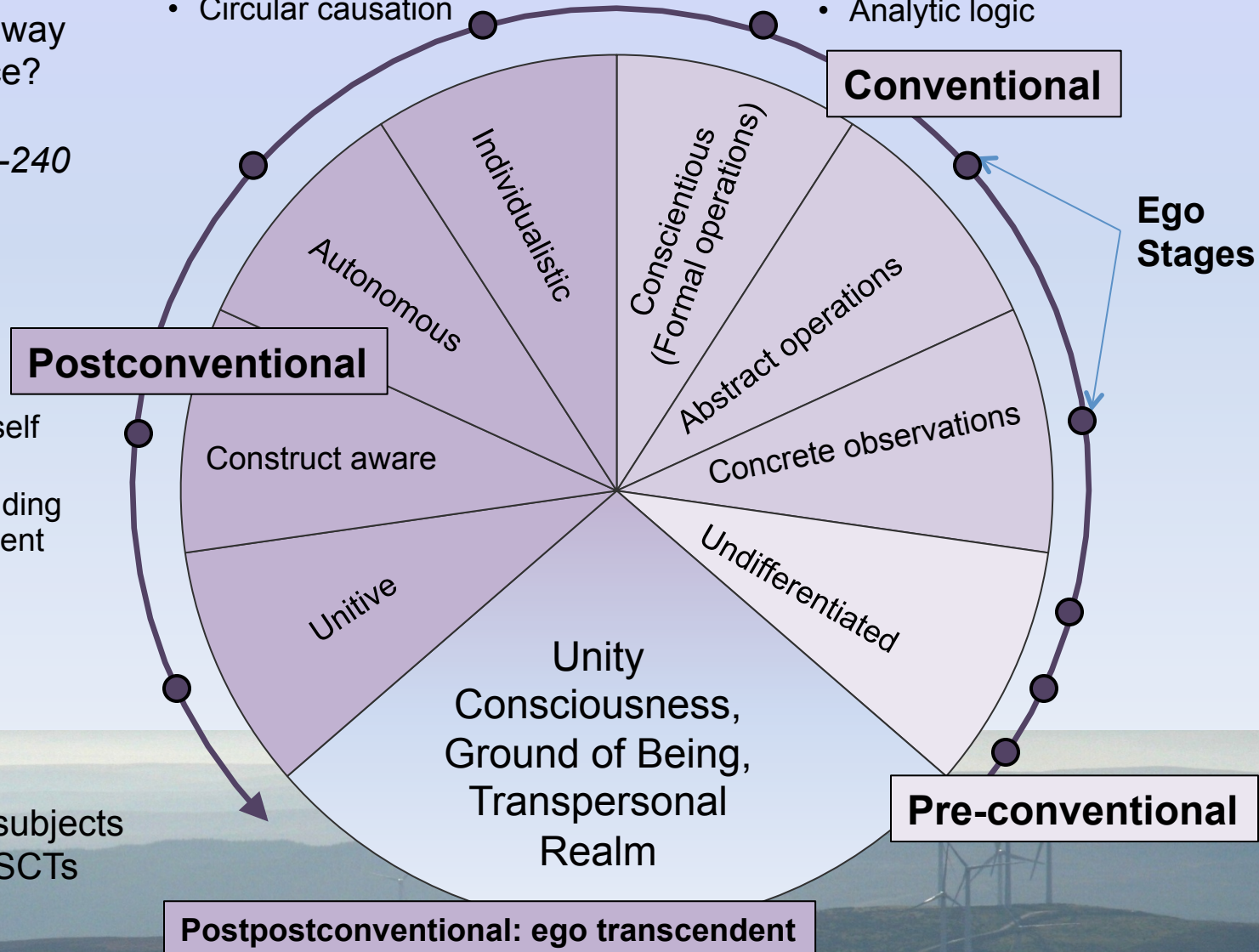
## Systems view

Aware of:

- Subject-object relationships
- Participant observer
- Cultural conditioning
- Contexts and perspective
- Circular causation

## Linear view

- Max. subject-object separation
- Linear causality
- Analytic logic



From thousands of subjects  
taking Loevinger's SCTs