SPECIAL SESSION

More systemic, more adaptive:
the way forward for water governance?

Ray Ison, Sharon Pollard, Harry Biggs,
Derick du Toit, Philip Wallis, John Colvin

Welcome and overview

Backdrop

- Recognition of the complex and dynamic context within which water governance is required to act
- Global responses moved from hydraulic mission - IWRM supported by flexible governance and strategic adaptive management.
- Research highlights contribution of a range of leadership, organizational and intermediation capabilities.

Welcome: Thinking differently

- Recognition of complex and dynamic context within which water governance is required to act
- Global responses hydraulic mission - IWRM supported by flexible governance, learning & SAM
- Pay more attention to how we think and act
- And what informs our position and perspective?

But what does systemic thinking mean for practice ?

Invitation to think differently

Purpose

- Highlight why, how systemic thinking and approaches can contribute to flexible, adaptive and resilient polycentric governance arrangements.
- Aim to provide some insight
  - In discourses on systems thinking for complex systems (catchments) through a brief overview of key concepts and associated heuristics and tools

Agenda

30 mins	Broad overview:	Ison, Biggs, Pollard
30 mins	Exploring your experiences	You!
40 mins	Exploring heuristics and tools	World Café
10 mins	Brief synthesis	Derick and John

APPROACHES AND HEURISTICS FOR EFFECTIVE POLYCENTRIC WATER RESOURCES GOVERNANCE illustrative of organisational and societal change

Part of introduction to the session "More systemic, more adaptive: the way forward for water governance?"

Harry Biggs

South African National Parks

Rather than a list of approaches and heuristics, a narrative stretching over 15 years.

- Kruger National Park (KNP) realised it could not reach aquatic objectives
- It needed to influence upstream practices and management
- KNP Rivers Research Programme formed
- Within 15 years had major spinoffs (see Freitag et al. diagram at station) including forming basis of national Catchment Management Strategies for all CMAs

This talk will follow main sub-threads associated with various freshwater aquatic components, and weave the approaches and heuristics as examples along the way

Why did KNPRRP, and later SANParks, and the Water Act / IWRM, follow this different approach ?

recognising complexity,

dealing with uncertainty,

dealing with variability,

enhancing legitimacy,

enhancing resilience,

sustaining effectiveness of implementation

and more …

Public facilitation

IN SPITE OF OTHER SOMETIMES LAUDABLE ACHIEVEMENTS, NONE OF US WERE DEALING ADEQUATELY WITH IMPLICATIONS RESULTING FROM THE ABOVE CHALLENGES

Where did we start (approach-wise)?

Strategic Adaptive Management

- Goal-oriented but recognition that *goal shifts over time*, and that *pathway to this invariably tortuous*

- V-STEEP crucial (values central) increasingly done in multi-stakeholder mode

- Has a vital attribute step that is unique

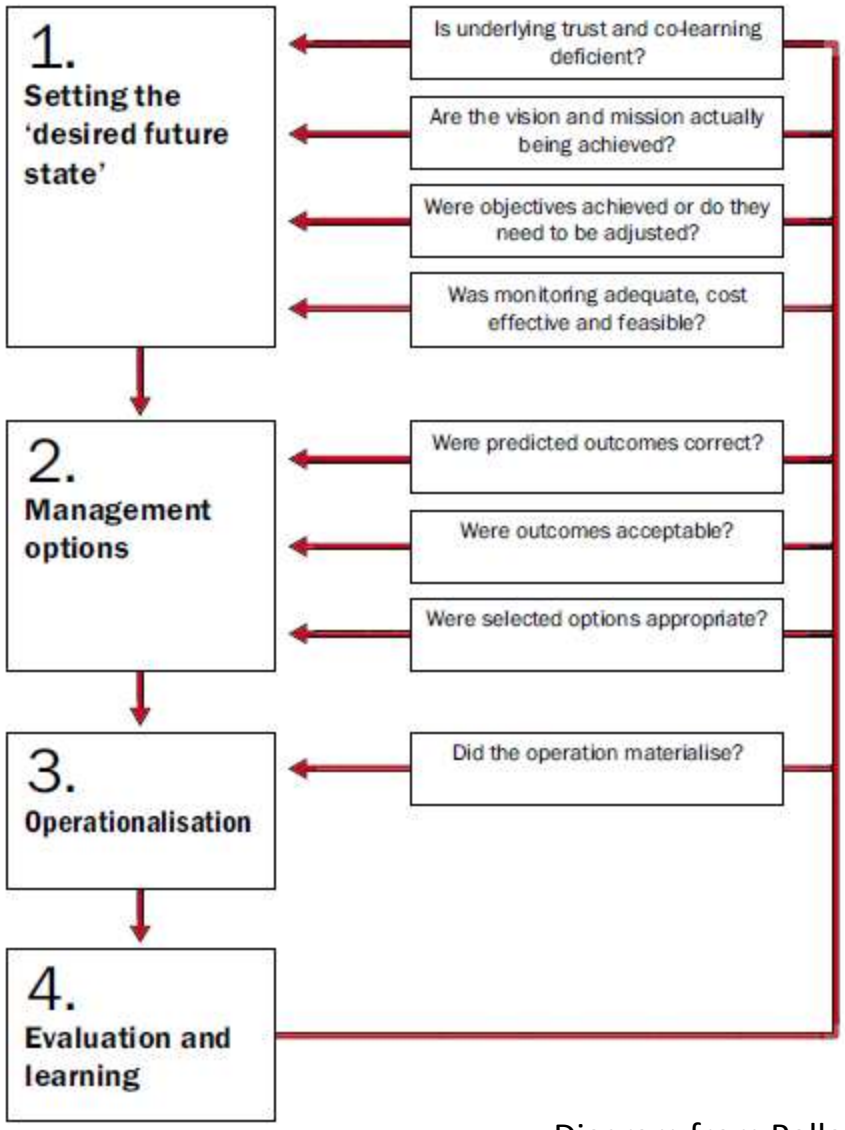
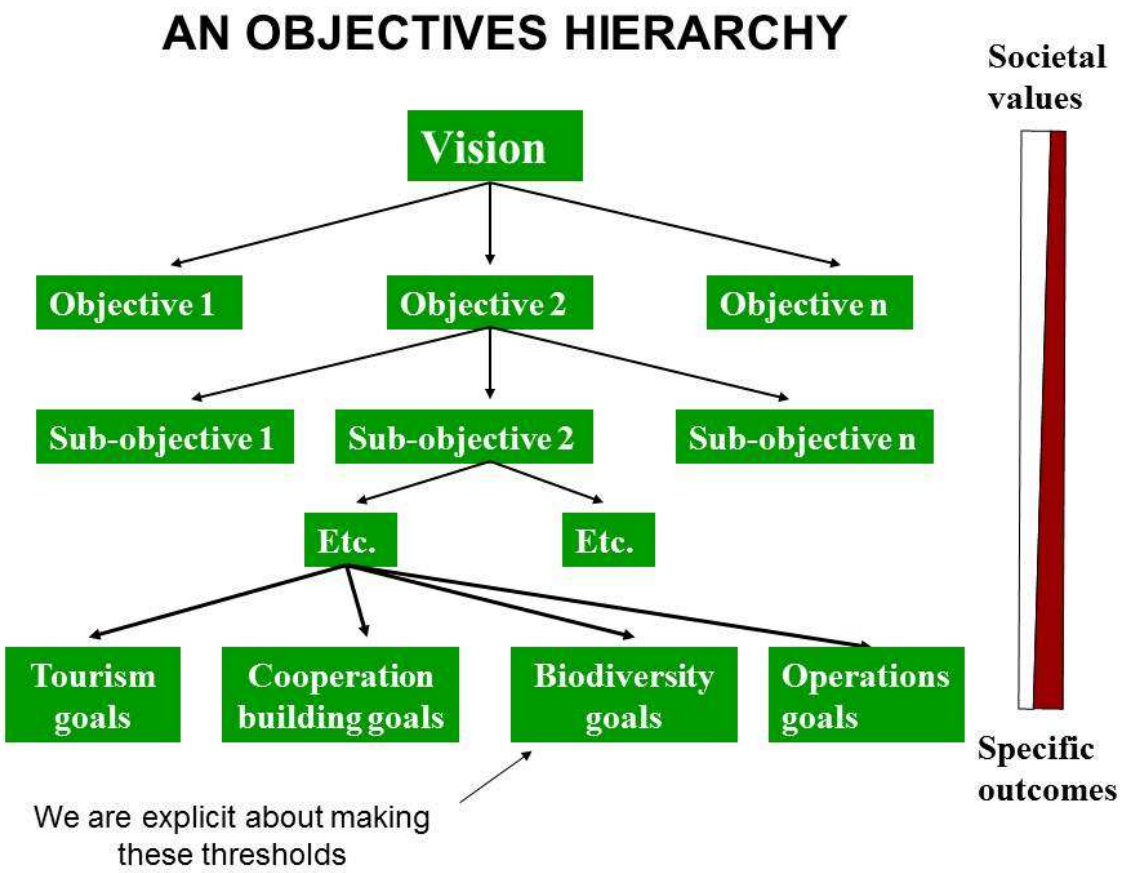
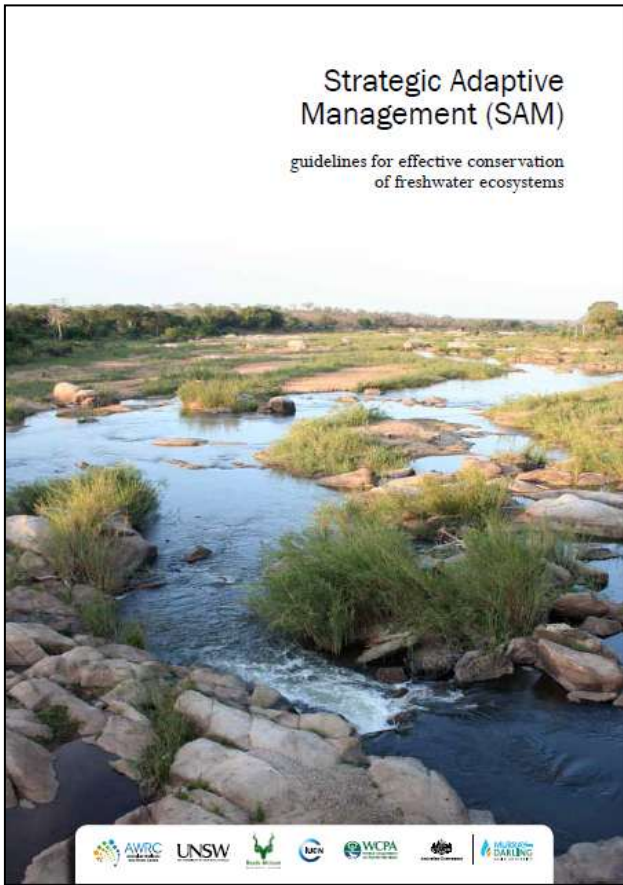


Diagram from Pollard and du Toit

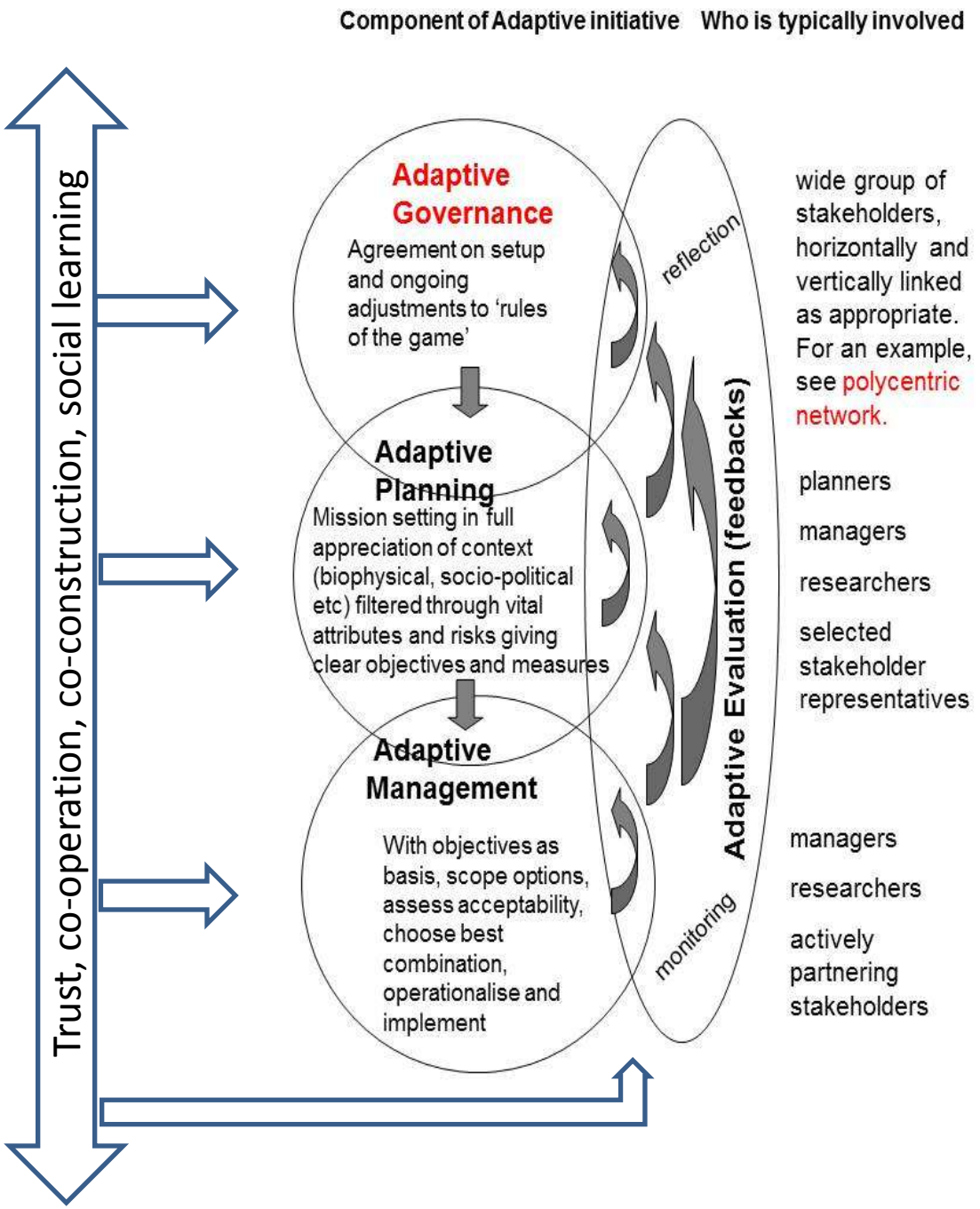
SAM typically produces an "objectives "hierarchy" to link strategic to operational goals with so-called Thresholds of Potential Concern or TPCs (orange lights before ecosystem endpoints)

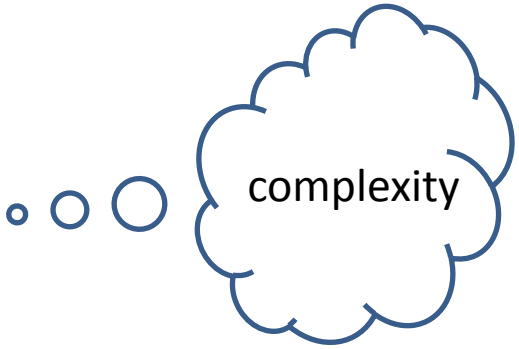


Many brochures, publications, etc on SAM available e.g.



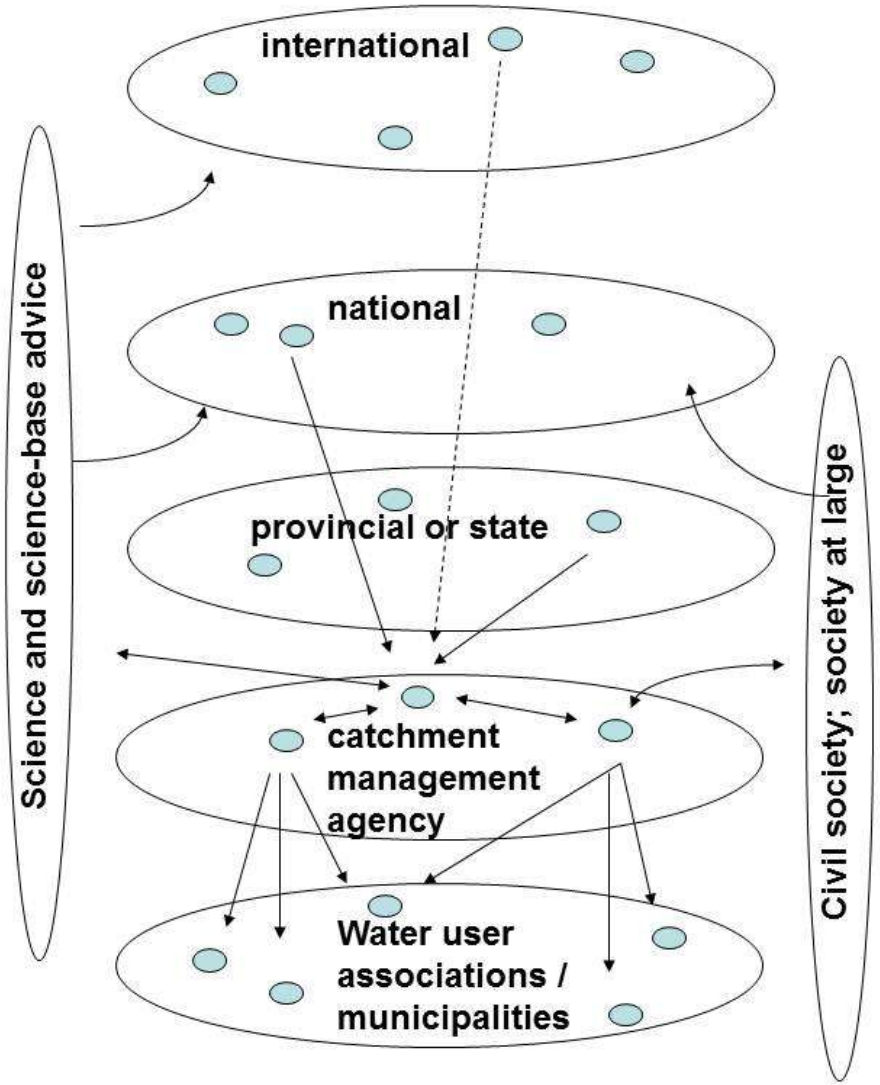
i.e. … established but evolving practice

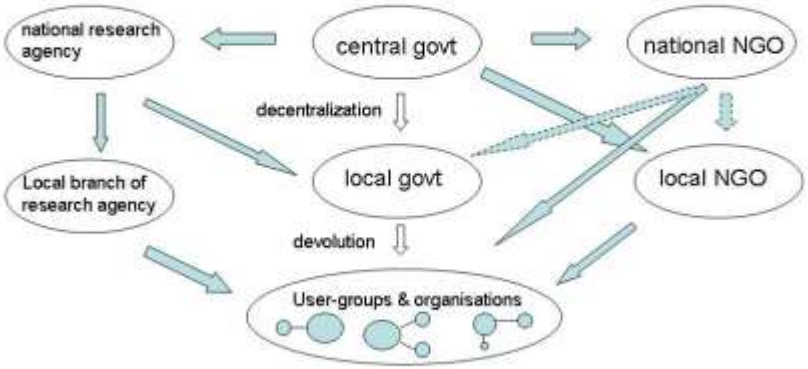




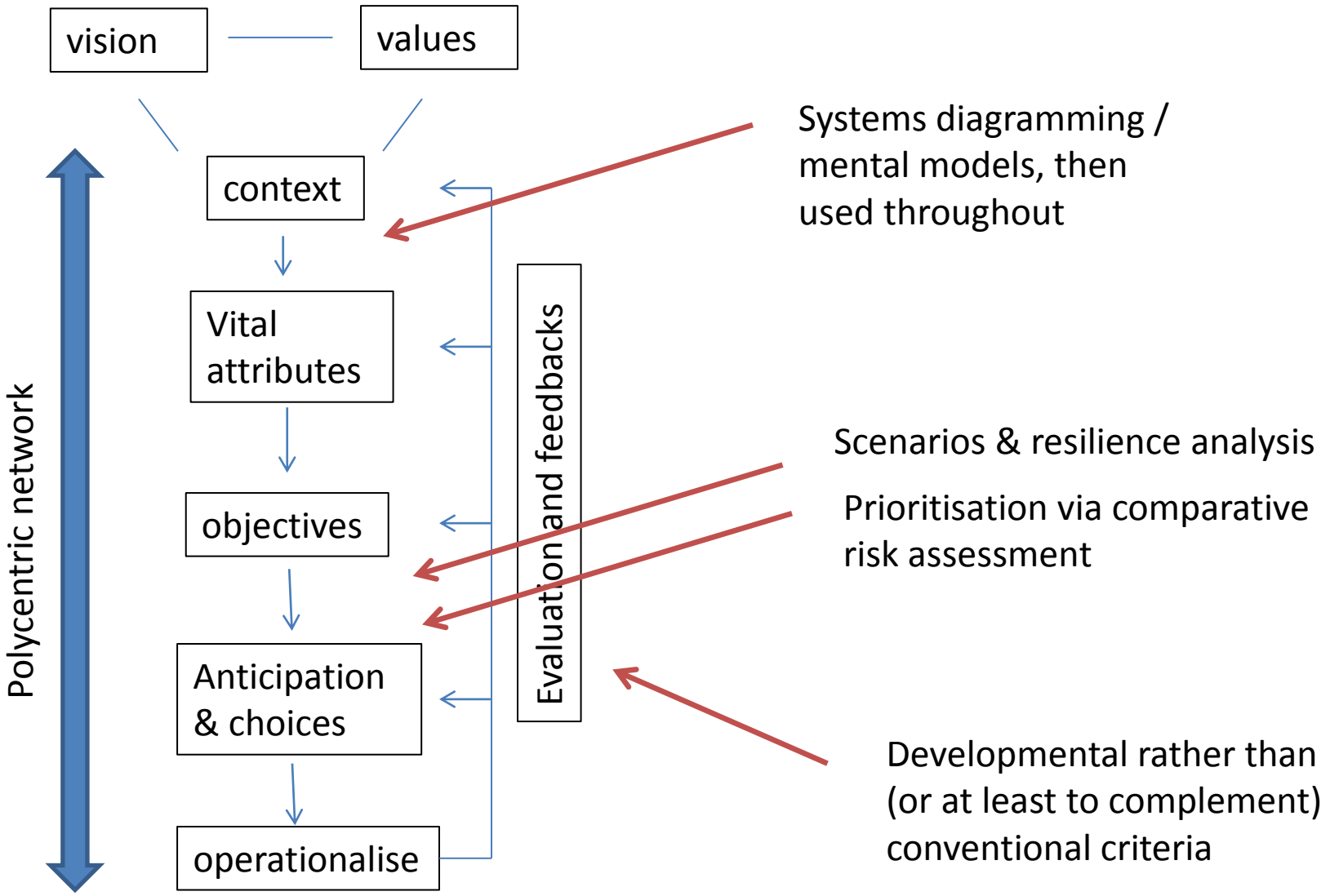
Seek a "requisite simplicity"

Examples of polycentric networks

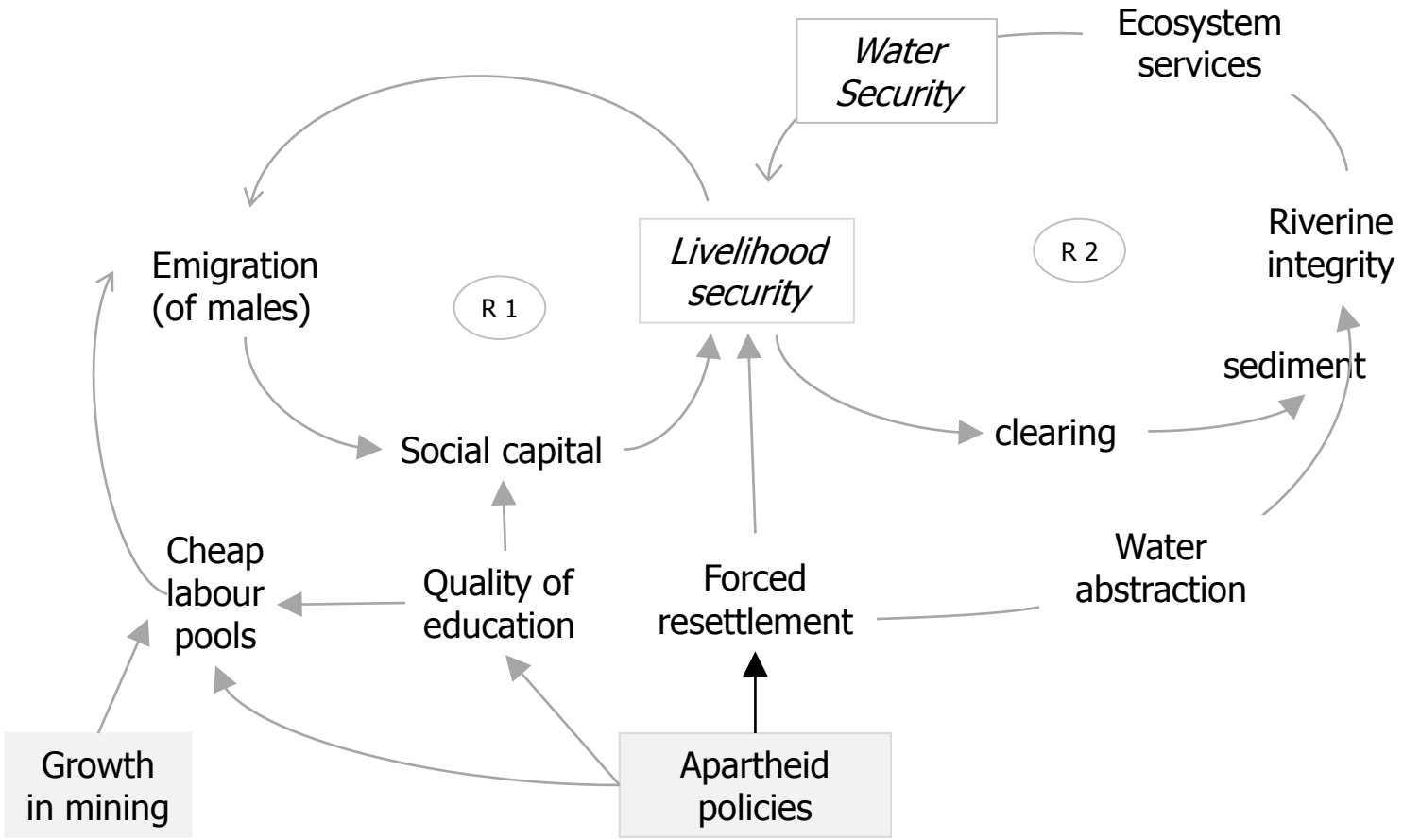




So with these two overarching ideas, let's look at where tools we are now using more regularly might be positioned ?



Systems diagramming (causal loop diagram)



A ‘lighter’ but sometimes more useful variant is mental models e.g. ARDI

Objectives	**Chance** that risk realises in next 15 years (low-high: rated 1-4)	Impact on protected area vision and mission (low-high: rated 1-4)	Raw Score = **Chance** x Impact (low-high: rated 1-16)	a) How effective are current actions in controlling this risk? b) What level of resourcing is needed to do so? (very high/ high/medium/low/none)	Is this level of risk control deemed acceptable? Is it within manager's risk appetite? (yes / no)	a) How effective could risk abatement be if improved? b) What would this take in resourcing? (very high/ high/medium/low/none)
To ensure floodplain forest area and condition are maintained	4	4	16	**a)** low **b)** very low	No	**a)** very high **b)** medium
To control unnatural fire regimes in reedbed vegetation	2	2	4	**a)** very high **b)** medium	Yes	**a)** not any better **b)** very high
To reduce colonisation and establishment by alien fish	3	3	9	**a)** low **b)** none	Yes	**a)** fair **b)** medium
To establish education and accessibility programs for tourism	2	1	2	**a)** high **b)** medium	Yes	**a)** very high **b)** very high
To ensure connectivity of floodplain to river	1	2	2	**a)** medium **b)** low	No	**a)** high **b)** very high

Comparative risk assessment as a multi-stakeholder tool for adaptive prioritisation

Use of Scenarios (technical or imaginative conceptual type) and Resilience analysis
SRC = Sand River Catchment

Attribute	Current state: SRC	Scenario 1 Affluent Society	Scenario 2: Desperate Measures	Scenario 3: Resilient Adaptor
Diversity	Moderate	Low	Moderate	High
Ecological variability	Moderate – decreasing	Low	Moderate	High
Acknowledgement of slow variables	Moderate Policy – high Practice – low	Moderate	Low	High
Tight feedbacks	Low	Low	Low	High
Social capital	Low – decreasing	Low	Low	High
Innovation	Low with pockets of high	Moderate	Moderate	High
Overlap in governance	Moderate	Moderate	Low	High
Ecosystem services	Moderate	Moderate	Low	High
Openness Positive	High	High	Moderate	Moderate
Openness Negative	High	High	Moderate	Moderate
Reserves and reservoirs	Moderate	High	Moderate	Moderate

If we evaluate using the wrong criteria, we will set ourselves up for failure …

e.g.

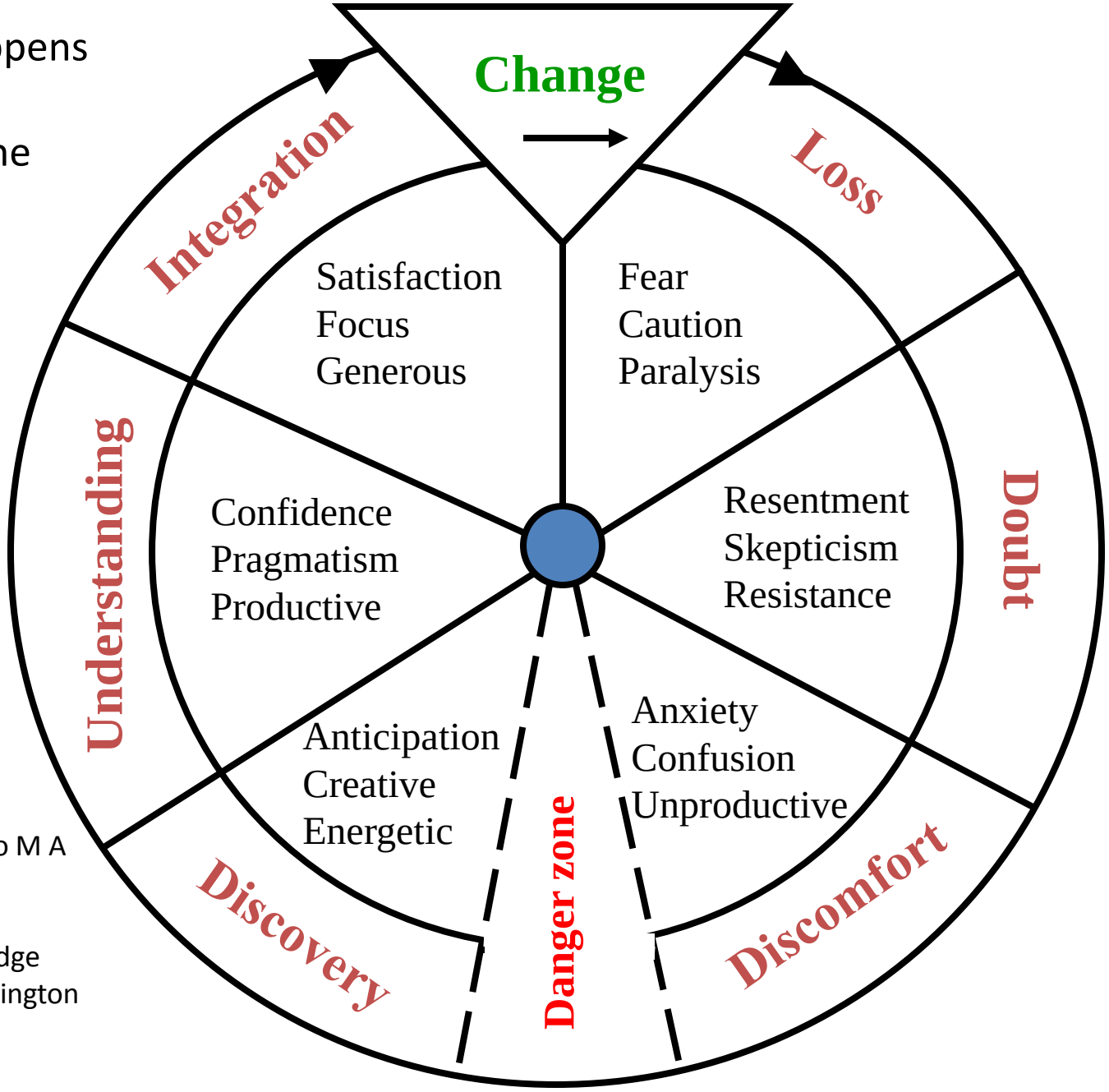
Traditional Evaluation (formative or summative - for testing results)	**Developmental Evaluation** (formative and summative combined for continuous improvement)
Testing models: render definitive judgments of success or failure	Complexity-based, Supporting innovation and adaptation. Provide feedback, generate learning, support direction or affirm changes in direction in real time
Evaluator external, independent, objective	Evaluator part of a team, a facilitator and learning coach bringing evaluative thinking to the table, supportive of the organisation's goals
Measure success against predetermined goals	Develop new measures and monitoring mechanisms as goals emerge & evolve
Evaluator determines the design based on the evaluator's perspective about what is important. The evaluator controls the evaluation.	Evaluator collaborates with those engaged in the change effort to design an evaluation process that matches philosophically and organizationally.
Design the evaluation based on linear cause-effect logic models	Design the evaluation to capture the assumptions, models of change, system dynamics, interdependencies, and emergent interconnections in complex environments.
Aim to produce generalised findings across time & space.	Aim to produce context-specific understandings that inform ongoing innovation.
Accountability focused on and directed to external authorities and funders.	Accountability centered on the innovators' fundamental values and commitments and desire for continuous learning and adapting the programme to a continually changing, complex environment.
Accountability to control and locate blame for failures.	Learning to respond to lack of control and stay in touch with what's unfolding and thereby respond *strategically*
Evaluation often a compliance function delegated down in the organization.	Evaluation a leadership function for *reality-testing, results-focused, learning-oriented leadership*
Evaluation engenders *fear of failure*	Evaluation supports *hunger for learning*

e.g.

Patton, Michael Quinn, *Developmental Evaluation, Applying Complexity Concepts to Enhance Innovation and Use*, 2011

Adaptation happens at the level of individuals in the organisation

Personal Change is key



Brock L R and Salerno M A (1998) *The secret to getting through life's difficult changes*. Bridge Builder Media, Washington DC/Durban RSA

Systems thinking, systems practice, systems approaches and their role in water governance?

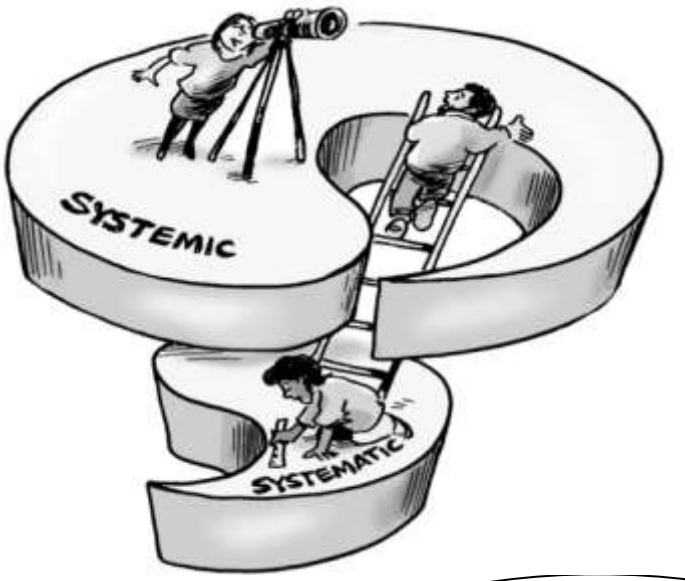
Ray Ison

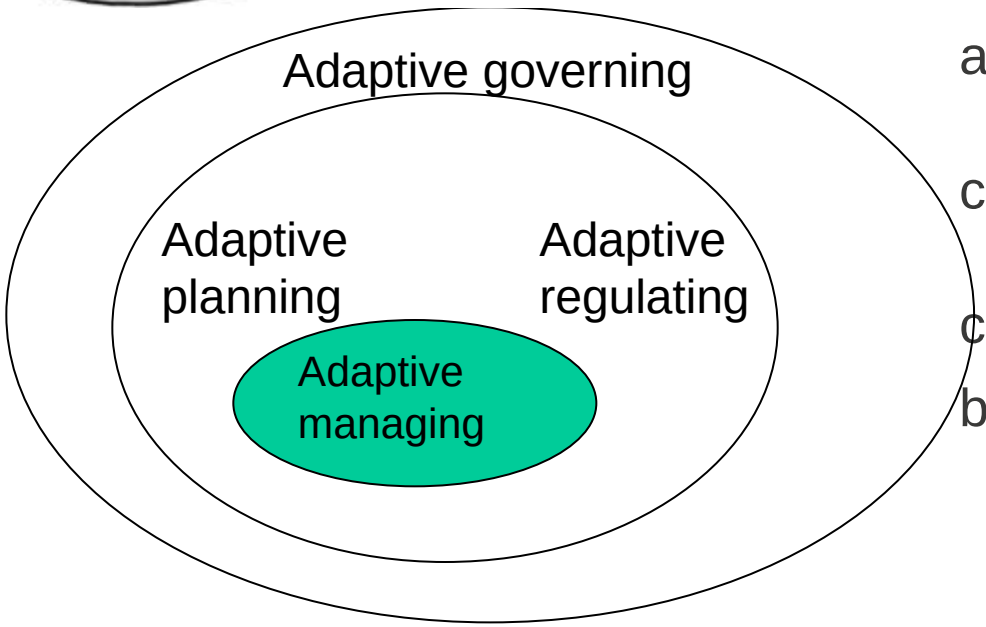
Open Systems Research Group
Open University, UK

Systemic Governance Research Program, Monash Sustainability Institute (MSI), Monash University, Australia

International Conference on Freshwater Governance for Sustainable Development, Central Drakensburg, South Africa 7th November 2012

Systemic Governance?





e.g. South African National Parks - Kruger

leadership

15 years of adaptive learning

attention to process and relationships

changed boundaries of 'system of interest'

changed role for science

but may not be able to do it purposefully in another context – praxis?

Governance

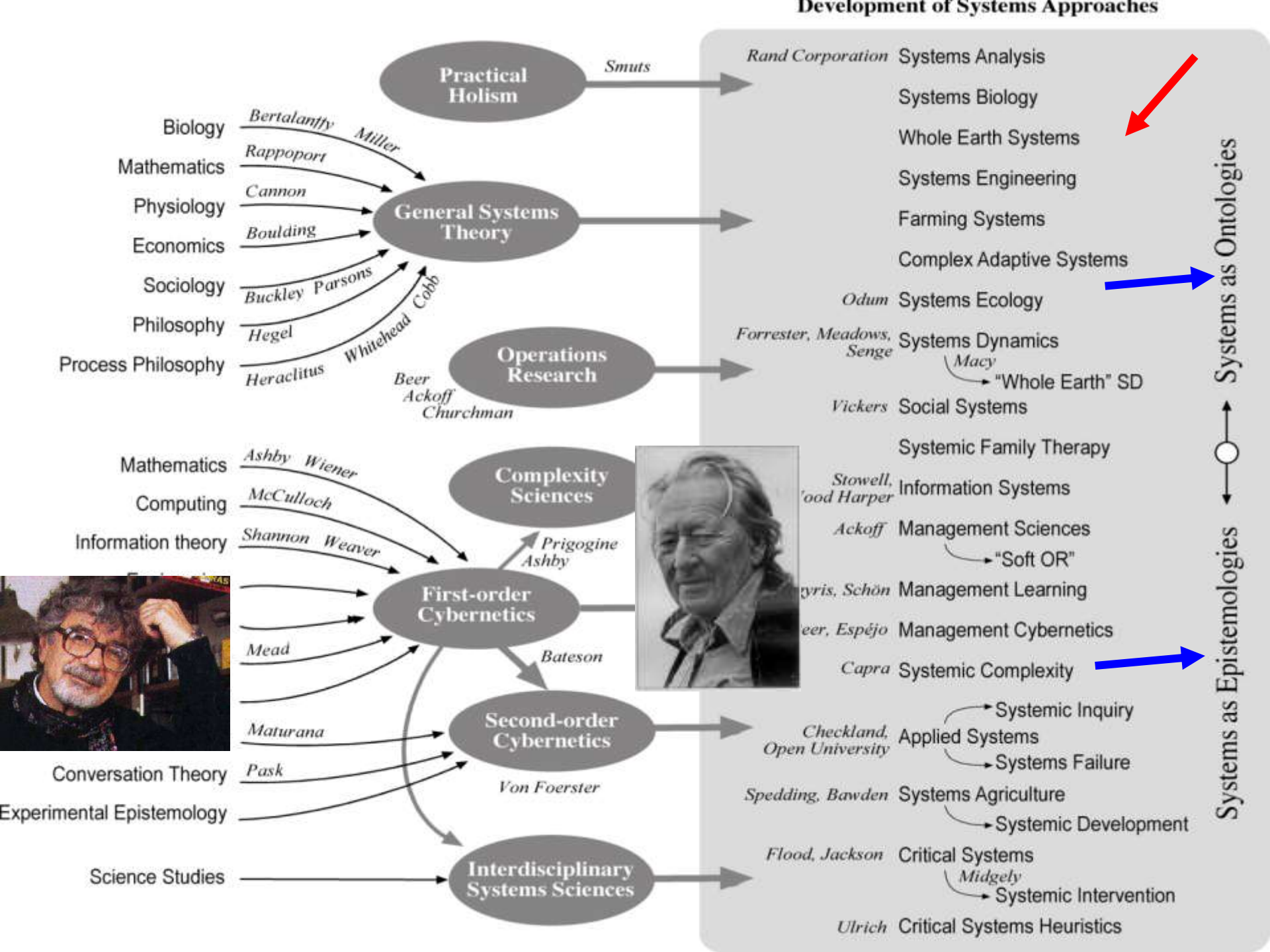
Responding to feedback

A cyber-systemic concept

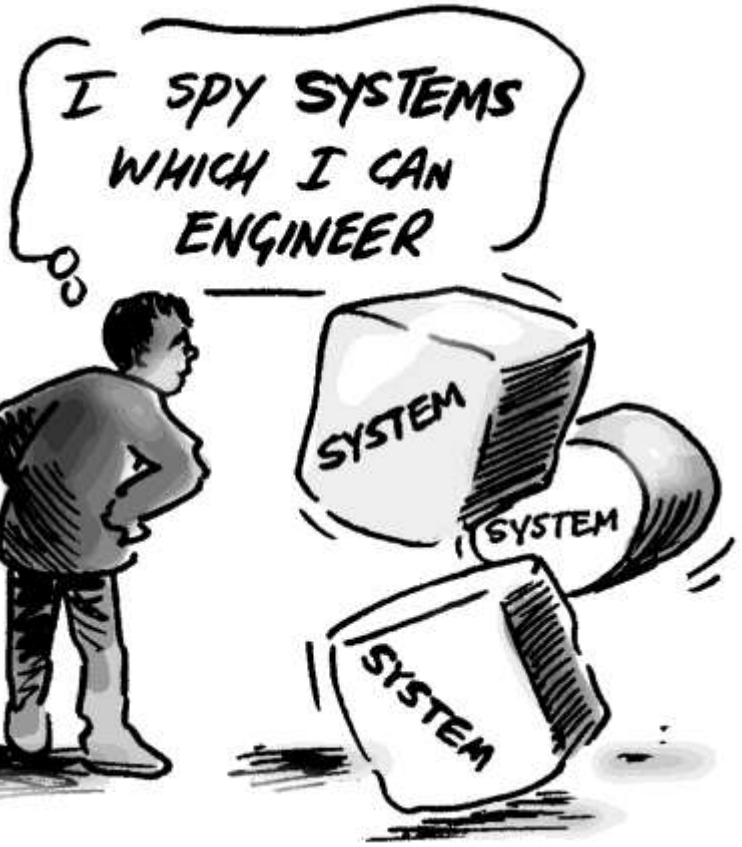
Cybernetics, from kybernetes meaning helmswoman or steersman

Governing – responding to feedback; charting a course (purpose)

Development of Systems Approaches



Start with a Situation? or System?
A choice to be made

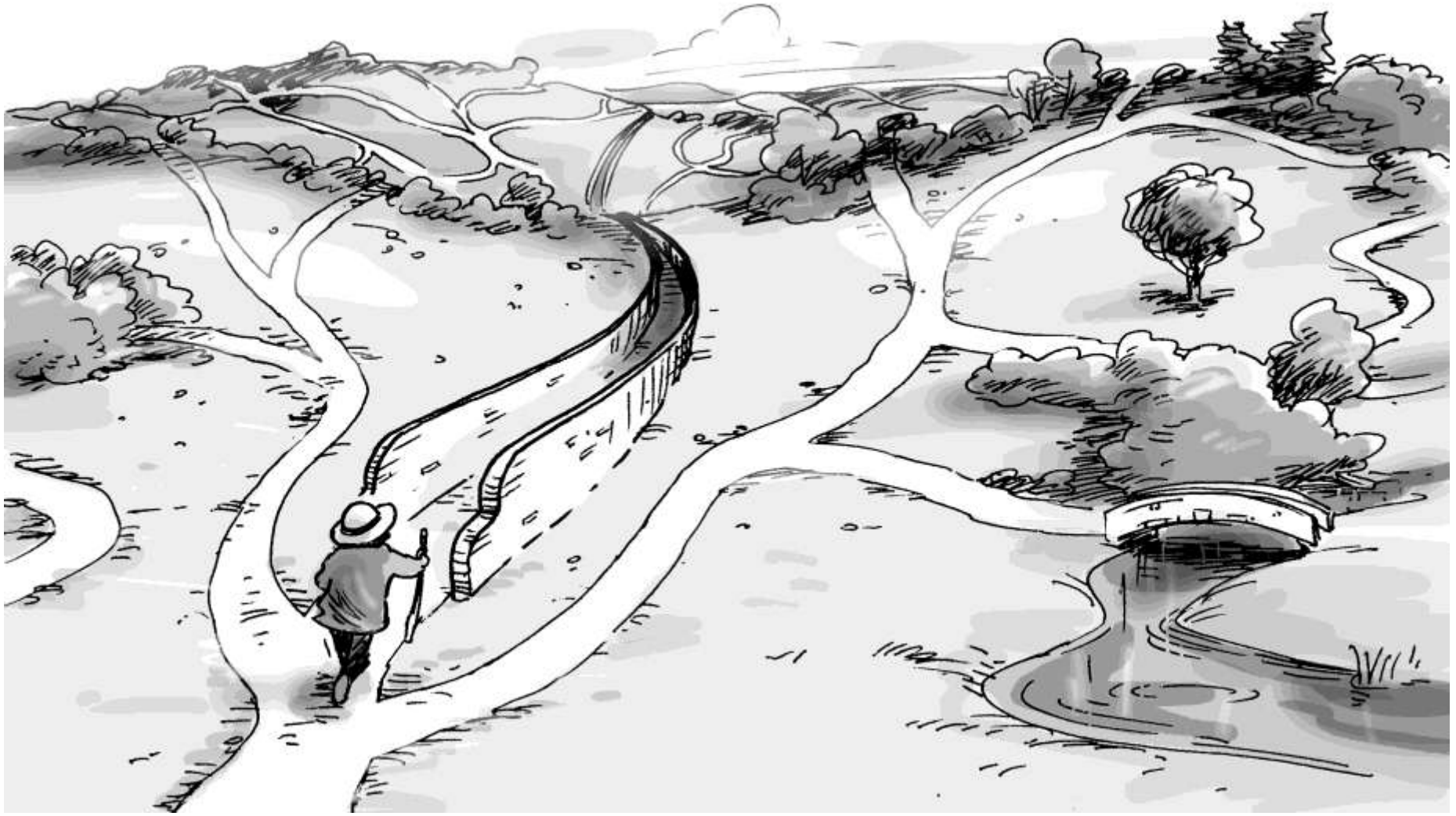


Systemic

(epistemologies)

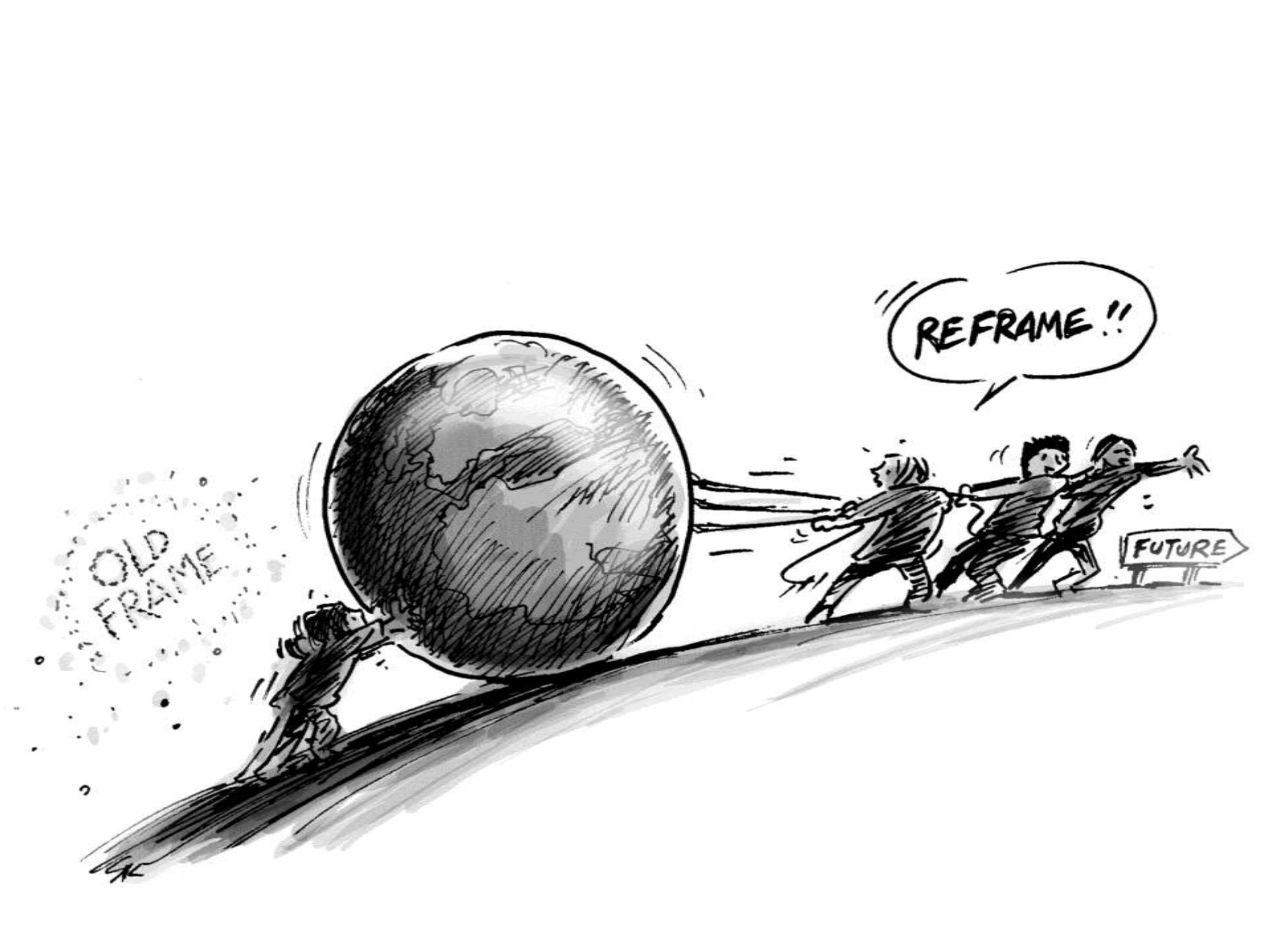
Systematic

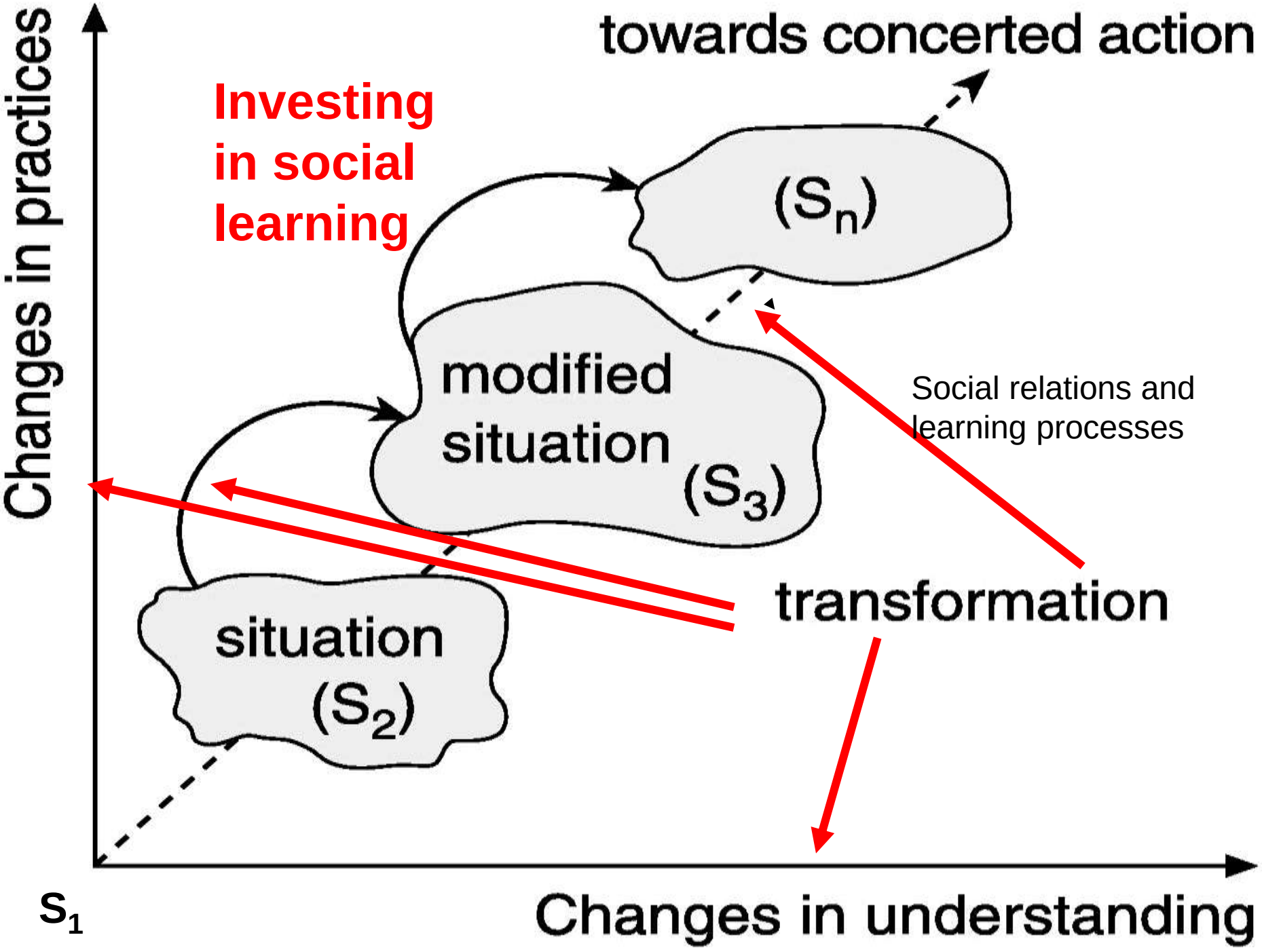
(ontologies)



Is it possible to ‘build’ systemic (and adaptive) water governance performances?

‘We’ are over-committed doing the wrong thing righter?


REFRAME !!
OLD FRAME
FUTURE


towards concerted action
Investing in social learning
(S_n)
modified situation (S_3)
Social relations and learning processes
transformation
situation (S_2)
Changes in practices
S_1
Changes in understanding

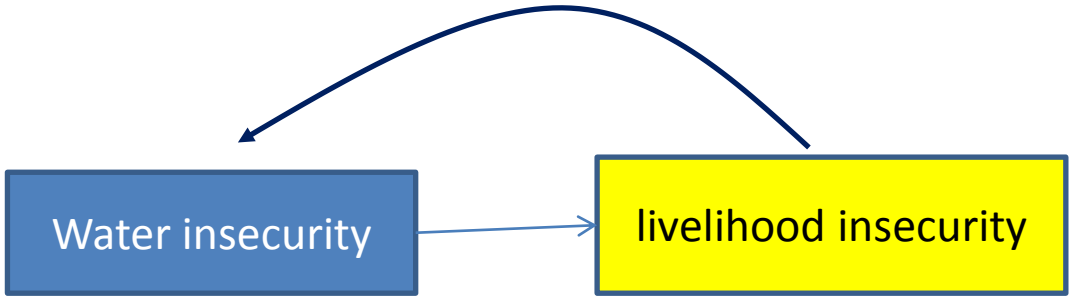
Understanding policy changes in a socio-ecological system: The Sand River Catchment

Emergence of a systems view

Sharon Pollard
Derick du Toit
Harry Biggs

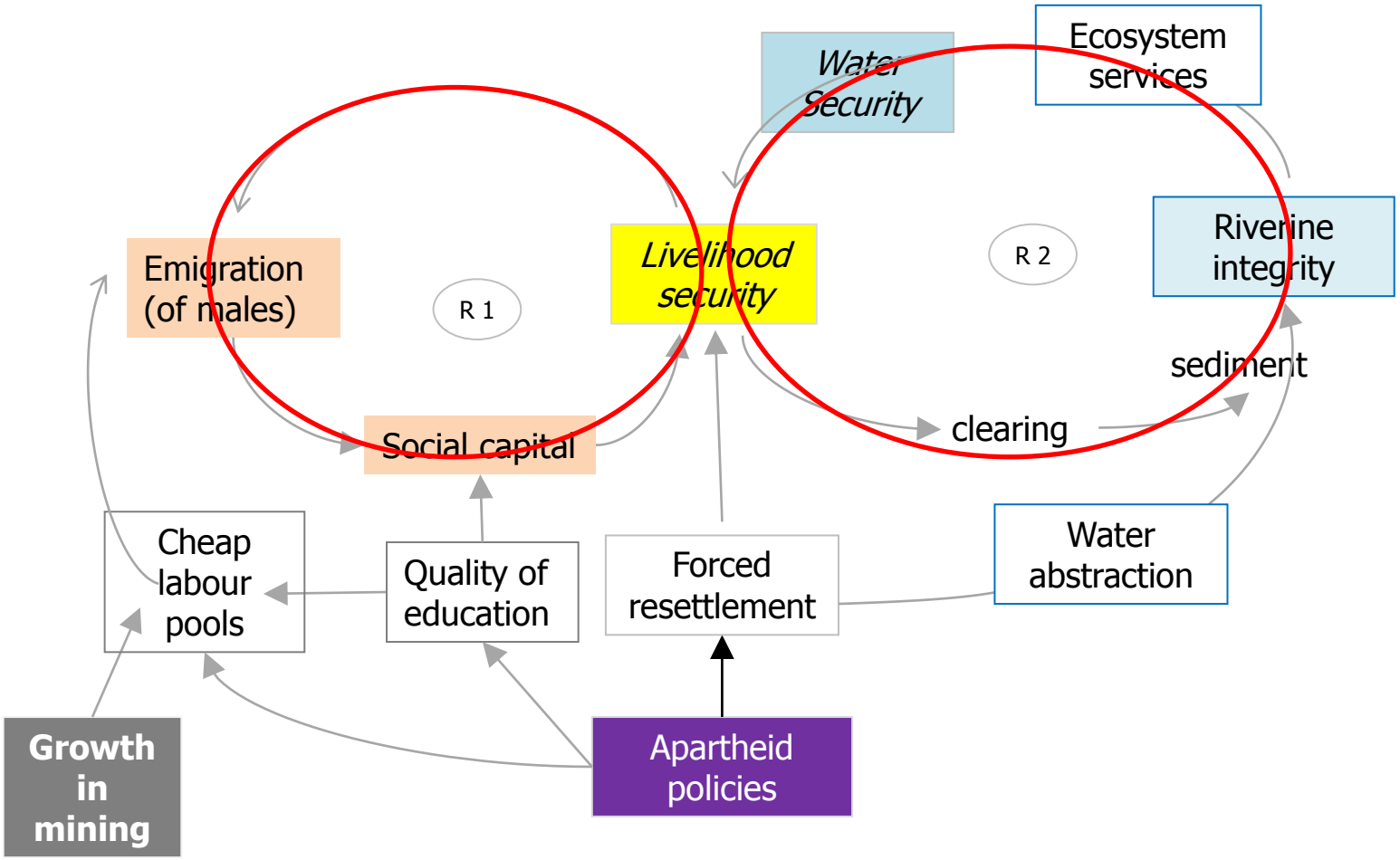
AWARD
Association for Water & Rural Development

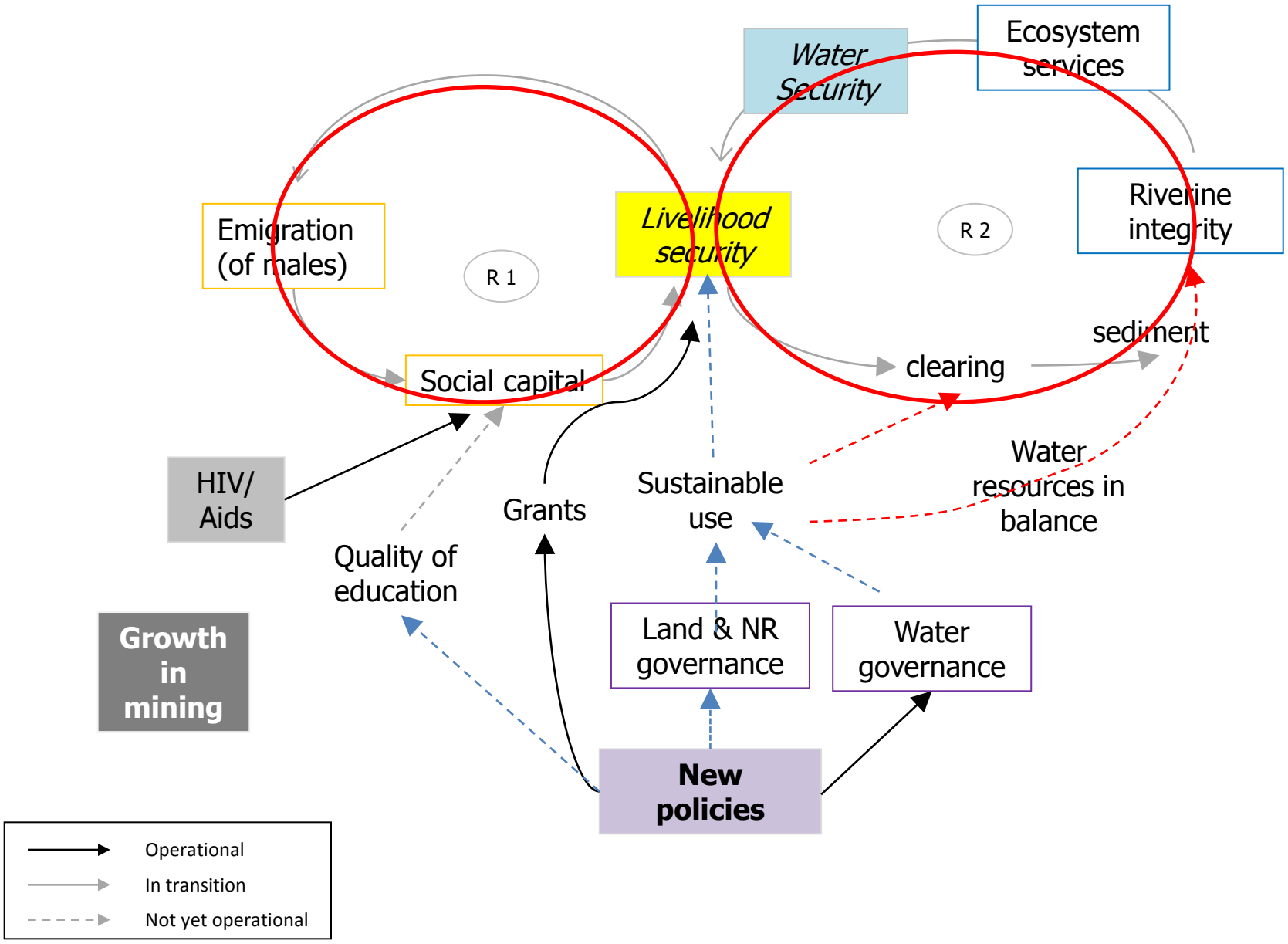
Context:



- Despite enabling policies this relationship did not appear to be improving…
- Why?

- Stared to think about:
- SES as linked system
- Setting a system boundary is a construct framed by the question at hand(catchment)


Water Security
Ecosystem services
Emigration (of males)
R 1
Livelihood security
R 2
Riverine integrity
sediment
clearing
Social capital
Cheap labour pools
Quality of education
Forced resettlement
Water abstraction
Growth in mining
Apartheid policies


Water Security
Ecosystem services
Riverine integrity
Livelihood security
Emigration (of males)
R 1
R 2
Social capital
clearing
sediment
HIV/ Aids
Grants
Sustainable use
Water resources in balance
Quality of education
Growth in mining
Land & NR governance
Water governance
New policies
Operational
In transition
Not yet operational

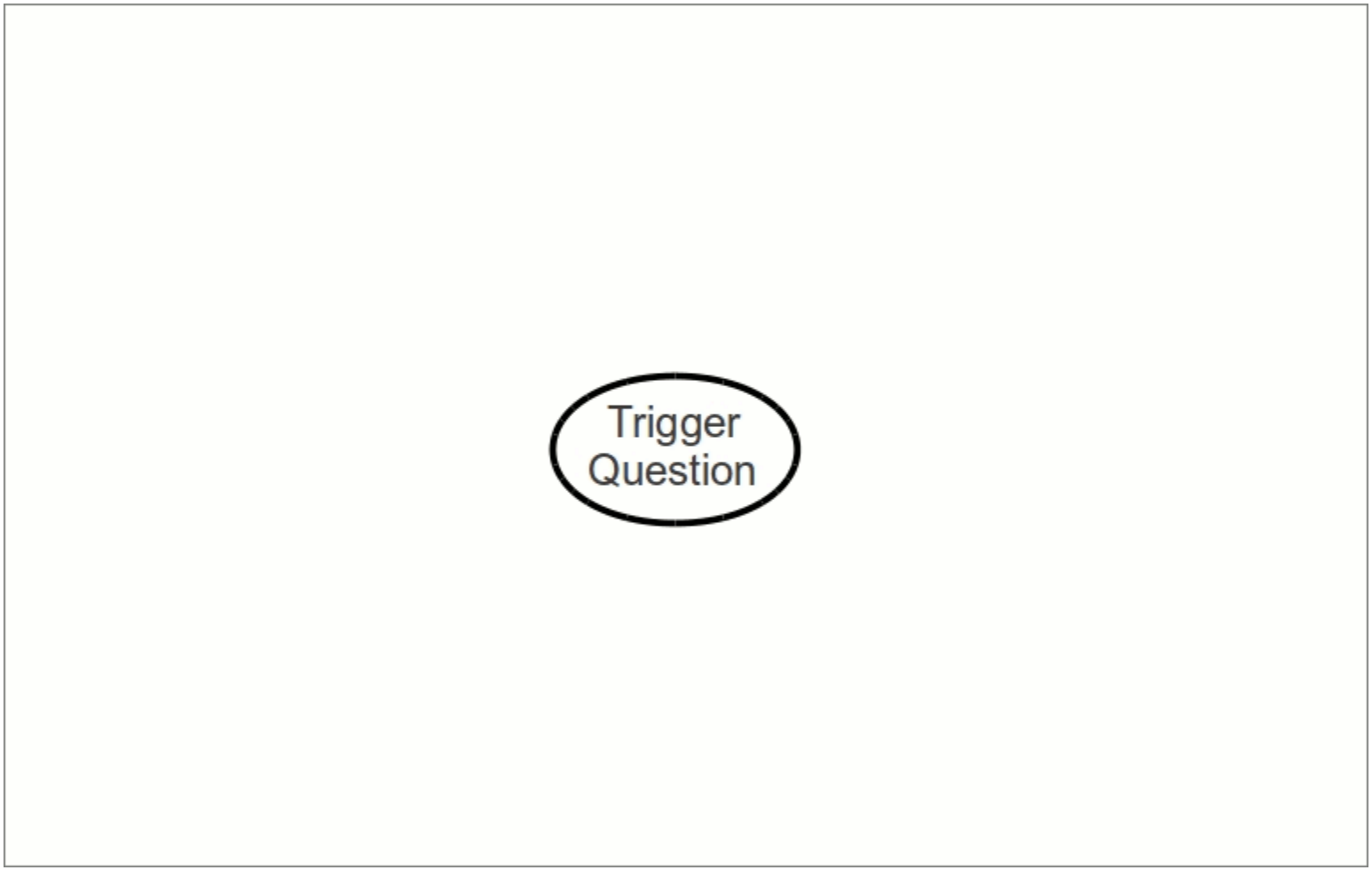
Principles

- Co-construction that is critical
- No “truth”
- Inter-relationships – can cause ‘emergence’
- Drivers – impacts vary in space and time
- Can produce unanticipated outcomes
- Feedbacks can result in resilience “brittleness’
- Governance / policy is part of such complex systems

Conversation Mapping

McKenzie, B. ‘Conversation mapping: generating probes to explore complex adaptive systems through critically systemic discourse’, Systemic Development Institute, Australia

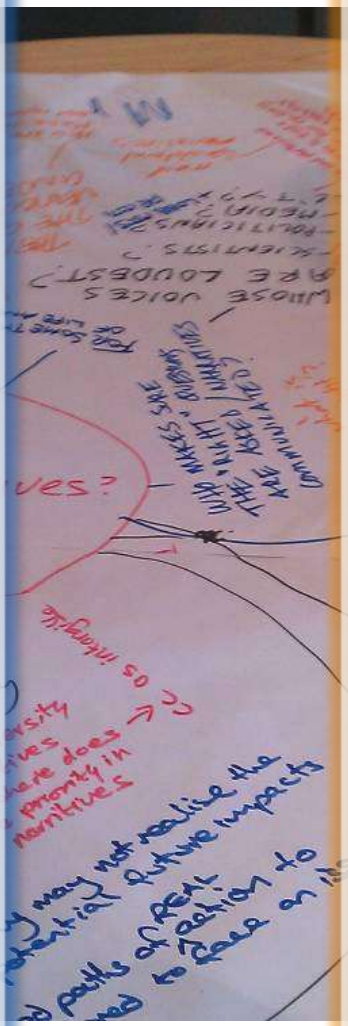
A ‘Map’ of your Conversation



The Process

Do

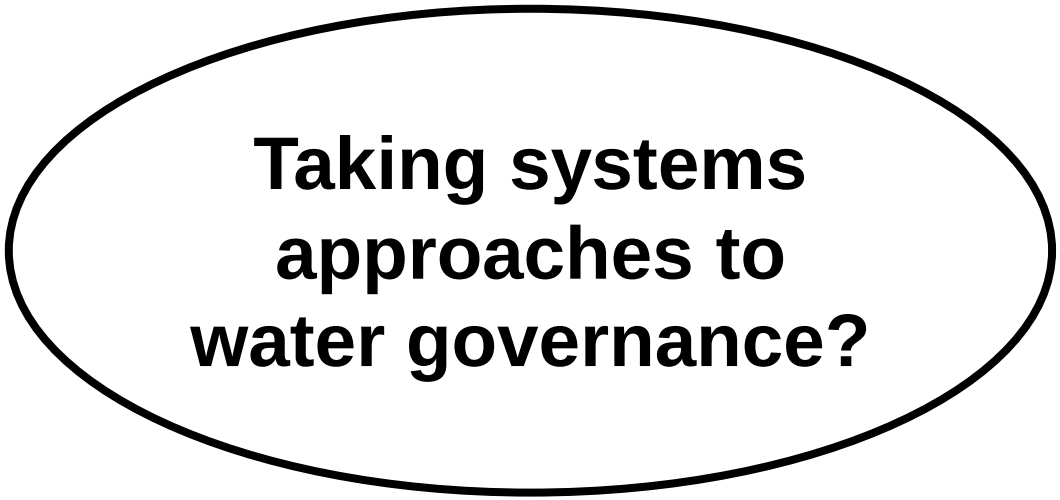
Introduce
Stand up
Use markers
Actively listen



Don’t

Connect themes
Talk over others
Be constrained
Force patterns

Trigger Question



- Reflect on your engagement in freshwater governance research and practice
- What systemic approaches do you use or would like to use?

Exploring systemic (research) practice

Dr John Colvin, Open Systems Research Group, Open University, UK

- In this carrousel I will reflect on the design of research programmes which might enable institutional innovation.
- Drawing on a South African case study, I will introduce two heuristics - concerned with social learning and inquiry pathways.
- We will also consider how you might progress your own work in the context of systemic governance

How do I understand systems thinking?

Systems thinking:

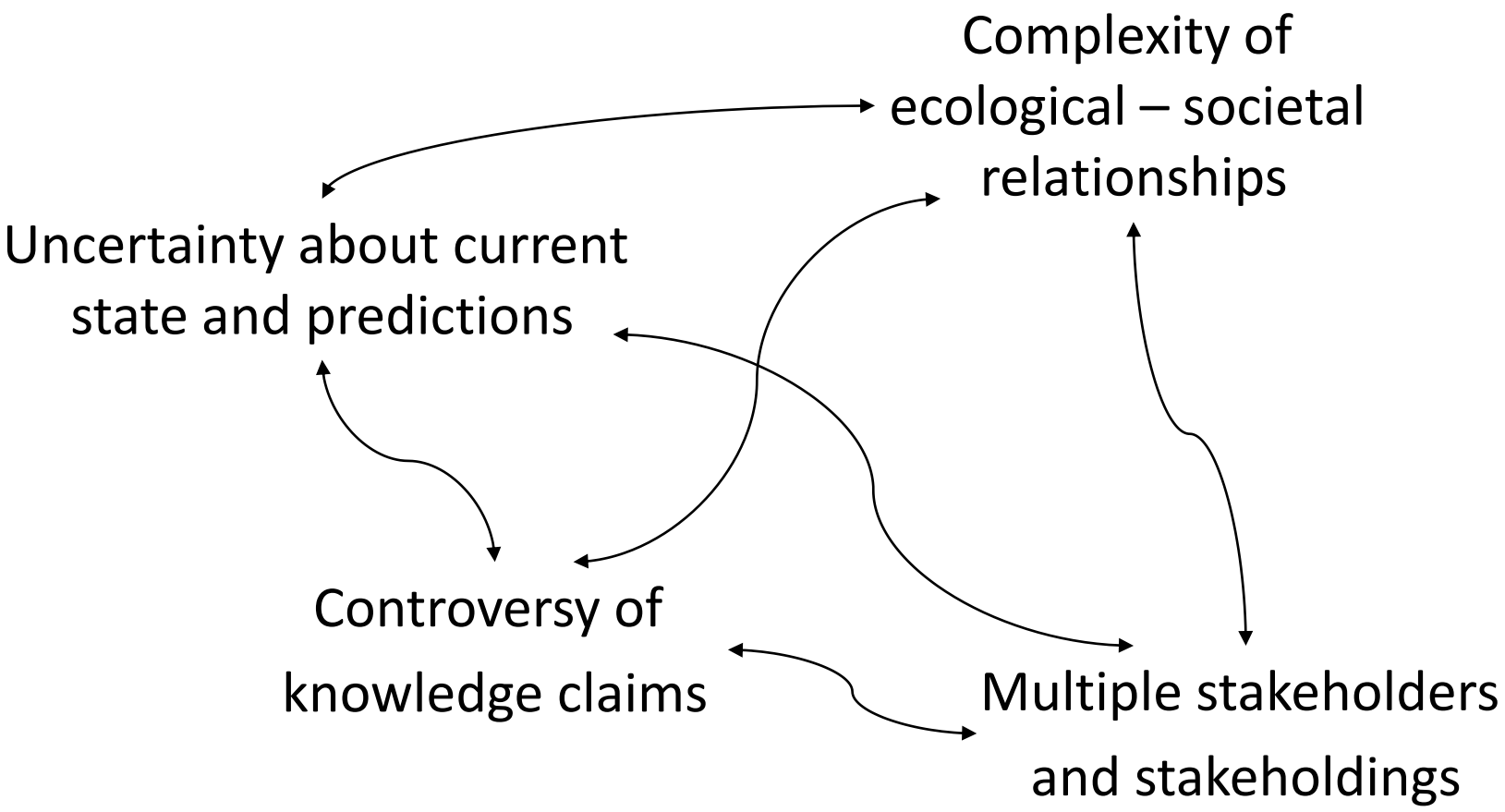
- Emphasises connectedness and relationships within wholes
- Recognises multiple relationships and influences
- Appreciates multiple partial perspectives

Current paradigm:

- Emphasis on parts (‘reductionist thinking’)
- Linear, deterministic cause-effect relationships
- Single truth or perspective

How do I understand systems thinking?

Recognising the 'messiness' and complexity of situations:

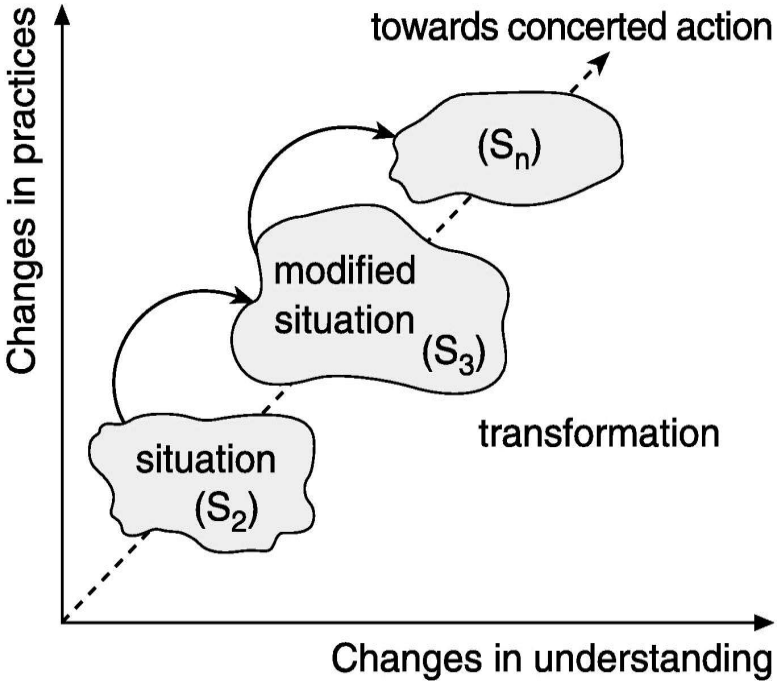


From systems thinking to systemic (research) practi

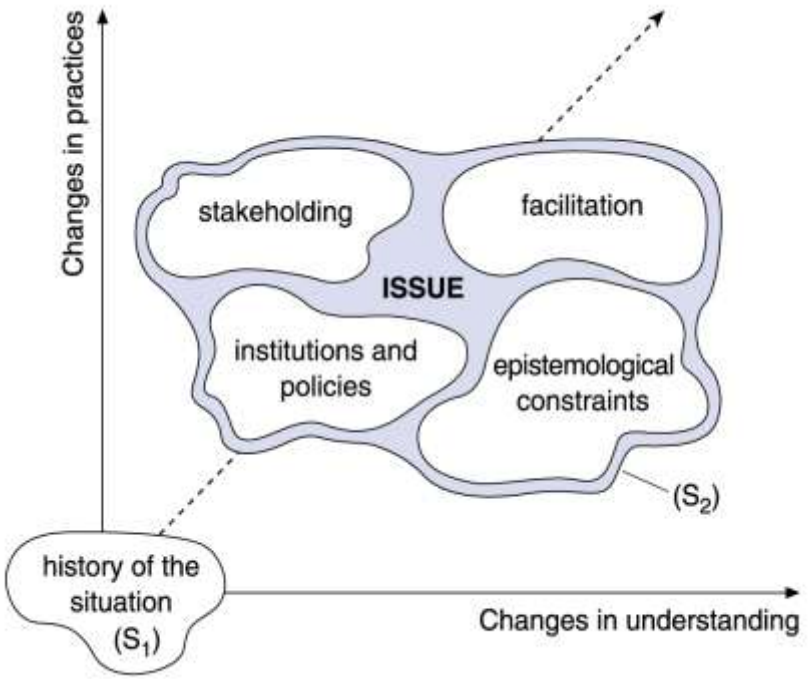
Systems doing ('systemic practice') emphasises:

- *Praxis* (theory of change). Being aware of the theory underpinning your practice.
- *Social learning* – people learning with and from each other to create change.
- *An emotion of inquiry* – being open to new experiences and ideas as a basis for learning

How do we design for transformative research (or practice) using systems approaches?

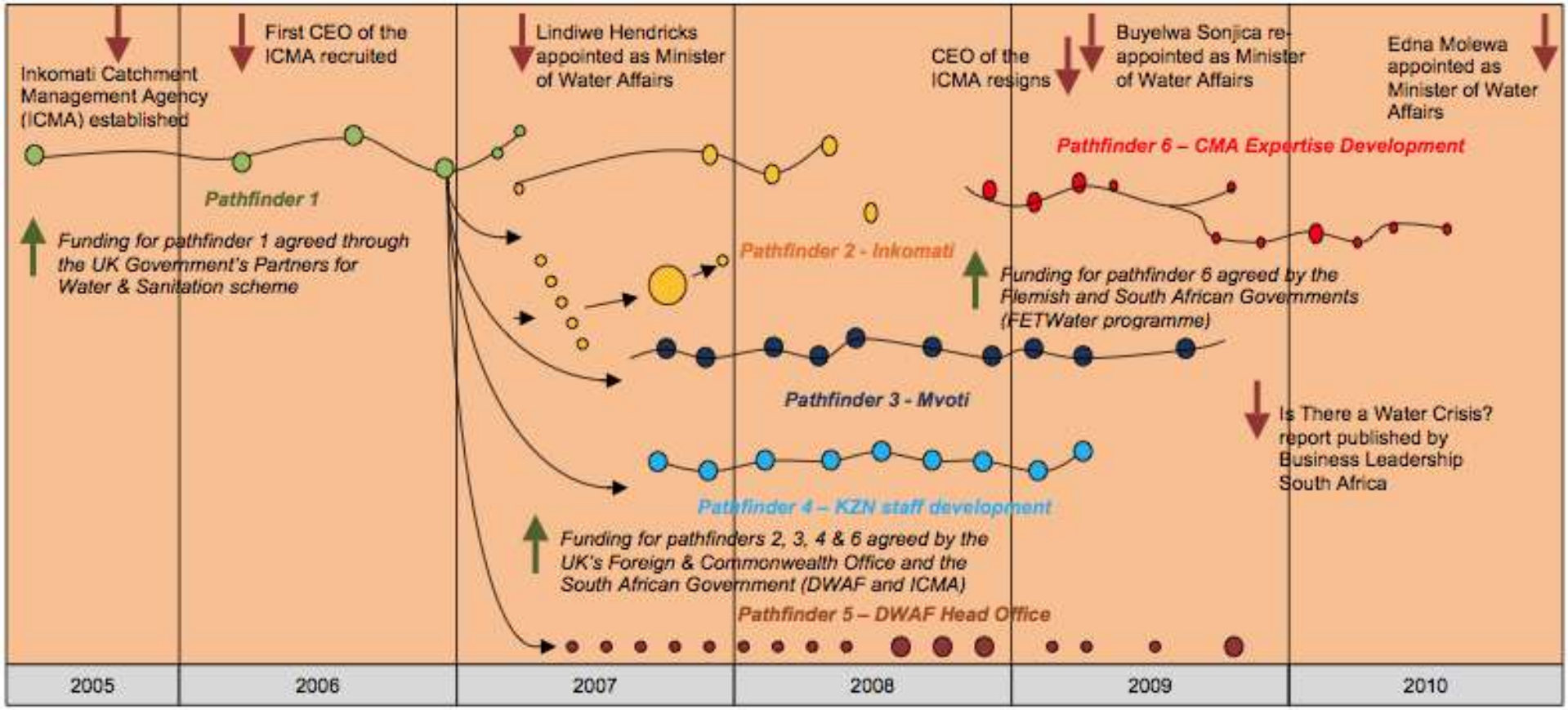


(after SLIM, 2004)



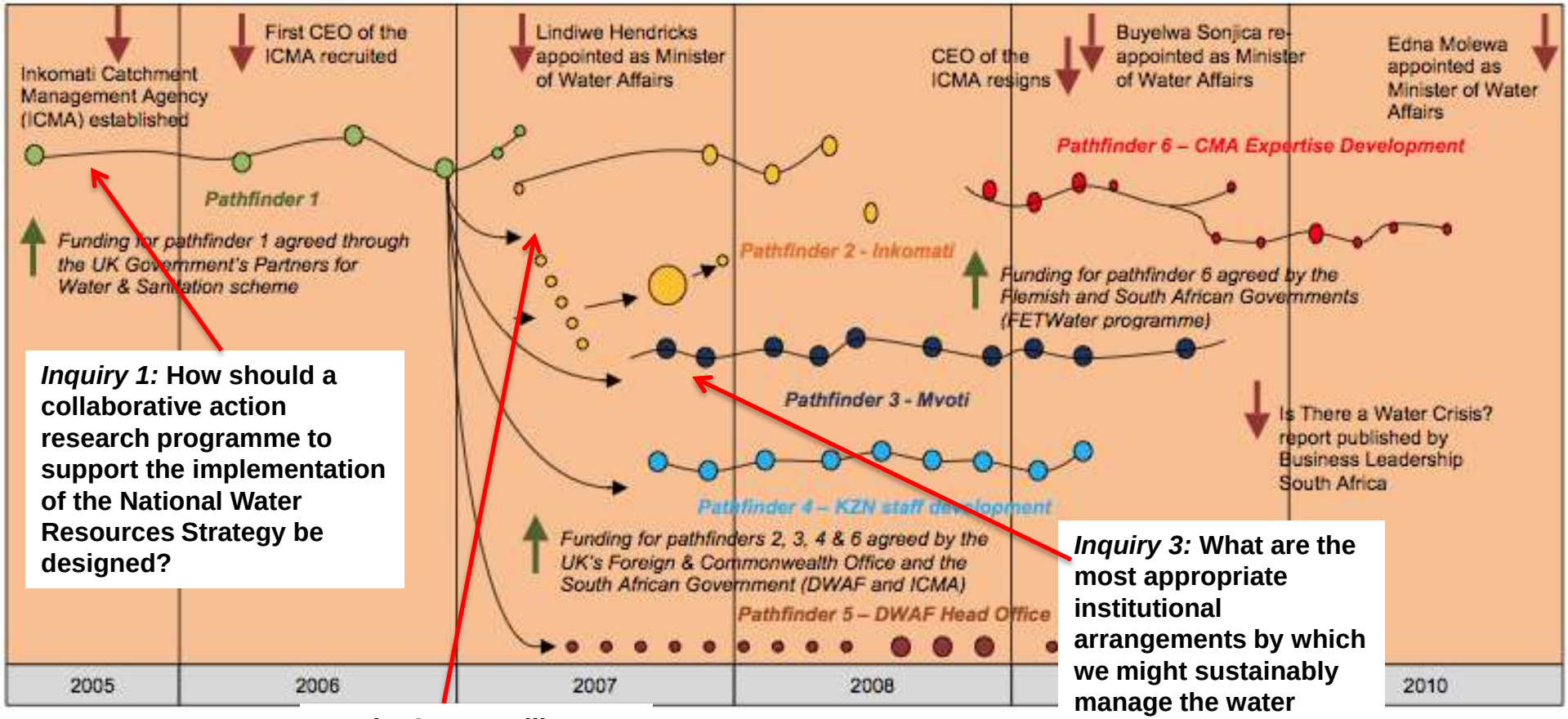
Social learning: process of socially constructing an issue by actors in which their understandings and practices change, leading to transformation of the situation through collective / concerted action.

Watercourse collaborative action research programme, South Africa, 2005 – 2010: consisting of six designed and emergent inquiry pathways



Designing for systemic action research using social learning approaches requires *designing for emergence* within an overall framework and set of principles

Watercourse collaborative action research programme, South Africa, 2005 – 2010: Framing governance research in terms of inquiry pathways that involve multiple stakeholders

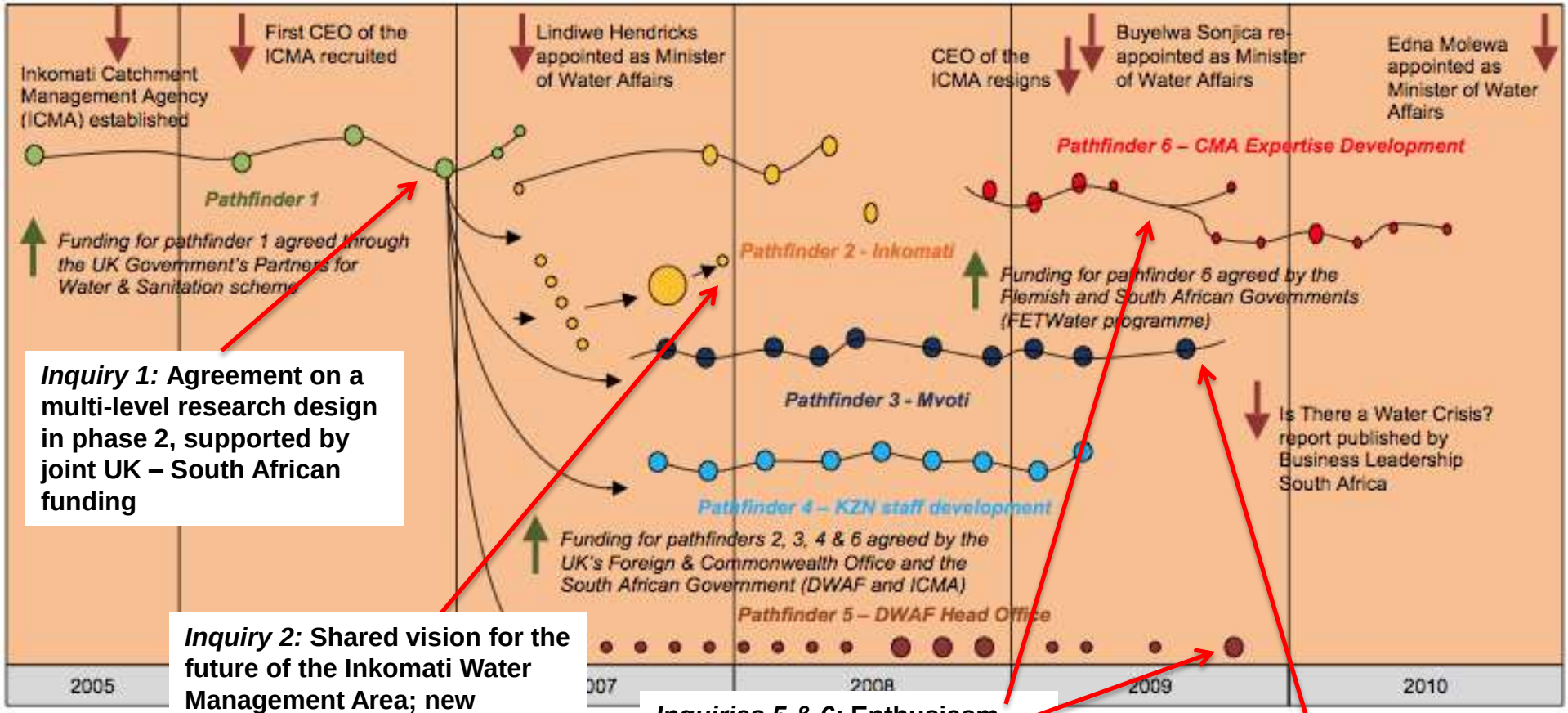


Inquiry 1: **How should a collaborative action research programme to support the implementation of the National Water Resources Strategy be designed?**

Inquiry 2: **How will we develop collaborative and adaptive governance practices in the Inkomati Water Management Area?**

Inquiry 3: **What are the most appropriate institutional arrangements by which we might sustainably manage the water resources that we share within our Mvoti catchment?**

Watercourse collaborative action research programme, South Africa, 2005 – 2010: Outcomes



Inquiry 1: **Agreement on a multi-level research design in phase 2, supported by joint UK – South African funding**

Inquiry 2: **Shared vision for the future of the Inkomati Water Management Area; new experiential understanding of social learning processes by the ICMA team**

Inquiries 5 & 6: **Enthusiasm and commitment within DWA to social learning approaches as a basis for institutional reform and CMA development**

Inquiry 3: **Agreement on an institutional design and proposal for a Mvoti Water User Association**

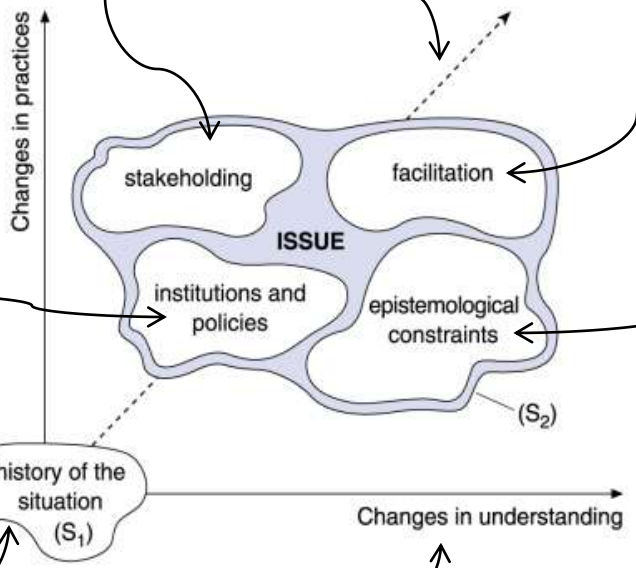
Watercourse collaborative action research programme, South Africa, 2005 – 2010: Findings and lessons

Stakeholding is a key issue in the South African situation: finding a shared framing of the situation and using dialogic approaches draws out enthusiasm and stakeholding in working towards shared solutions

Social learning systems are emergent not deterministic

Facilitation approaches are critical to collaborative dialogue and action research and need to be flexible and appropriate to the situation

The South African policy framework was a critical enabling condition for this research; uncertainties over policy commitments were also a key constraining factor



Science is necessary but not the only determinant of process or outputs

Starting conditions matter: starting in a light touch way by reflecting on experience and current practices enabled the framing of a multi-level programme

Changes in understanding and practice are not synchronous

Progressing our personal practice

Questions:

- What engaged your interest or resonated for you in this brief presentation?
- What questions did it raise in your mind?
- What next steps might I take in progressing my own practice?

Reflect on these questions:

- Individually
- In pairs