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The Open University

# Cyber-systemics, systemic inquiry and institutional reform?

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President, International  
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Sciences 2014-15



# EARTH



-GOT A  
PIECE WITH  
'HUMANS'  
ON IT?

... NOT  
NECESSARILY...

Ison, R.L. (2010) Systems  
practice. How to act in a  
climate-change world.  
London: Springer.

# An inquiry about framing and reframing choices?

Reframe how we think and act?

How governance (or governing) is understood?

How we frame what is to be governed?



# ‘Framing’ situations is a choice we have...and one we always make

- *“All thinking and talking involves “framing.” And since frames come in systems, a single word typically activates not only its defining frame, but also much of the system its defining frame is in” (Lakoff 2010 pp.71-72)*
- This applies equally to:
  - ‘the Anthropocene’
  - governance/governing
  - practice/practicing – doing science, doing systems
- Framing choices create initial starting conditions that become conserved as lineages (pathway dependencies) and as institutions (norms, ‘rules of the human game’)

# Being open to what ‘the Anthropocene’ as a ‘framing choice’ reveals and conceals

- Malm, A. & Hornborg, A. (2014) The geology of mankind? A critique of the Anthropocene narrative, The Anthropocene Review
- “We need to question the use of the species category in the Anthropocene narrative ...because it is analytically flawed (i.e., only some, not all, humans have contributed) ...and it is inimical to action”
- Too often intra-species inequalities are ignored
- Metaphor theory/practice can help – what does a framing choice reveal or conceal? What are its theoretical entailments?

Why?

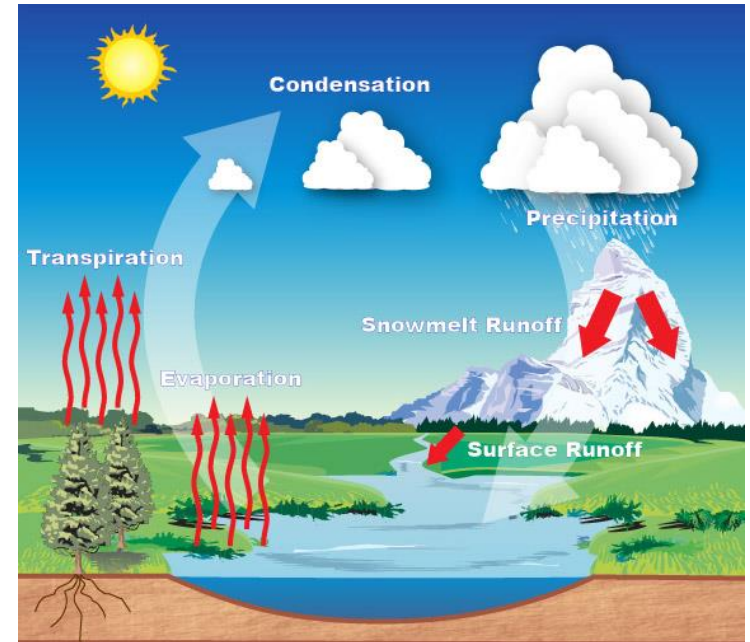
# Governing 'the Anthropocene'?

Crutzen, P. J. (2002). Geology of mankind. *Nature*, 415 , 23.





## Global systemic processes or cycles



- Water cycle
- Carbon cycle
- Nitrogen cycle
- Phosphorous cycle

# Train tracks buckle during 2009 Melbourne heatwave





# Sewer systems in UK not designed to handle prolonged periods of heavy rain, February 2014



# Thames barrier closes 40 times in 2014 as of February 17<sup>th</sup>



Maximum closures allowed per year to avoid breakdown and spiralling maintenance costs - 50



Plant phenology (e.g. flowering time) changes due to temperature shifts





# Health and Social Problems are Worse in More Unequal Countries

## Index of:

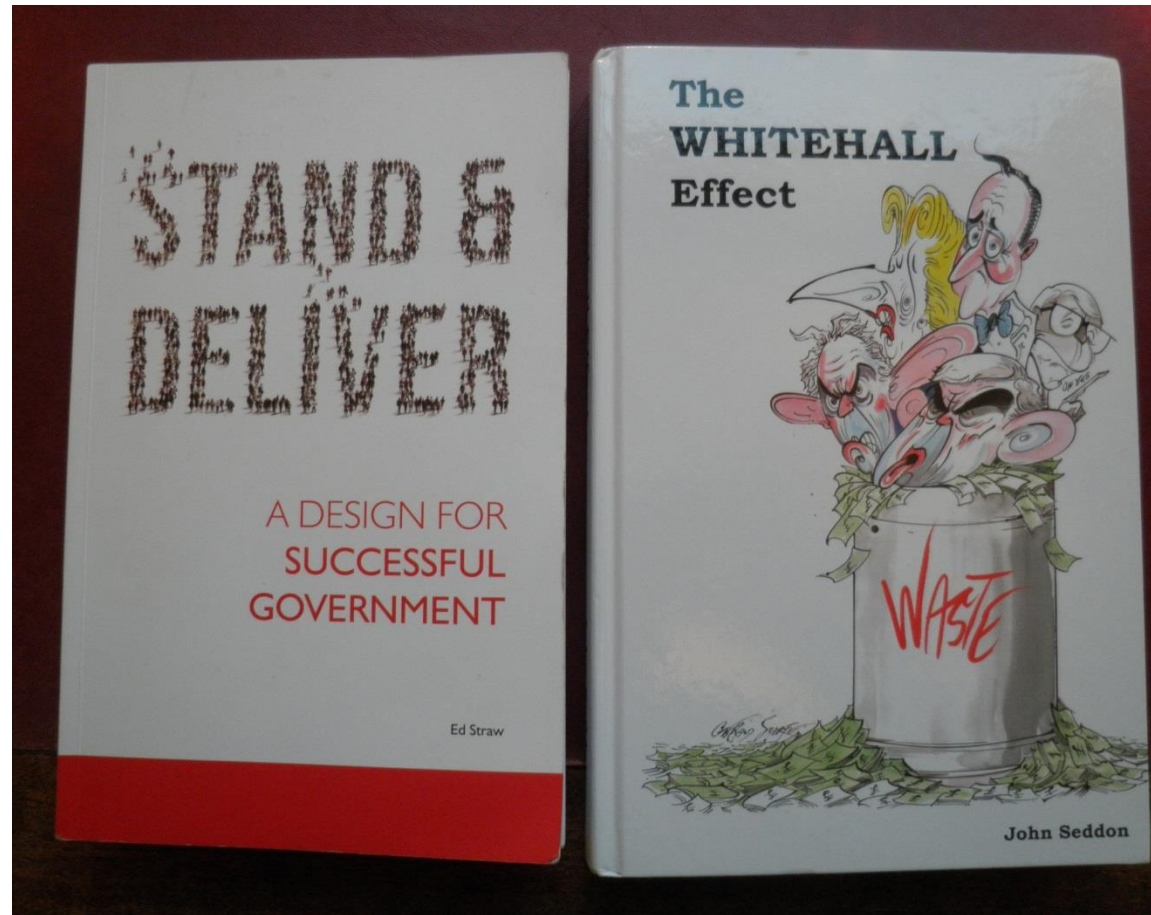
- Life expectancy
- Math & Literacy
- Infant mortality
- Homicides
- Imprisonment
- Teenage births
- Trust
- Obesity
- Mental illness – incl. drug & alcohol addiction
- Social mobility



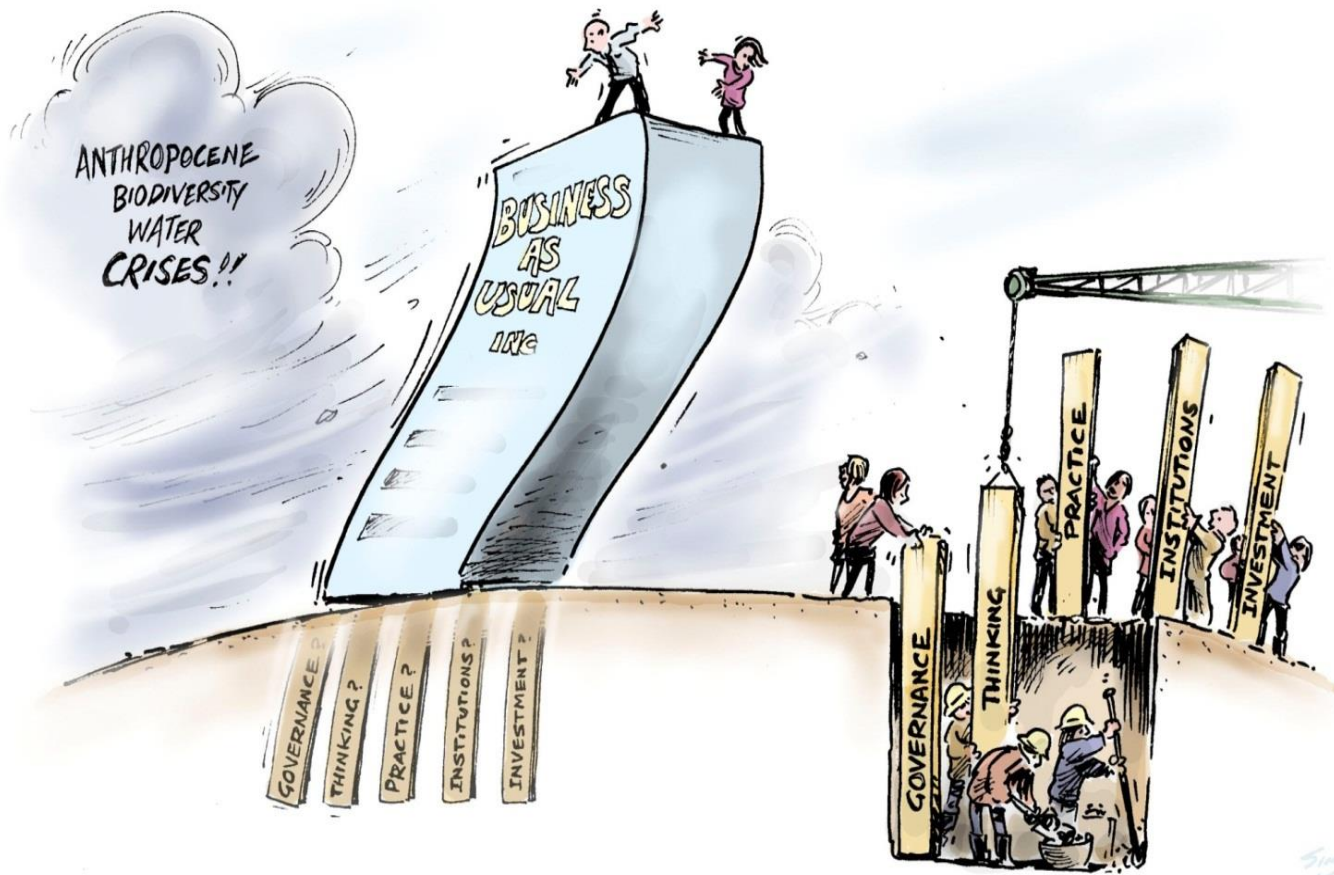


# The systemic failure of governance by governments!

- Ison, R.L. (2010) Governance that works. Why public service reform needs systems thinking. In Davis, M. & Lyons, M. eds *More Than Luck. Ideas Australia Needs Now*. pp. 215-228. CPD, Sydney.
- Ison, R.L., Wallis, P.J. & Alexandra, J. (2016) Not muddling intelligently enough: 'deliverology' and the malaise of modern governments *Policy Sciences (submitted)*



# We are in a period new to human history – so what are the implications for what we do in future .....



- Governance
- Thinking
- Practice
- Institutions
- Investment

Re-building?  
Re-investing?  
Inventing?  
Designing?

# How can we make a difference?

- When we speak of the “environment”, what we really mean is a relationship existing between nature and the society which lives in it.
- Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live.
- We are part of nature, included in it and thus in constant interaction with it. Recognizing the reasons why a given area is polluted requires a study of the workings of society, its economy, its behaviour patterns, and the ways it grasps reality
- *Nothing in this world is indifferent to us*
  - 139. ENCYCLICAL LETTER, LAUDATO SI' OF THE HOLY FATHER, FRANCIS 2015

# How can we make a difference?

- Over these two days we can explore:
  - ❑ the opportunities a (re) investment in (cyber) systemic thinking and practices might offer?
  - ❑ what narratives and institutional arrangements might need to be built to realise these opportunities?
  - ❑ researchable agendas and institutional innovations based on our collective experiences and understandings



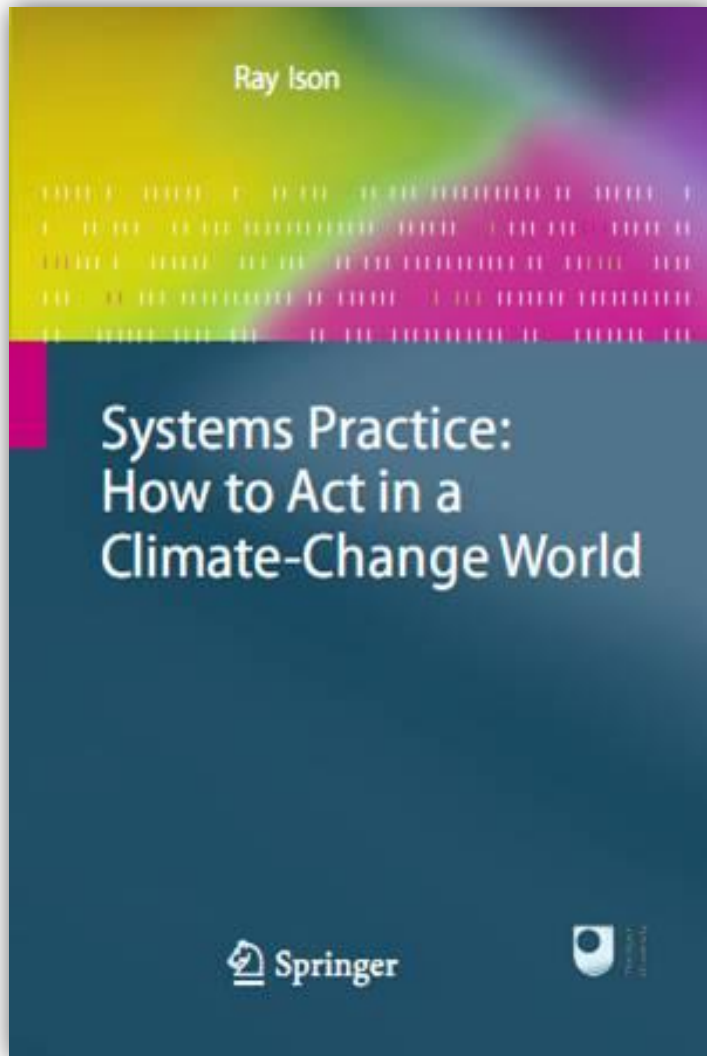
# Why cyber-systemics?



The late Garry Boyd, Professor of Education (educational technology) at  
Concordia University Montreal, Canada

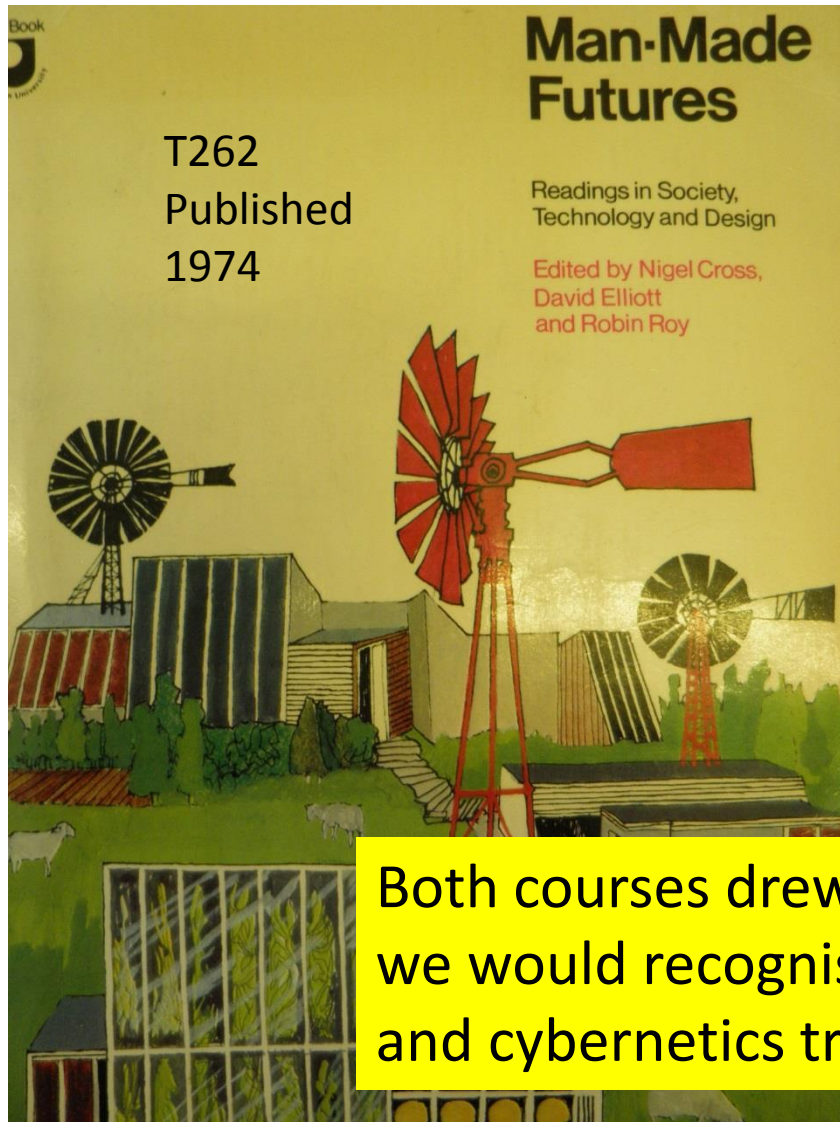
See: <http://www.col.org/blog/Lists/Posts/Post.aspx?ID=136>

## Experience, evidence & constructive critique?



- Developing and delivering a 'systems' curriculum to over 40000 students through the UK Open University (1972-2015)
- A more detailed account of material I touch upon today can be found in this book
- This book is also part of an Open University (UK) module: 'Managing systemic change: inquiry, action and interaction' (TU812)
- Which is a core course in the Systems Thinking in Practice (STiP) MSc

# Early 'framing' commitments in Design & Systems OU (UK) courses



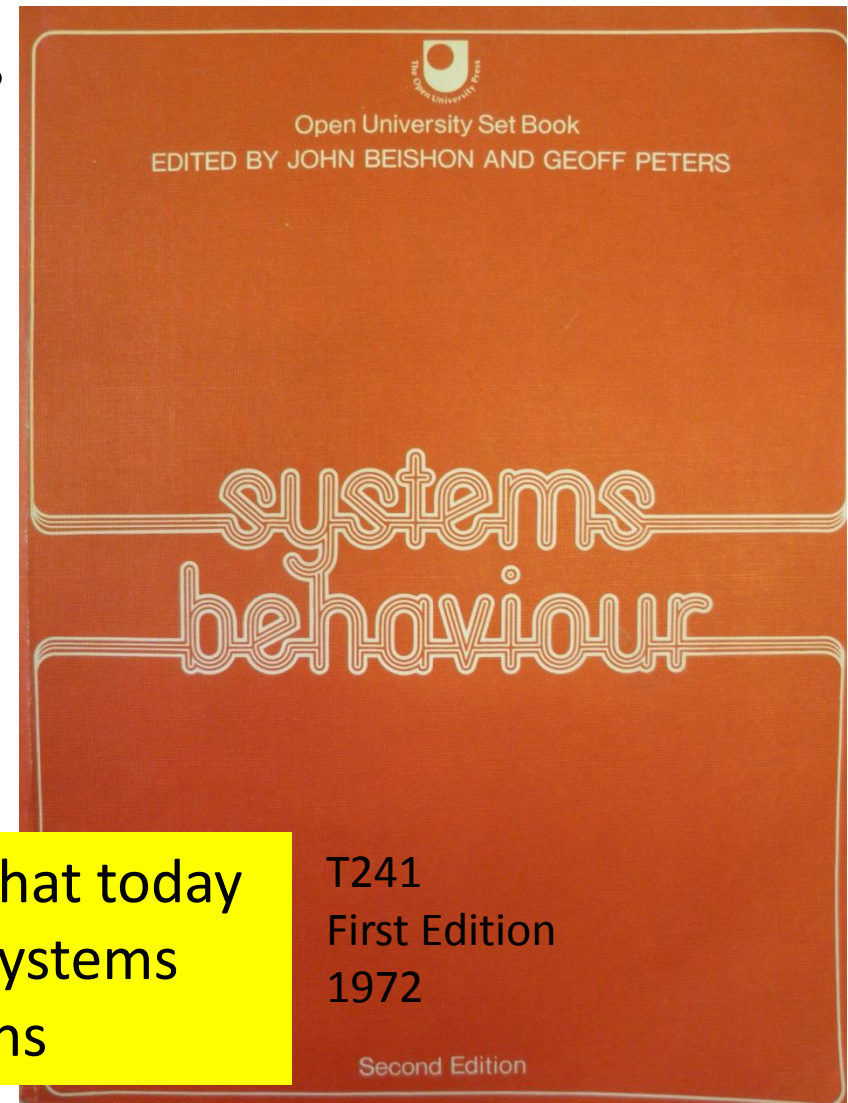
T262

Published

1974

Both courses drew on what today we would recognise as systems and cybernetics traditions

•



T241

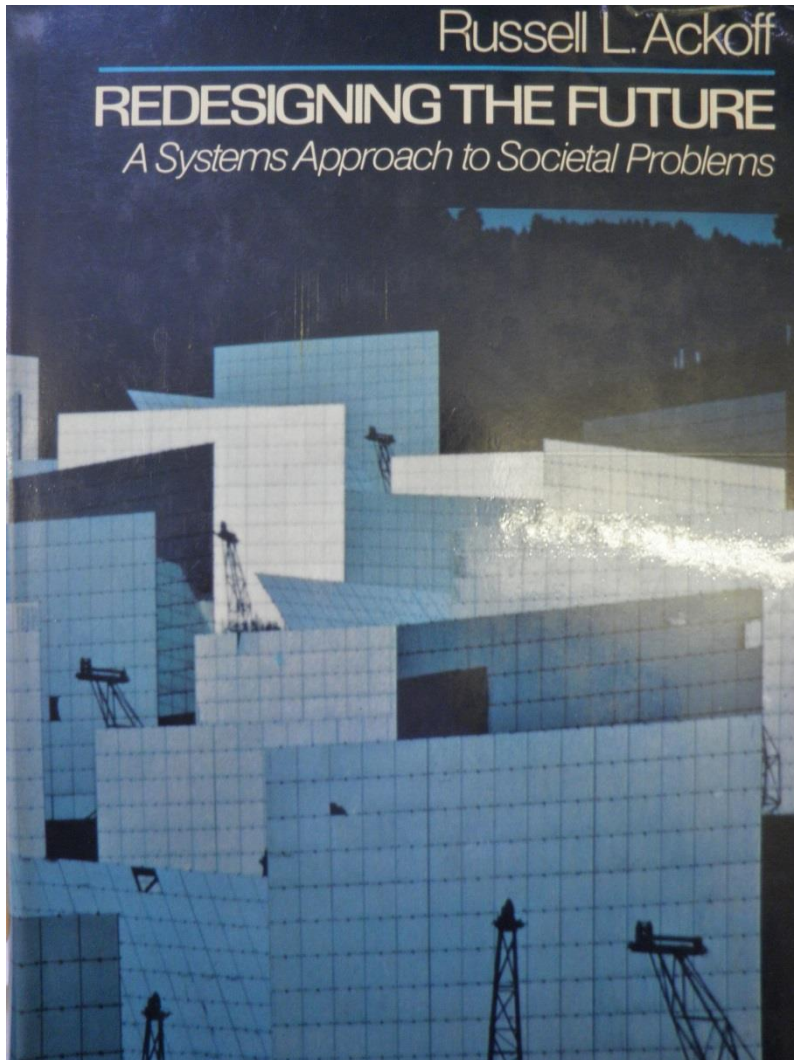
First Edition

1972

Second Edition



# Understanding Systems – T241 and ...?



- ‘*Systems behaviour*’ framed or designed around a set of ‘systems’ in the world
  - e.g. Deep sea container ports; Air traffic control; Local government; Structure and management of ecosystems etc
- In 1980 in T243 (*Systems Organization: the management of complexity*) adopted the work of Russ Ackoff and Peter Checkland



## Interview transcript (voices from the South):



The word 'system' has 'gone feral' – there has been a failure to institutionalise narratives, conceptions, praxis except as 'things' e.g. ecosystems ?

Systems  
approaches

Complex adaptive  
system(s)

Social-ecological  
system(s)

Systems  
praxis

Systems  
methodologies

Systems  
analysis

systematic

Earth system(s)

systemic

Systems science

Eco  
system(s)

Systems  
practice

Health system(s)  
X<sub>1-n</sub> system(s)

Systems research

Computer  
system(s)

The  
system(s)

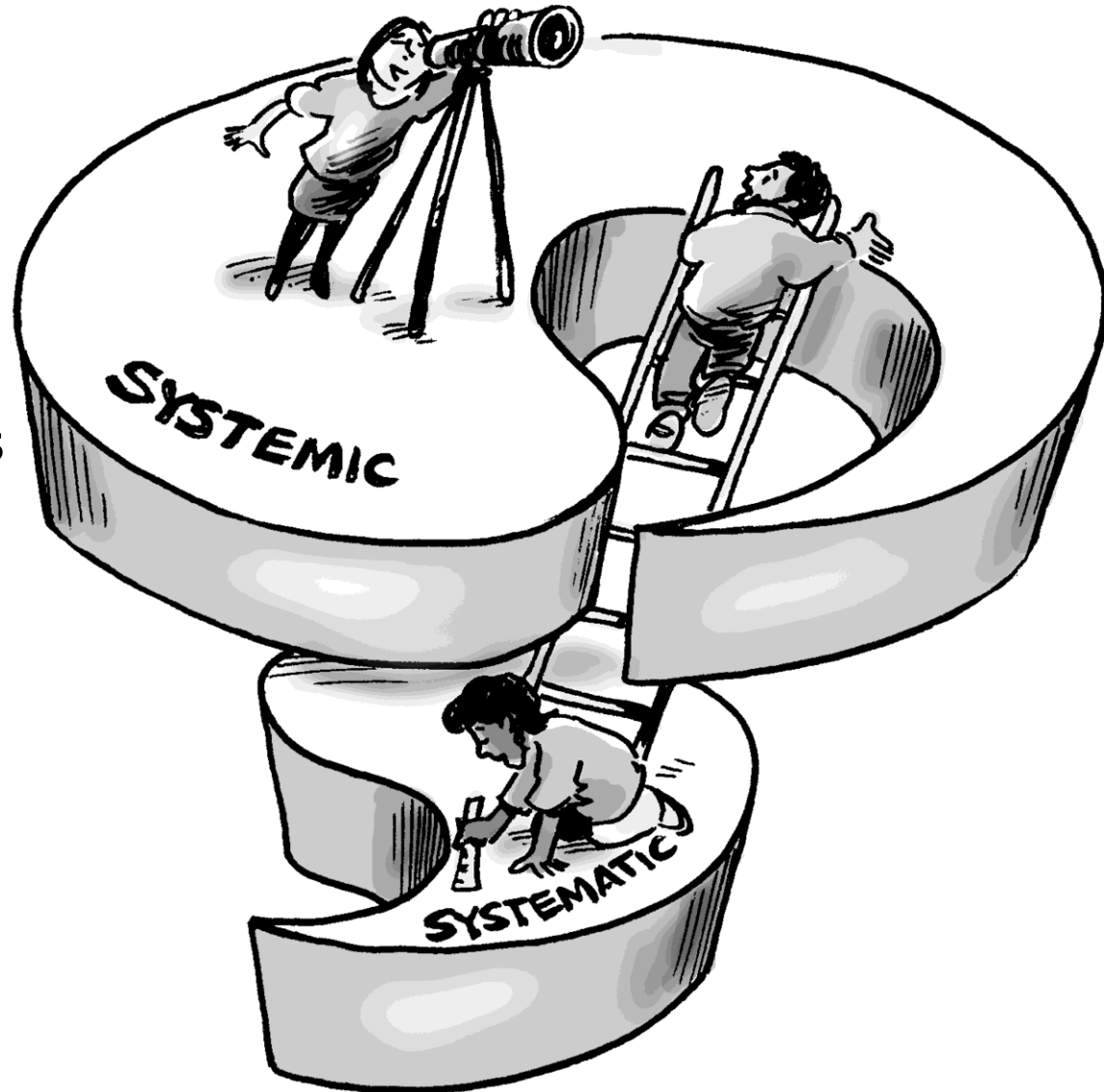
Systems  
thinking

# Systems thinking in practice (STiP)

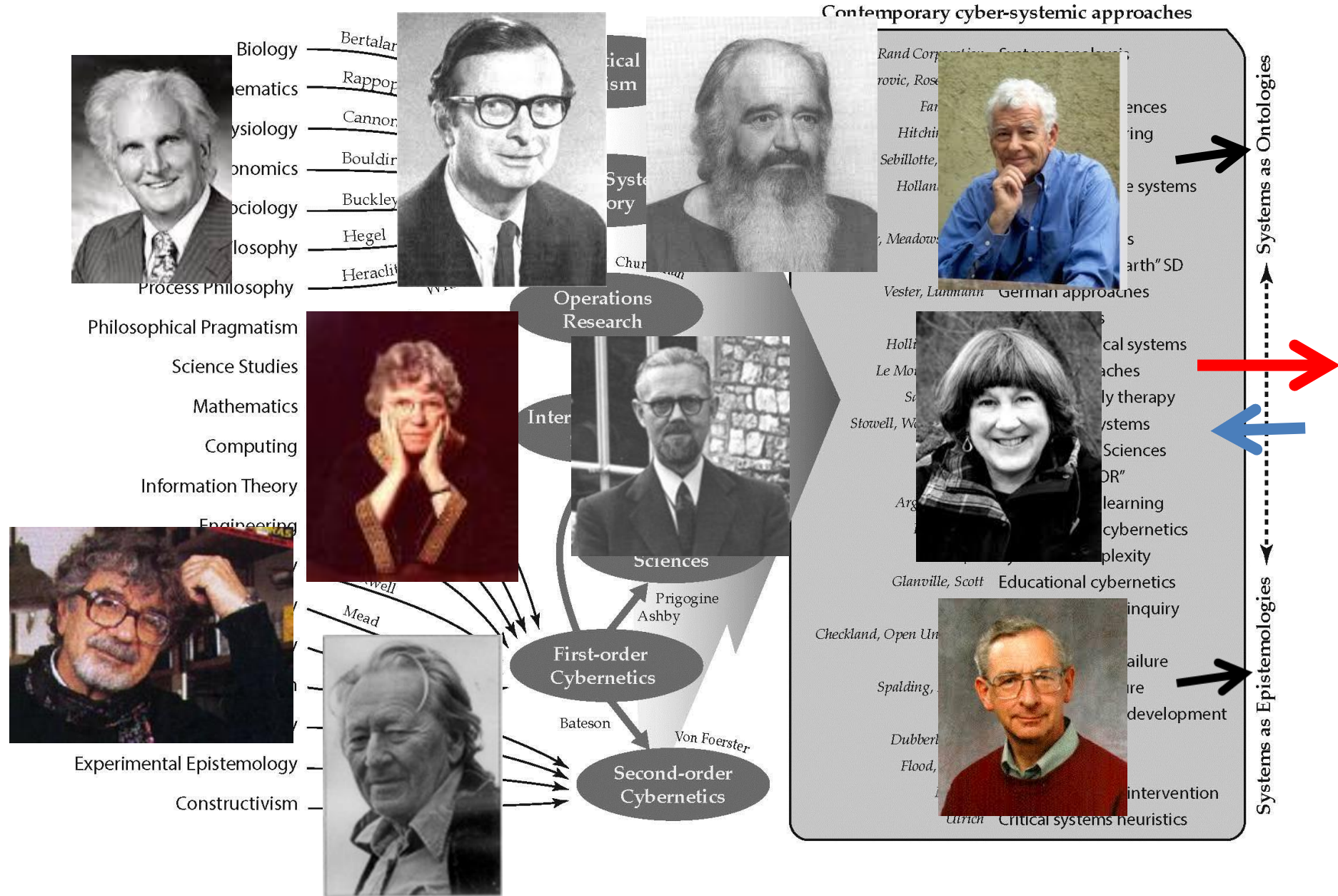
Systemic + systematic praxis?

- Transformational change requires thinking and practice that is systemic + systematic

- Together these constitute an holistic response (A DUALITY NOT A DUALISM)



Do we appreciate our own domain? Where do we draw boundaries?  
How institutionalised? What future trajectory?

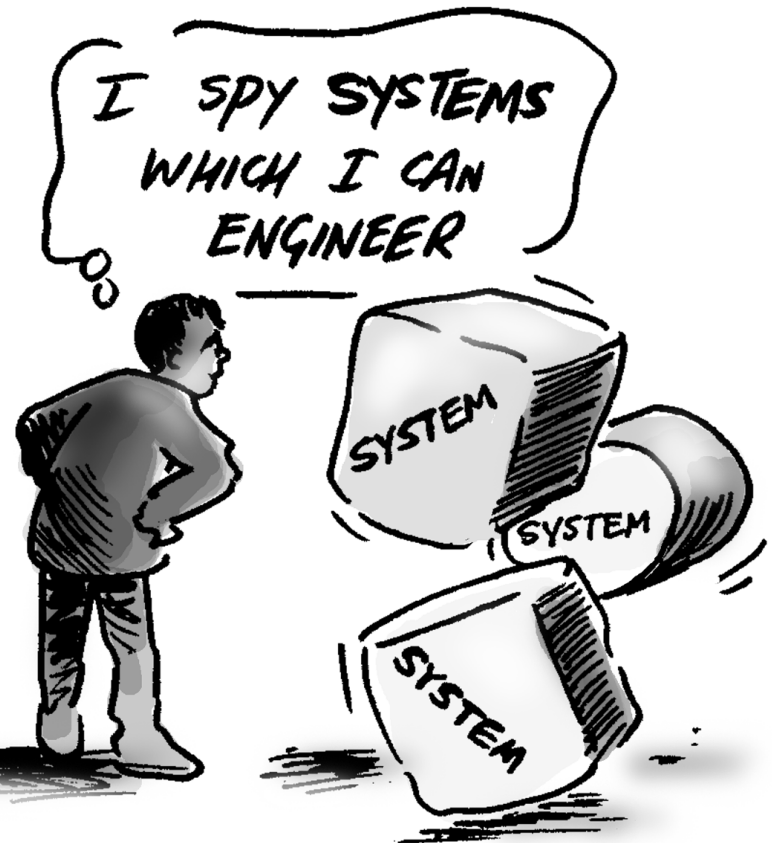




# Start with a Situation? or System? A choice to be made



Systemic  
(epistemologies)



Systematic  
(ontologies)



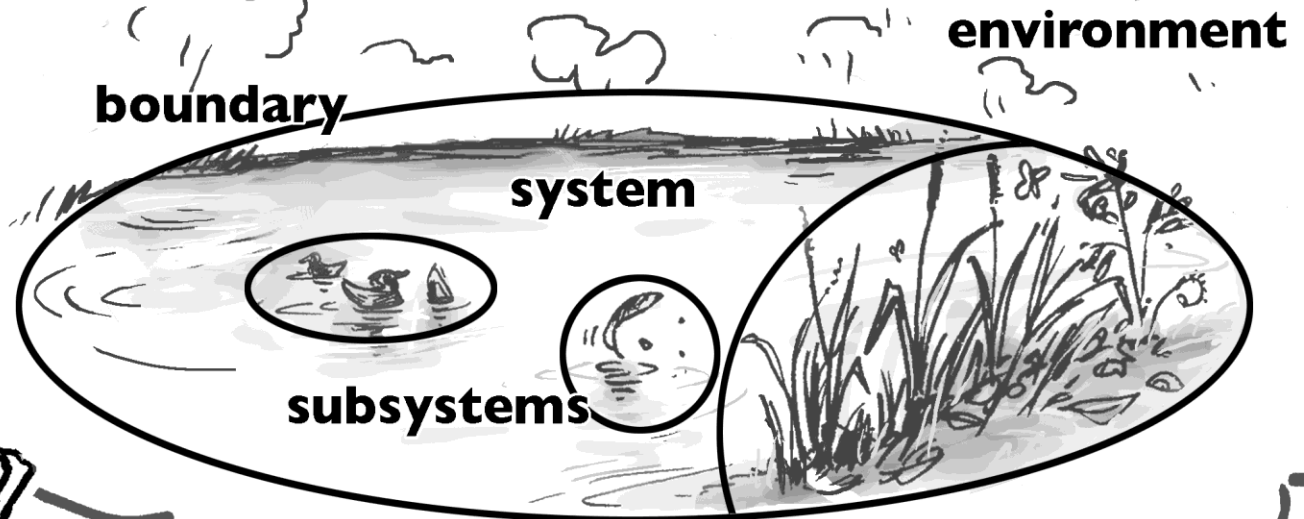




In 'bringing forth' a system – a system-environment relationship is created mediated by a boundary judgment

? of  
purpose

For an aware systems practitioner a system of interest is an epistemological device – a way of knowing about a situation



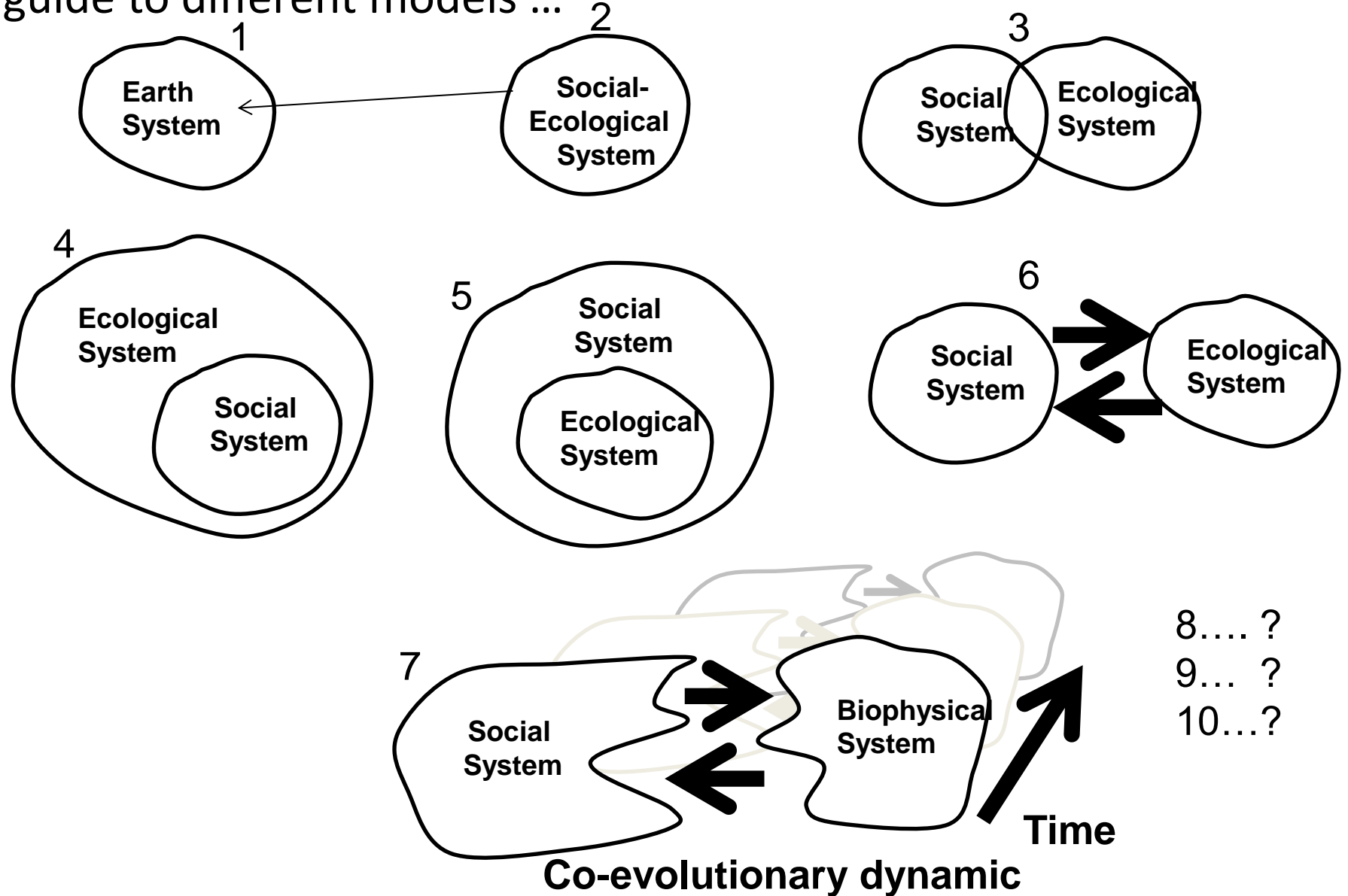
# e.g. a cybersystemic framing of systemic governance



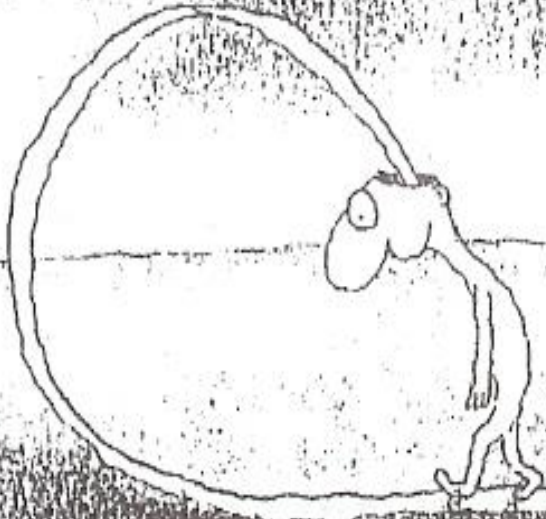
- Responding to feedback
- Cybernetics, from Greek 'kybernetes' meaning helmswoman or steersman
- Governing – responding to feedback; charting a course (purpose)
- Integrating feedback from the social and the biophysical
- The social-biophysical relationship mediated by technology – a boat –or institution – e.g. the rules of the race



We cannot govern a 'social-ecological system' unless we appreciate the framing choices that underpin a conception: a field guide to different models ...

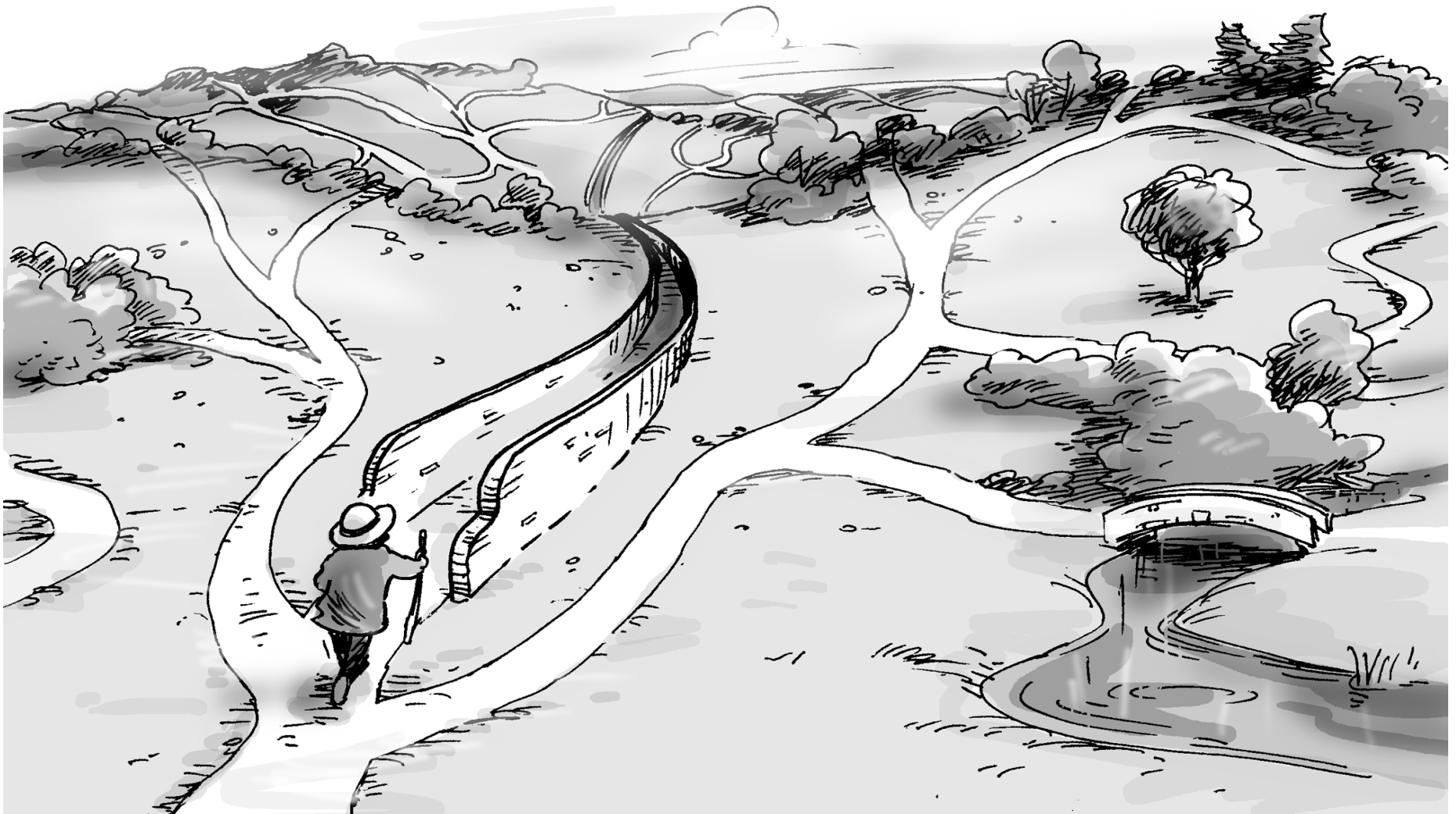


Let it go. Let it out.  
Let it all unravel.  
Let it free and it can be  
A path on which to travel.

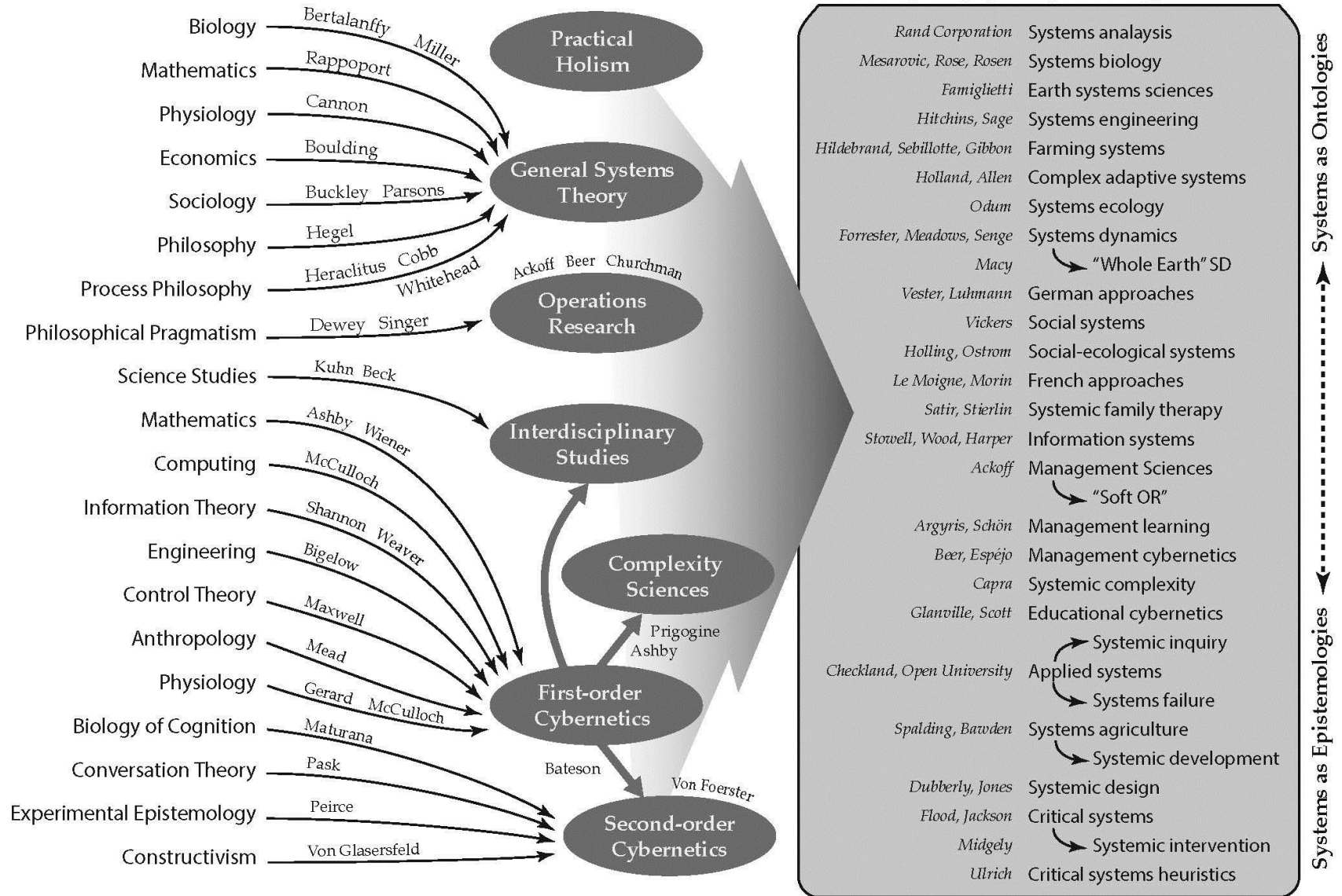


**What traditions of  
cybersystemic  
understanding will we  
conserve individually and  
collectively... in the  
service of.....?**

Heinz von Foerster *'act always so as to increase  
the number of choices'*



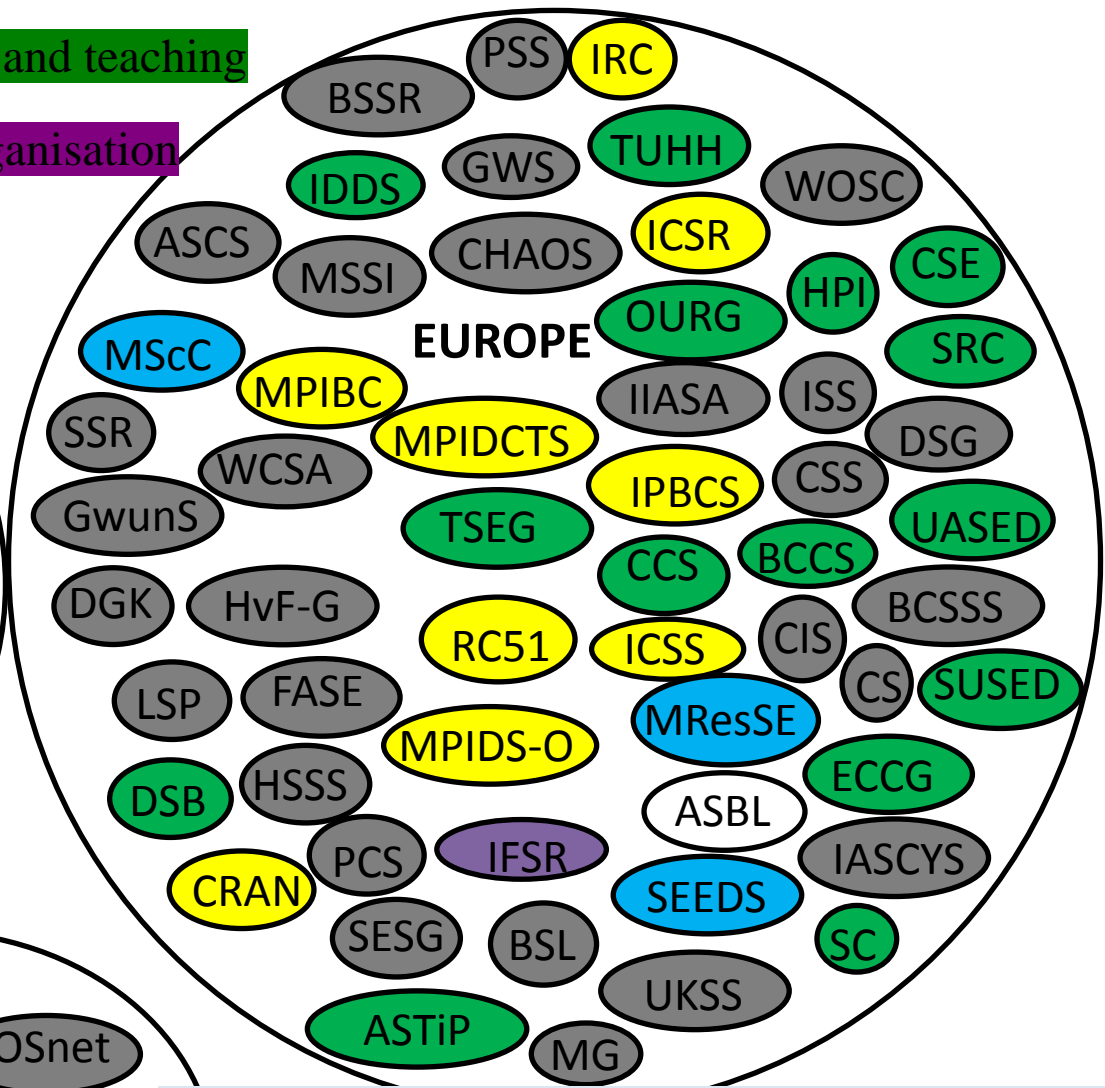
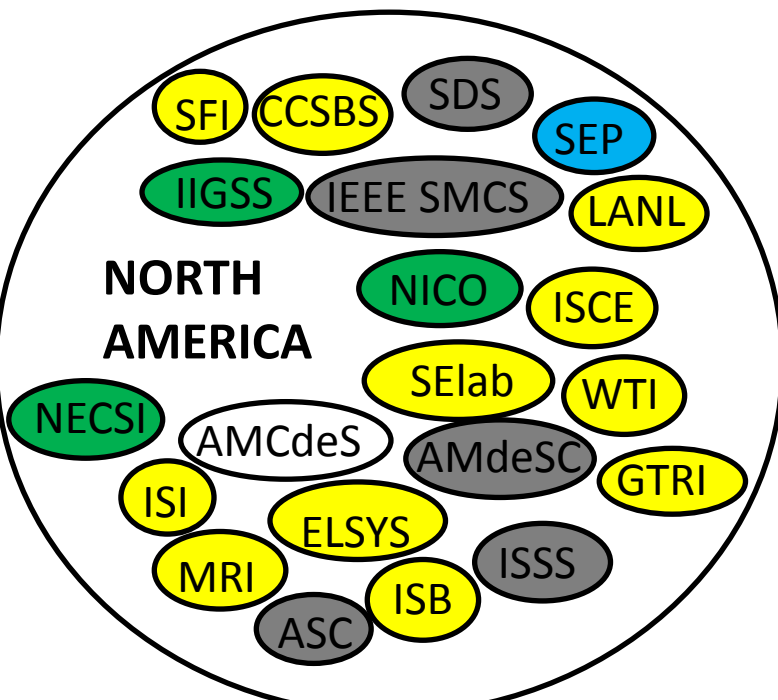
# How are we organised? What institutions constrain or enable?



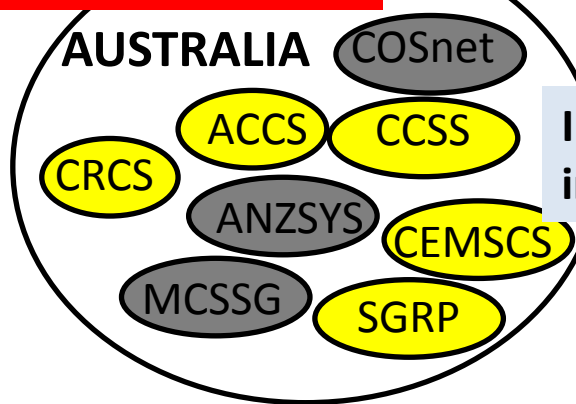
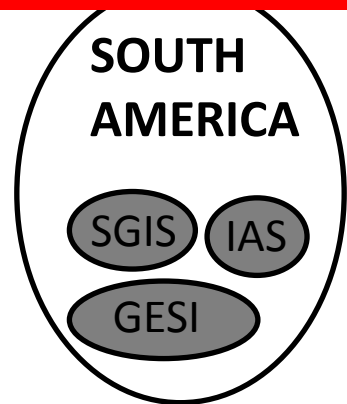


Research only Teaching only Research and teaching

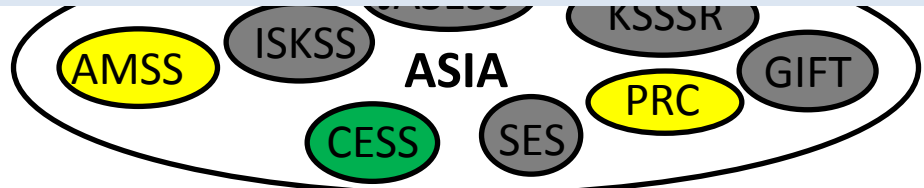
Membership organisation Umbrella organisation



Cyber-systemic organisations



Institutional complexity ; institutional innovation failure?





- Institutional complexity is like having too many cooks.....

...

constrains achieving the main outcomes



# Why systemic inquiry?

- Because of the transformations we have to ‘manage’?
  - the need for an effective praxis for climate change adaptation and mitigation
  - the need for new ways of cooperating to effect purposeful action



# Why a systemic inquiry?

- Inquiry is ....
  - *‘reflective learning in the literal sense.... it is the thinking about thinking, doubting about doubting, learning about learning, and (hopefully) knowing about knowing’* (Churchman 1971 p. 17).





# Why a systemic inquiry?

- We live in a 'projectified-world' and there is increasing evidence that 'projects' deal poorly with complex, long-term phenomena
  - e.g. project management systems such as PRINCE2 which is mandatory for big projects within UK government



# What is systemic inquiry?

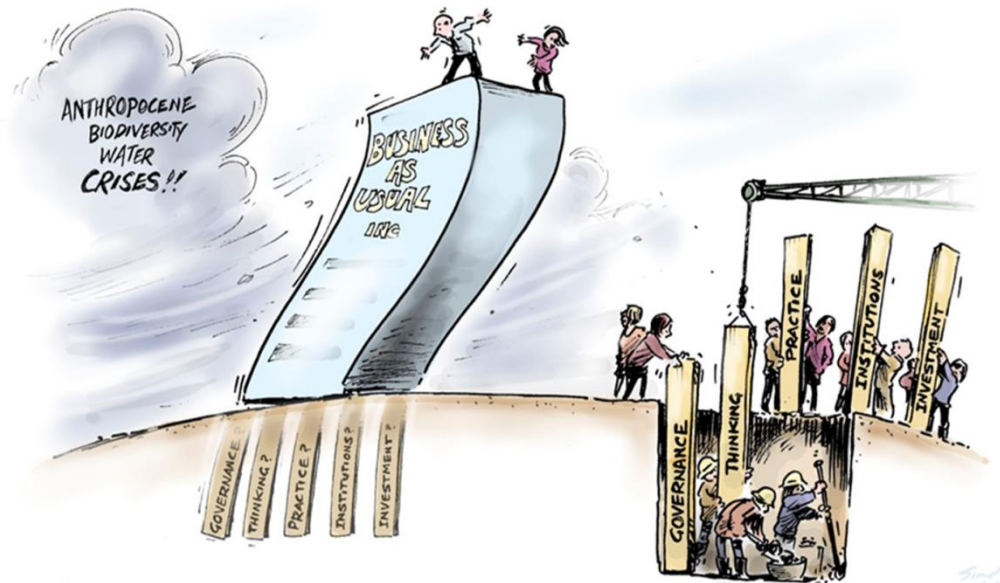
- (i) begins within an emotion of uncertainty
- (ii) understanding situations in context and especially the history of the situation;
- (iii) addressing questions of purpose;
- (iv) clarifying and distinguishing 'what' from 'how' as well as addressing 'why';
- (v) facilitating action that is purposeful and which is systemically desirable and culturally feasible



# What is systemic inquiry?

- (v) developing a means to orchestrate practices across space and time which continue to address a phenomenon or phenomena of social concern when it is unclear at the start as to what would constitute an improvement
- (vi) an inquiry-based approach that enables managing and/or researching for emergence
- (vii) a form of practice in which ethics arise in context-related action

# What next?





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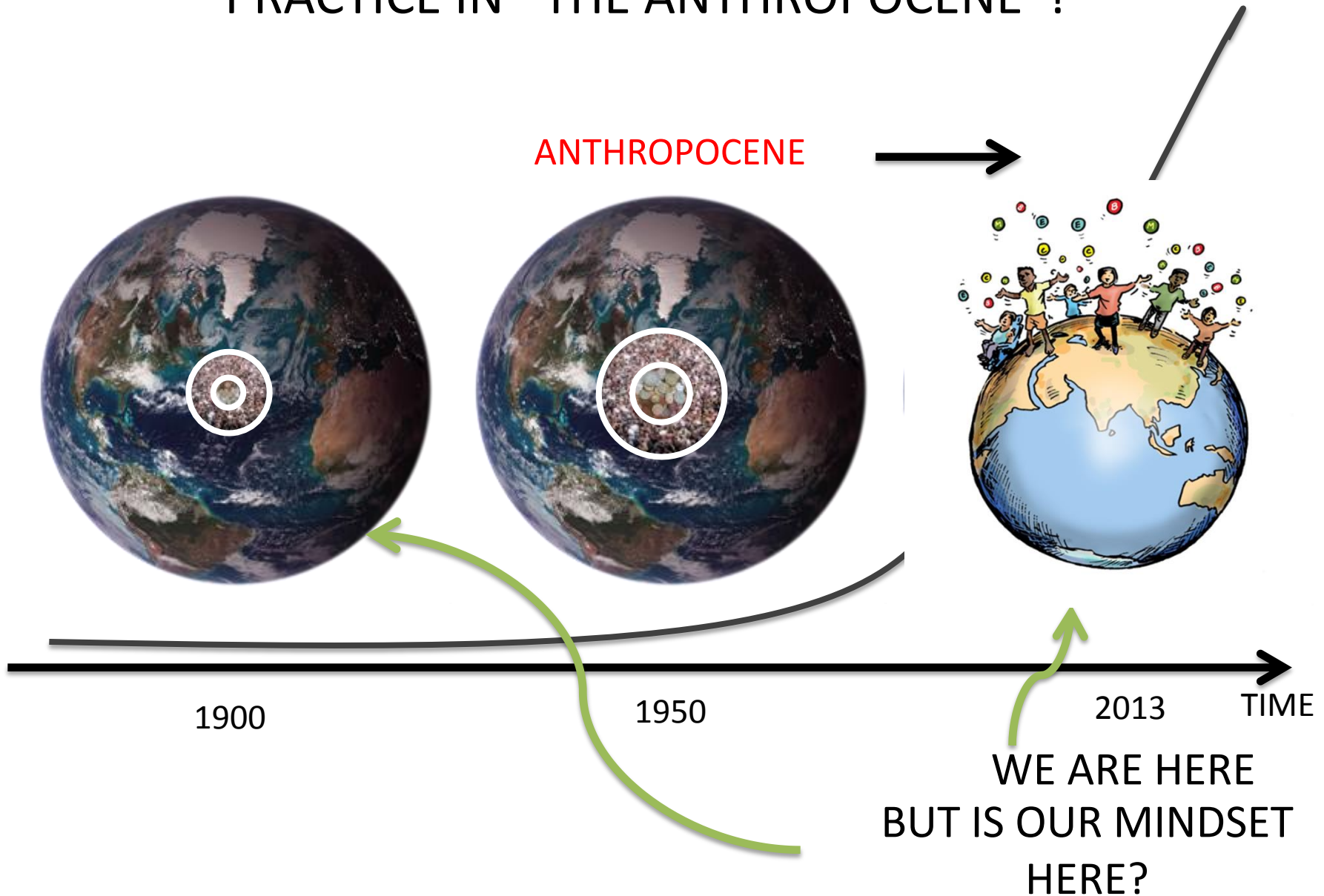
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# Nothing in this world is indifferent to us

- Given the scale of change, it is no longer possible to find a specific, discrete answer for each part of the problem. It is essential to seek comprehensive solutions which consider the interactions within natural systems themselves and with social systems.
- We are faced not with two separate crises, one environmental and the other social, but rather with one complex crisis which is both social and environmental.
- *ENCYCLICAL LETTER, LAUDATO SI' OF THE HOLY FATHER, FRANCIS 2015*

# RETHINKING CYBER-SYSTEMIC THINKING AND PRACTICE IN “THE ANTHROPOCENE”?



# Identify institutions that are missing?

- Institutions that create 'demand pull' for cybersystemic understandings and practices?
- Institutions built on circular, systemic, recursive causality rather than linear causality?
- Faculties of cybersystemics...and trained faculty?
- A curriculum that deals with the breadth of material that could contribute?
- Institutions that drive and reward praxis (theory-informed practical action) innovation e.g. 17 SDGs (sustainable development goals)

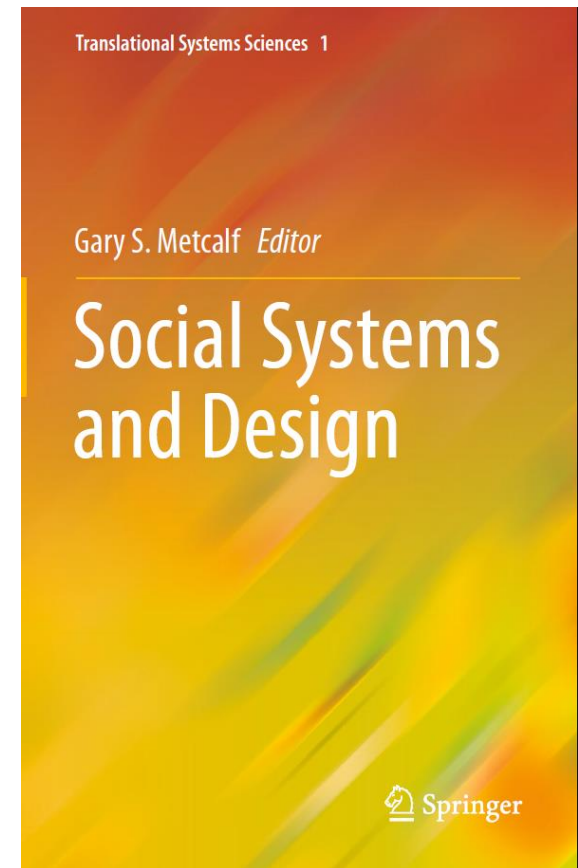


# Institutional innovation & reform?

- can we design better institutions to realise better conversations/actions?
  - Cybersystemic Peak Body?
  - Cybersystemic educators CoP?
  - Cybersystemic governing/governance 'rules'?
- can we design cyber-systemic-institutions that can change our co-evolutionary trajectory?
  - Requirements for 'company boards' to learn their organisations and account for their structural coupling?

# Collectively we are part of, or know of, initiatives to build upon

- Limits to Growth
  - Decoupling/Degrowth
  - The Circular Economy
  - The Blue Economy
- New UN Sustainable Development Goals (SDGs)?
- Resilience ?  
<http://www.resalliance.org/>
- Future Earth ?  
<http://www.icsu.org/future-earth>
- Think2Impact?  
<http://www.think2impact.org/app/#/home>





# Ask what constrains the transformations we seek?

- (i) widespread lack of epistemic awareness in domains of practice and policy development – a crisis of knowing;
- (ii) lack of awareness of the implications of living in language – e.g. framing failure;
- (iii) inappropriate measures of ‘system performance’ (e.g. GDP);
- (iv) lack of awareness of how objects arise ...and the implications of reification, the creation of ‘things’ such as the environment, resources, systems etc;



# Ask what constrains the transformations we seek?

- (v) lack of congruence between what is espoused and what others experience - ‘talking the talk but not walking the walk’;
- (vi) failures to institutionalise systems understandings and practices in manners that create demand pull and sustain institutionalisation, and
- (vii) a focus on scientism at the expense of design – particularly the praxis associated with the design (crafting?) of learning systems and governance innovations