

Taking a Systems Approach to Estuary Management

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ICZM

“... it is clear that integrated coastal zone management involves a non-sectorial approach to the management of coastal resources. It must consider the environmental, natural resource, socio-economic, political, cultural and geographic dimensions of the coastal zone in a multi-sectorial framework”

Hildebrand and Norrena 1992

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Here we would like to report on a systems approach that:

- is being developed in a wide range of practical management situations
- integrates prior work in cognitive science, system dynamics, and applied history
- is designed to support community-based, action research into the feedback structure of complex systems
- supports an integrative, adaptive approach to management

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Three Systems Thinking Principles

ST1	The systems approach begins when you first see the world through the eyes of another
ST2	The systems approach goes on to discover that every worldview is terribly restricted
ST3	No one person can see the whole system (elephant)

Adapted from C. West Churchman

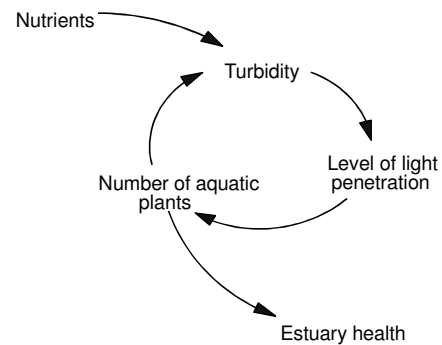
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Two System Dynamics Principles

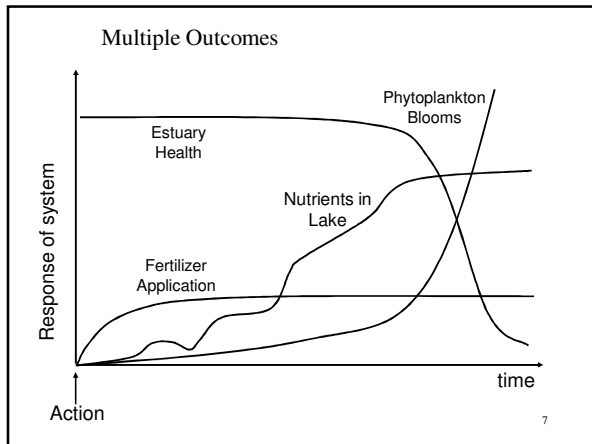
SD1	Feedback effects are important drivers of behaviour in any social-ecological system
SD2	Any action taken in a social-ecological system will have multiple outcomes, some wanted and some unwanted. The unwanted outcomes are usually delayed and therefore not associated with the triggering action

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Feedback in Ecological Sub-system



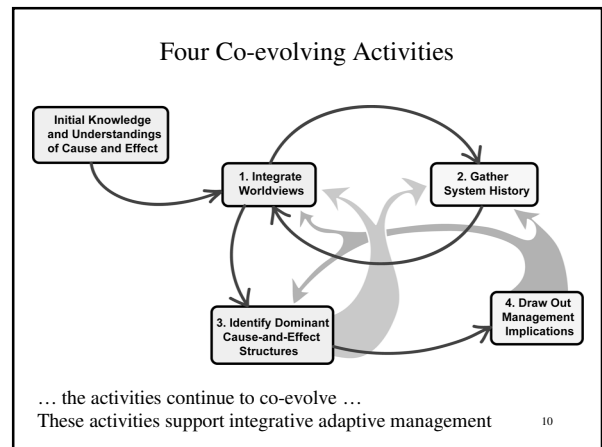
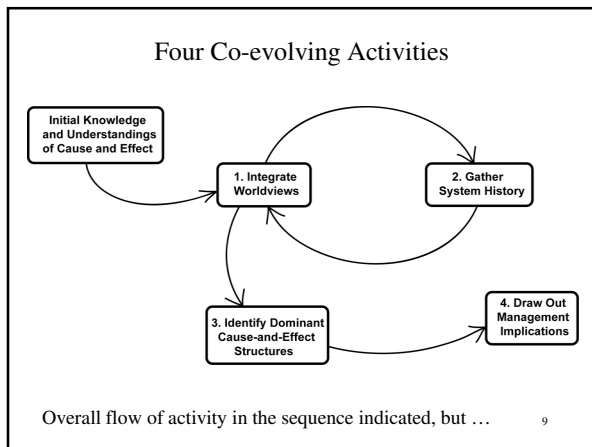
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Two System Management Principles

SM1	The behaviour of a social-ecological system cannot be optimised by optimising the behaviour of its parts taken separately
SM2	The boundaries of a social-ecological system cut across the boundaries of traditional disciplines and institutions

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NSW Estuary Management Process	Newell and Proust Systems Approach
Form an Estuary Management Committee	Integrate worldviews
Assemble existing data	Gather system history
Carry out Estuary Processes Study	Identify dominant cause-and-effect structures
Carry out Estuary Management Study	Draw out management implications

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