Ecosystem-Based Knowledge and Coastal Governance

Stephen Bloye Olsen

and

Arthur J. Hanson

IGBP SYNTHESIS:
Major Research Findings

- The Earth is a system that life itself helps to control.
- Global change is much more than climate change. It is real, it is happening now, and in many ways it is accelerating.
- The human enterprise drives multiple, interacting effects that cascade through the Earth System.
- The Earth's dynamics are characterised by critical thresholds and abrupt changes. Human activities could inadvertently trigger changes with catastrophic consequences for the Earth System.
- The Earth is currently operating in a no-analogue state.

The Paradigm Shift

FROM	TO
Individual species	Ecosystems
Small spatial scale	Multiple scales
Short-term perspective	Long-term perspective
Humans independent of ecosystems	Humans as integral parts of ecosystems
Management divorced from research	Adaptive management
Managing commodities	Sustained production potential for ecosystem goods and services

From: Lubchenco (1994) in Sherman and Duda (1999)

The relevant science is not always applied

- North Atlantic fisheries
- construction of shrimp ponds in the Rio Chone estuary, Ecuador
- Tsunami re-construction in Sri Lanka

What Is Science?

Richard Feynman's Danz Lectures (1998)

- A special method for finding things out
- A body of knowledge from things found out
- The doing of new things by applying what has been found out: technology

Whose Science?

Perceptions of relevance and value vary for:

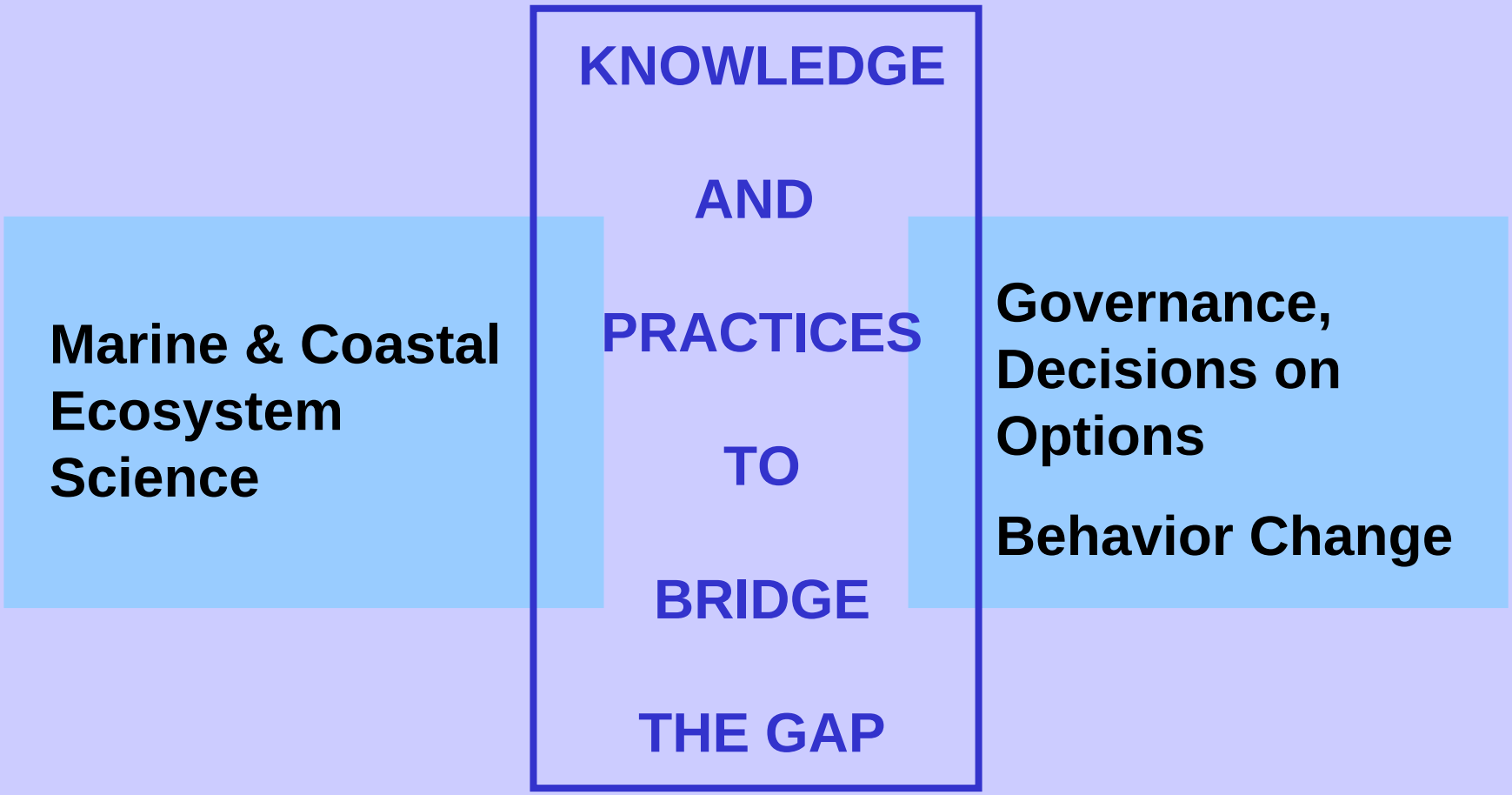
- Quantitative sector-by-sector science
- Quantitative risk assessment
- Action research
- Traditional knowledge

What Is Science Not Equipped To Address?

- What *should* be done?
- Moral judgements are not within the realm of science
- Science can be the applied as readily to do good as to do evil

What Are Governance and Management?

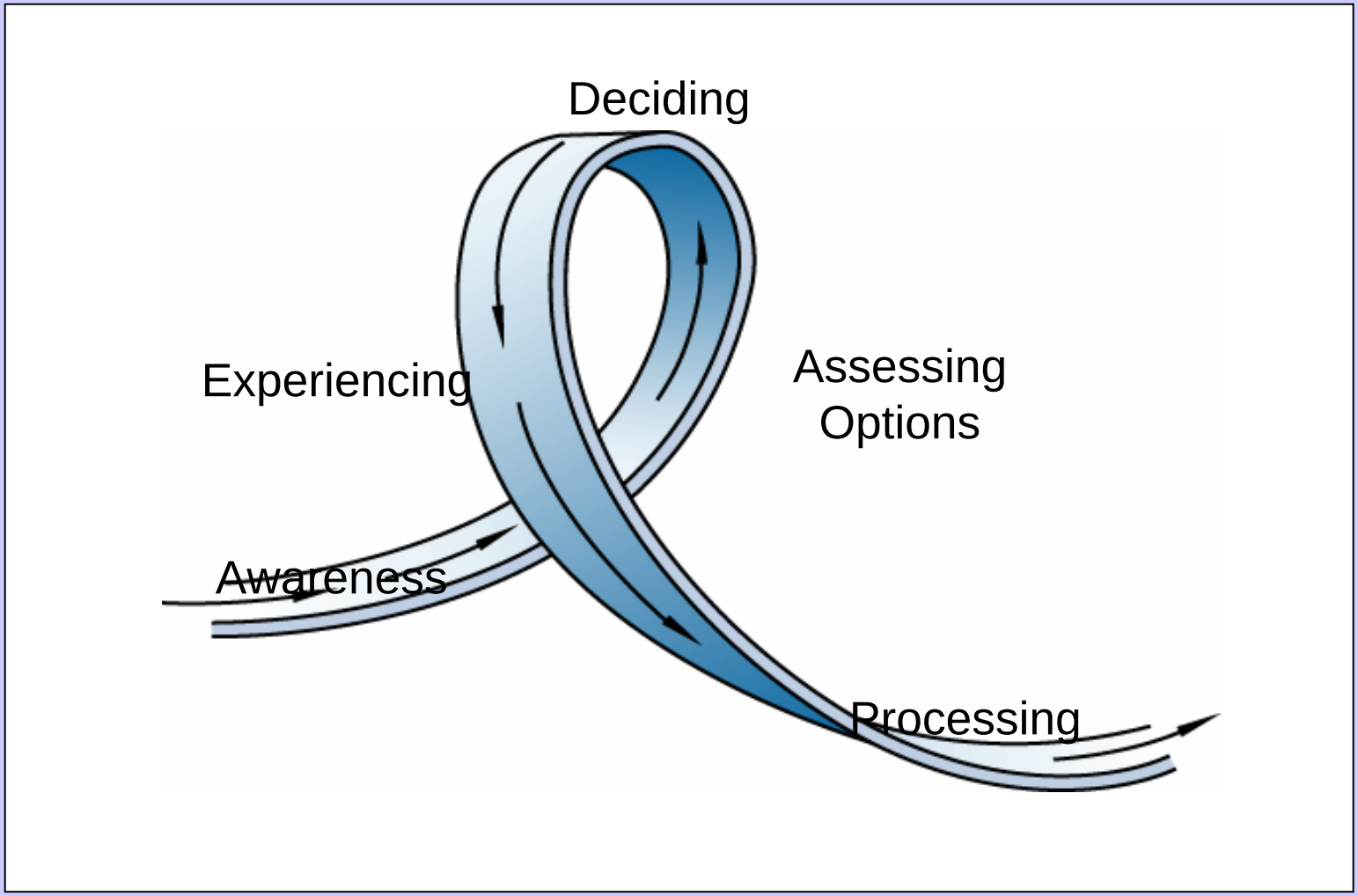
- Management is the process by which human and material resources are harnessed to achieve a known goal within a known institutional structure
- Governance defines the values, goals, policies, laws and institutions by which societal issues are addressed.
- Governance is NOT only the purview of government.
- Governance creates the context within which management occurs


KNOWLEDGE
AND
PRACTICES
TO
BRIDGE
THE GAP
Marine & Coastal Ecosystem Science
Governance, Decisions on Options
Behavior Change

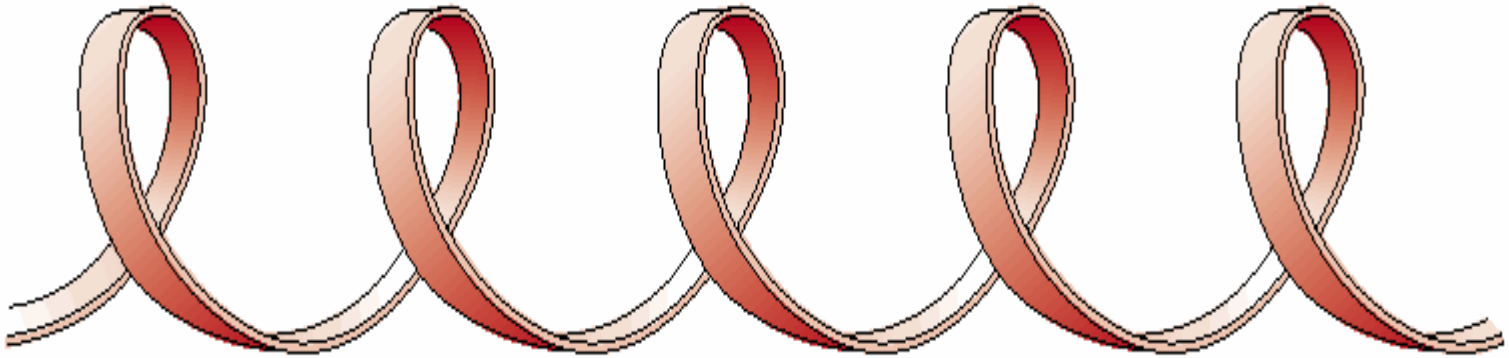
Insights From GESAMP (1996)

1. Scientists and managers must work together as a team to achieve the necessary trust, understanding and integration
2. Ecosystem management is best understood as an iterative process of learning
3. The roles of contributions of science change with each step of the cycle

The Learning Cycle



The Two Threads of Adaptive Governance

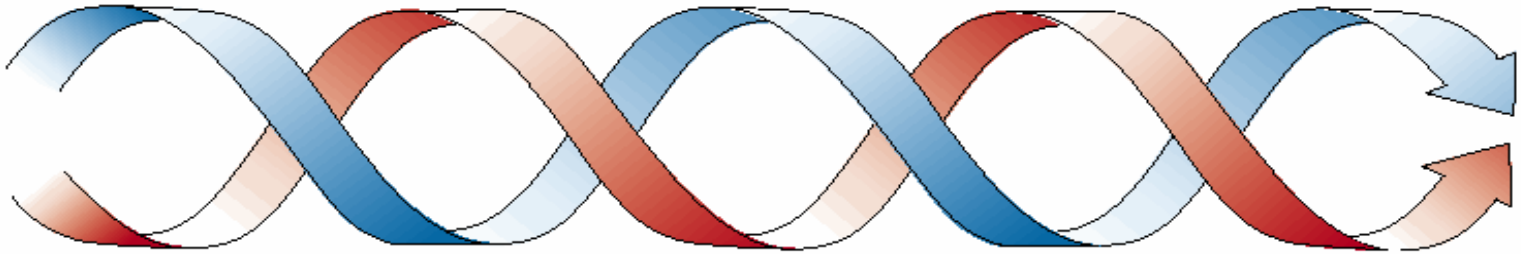


1. Ecosystem Science. In which learning accumulates from experimentation with its attendant hypotheses, data gathering, analysis, and drawing of conclusions.

The Two Threads of Adaptive Governance

2.Participatory Democracy. The sustained expression of which is founded on principles of accountability, fair dealing, and transparency in how and why decisions are made.

Adaptive Governance combines the two as sustained learning and adaptation.



Defining Features

Science

- webs of cause/effect
- surprises/variability
- long-term trends
- scenarios
- consequences of actions
- uncertainty

Governance

- values and beliefs
- goals
- constituencies
- mandates/authority
- financial resources
- institutional capacity
- decades of time

The LOICZ Science Plan

- **Primary Goal:** To provide knowledge, understanding and prediction needed to allow coastal communities to assess, anticipate and respond to the interaction of global change and the local pressures in determining coastal change.

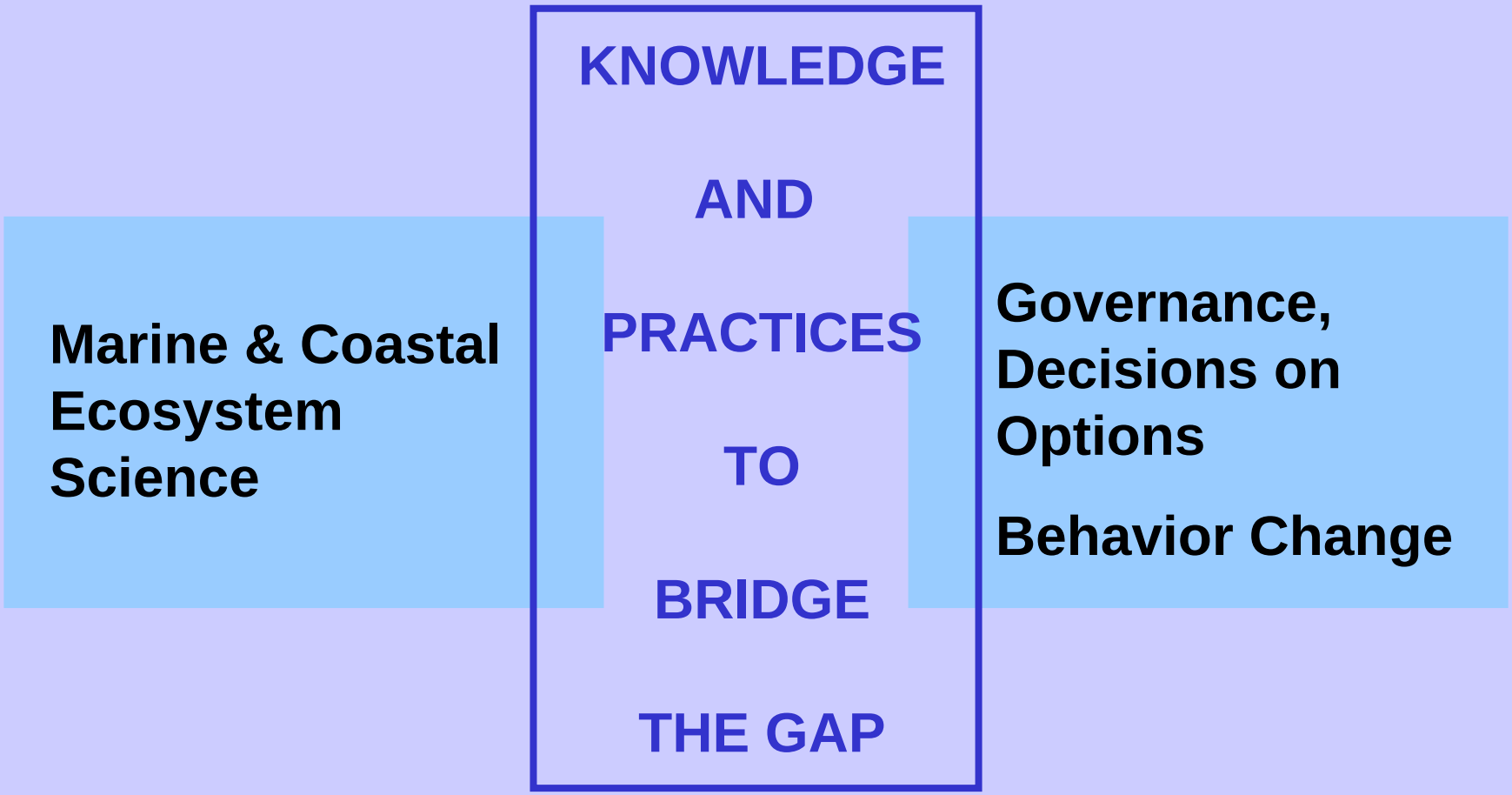
- Develop a framework for science dissemination, outreach and capacity building that encourages participation by scientific and non-scientific communities and the public at the local, regional and global scales.

- To advise policy makers, managers and stakeholders.

LOICZ Aspires to Be An Effective Boundary Institution

"The goal is to turn a "science-people-management' partnership into a trust-based learning cooperation".

LOICZ Science Plan


KNOWLEDGE
AND
PRACTICES
TO
BRIDGE
THE GAP
Marine & Coastal Ecosystem Science
Governance, Decisions on Options
Behavior Change

A Potential LOICZ Project

- Select sites for an analysis of success factors in bridging between ecosystem science and governance
- focus on successes/failures in instigating behavioral change
- examine coastal governance within the context of the next larger system:
  - the offshore (LME)
  - the watershed

Three Central Questions

1. How are overviews of ecosystem condition being developed and trends being communicated?

2. How can coastal ecosystem/ICM initiatives affect the behavior of societies more effectively?

3. What are the resulting outcomes and how can we improve upon them?

Selection Criteria: The Team

- Scientists with proven abilities to work with managers
- Managers with proven abilities to work with scientists
- Representing experience in both the South and the North
- Strong facilitation

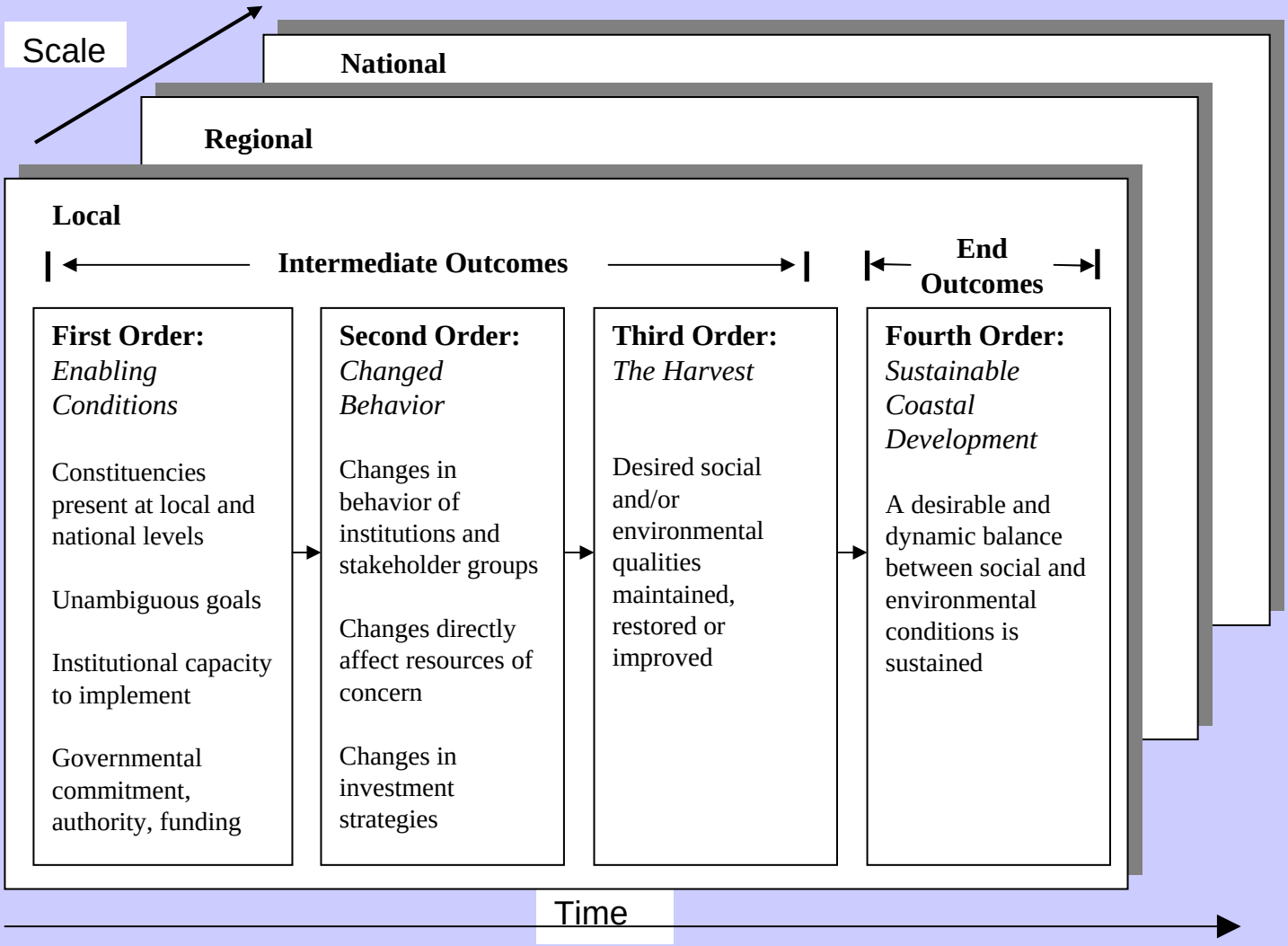
Selection Criteria: The Sites

- Ecosystems where freshwater inflows to estuaries are/have been being altered
- Range of settings: tropical, temperate, arctic
- Mature programs with a mandate to restore and/or sustain ecosystem qualities
- Offer evidence of sustained progress towards unambiguous goals
- Contain a diversity of human activities and conflicts

Wealth of Experience Available

- Large scale: the Great Barrier Reef, the Benguela current, Chesapeake Bay and its watershed, Canadian LOMAs
- Intermediate Scale: the Wadden Sea, the PEMSEA sites, the Colorado River delta
- Small Scale: Community-based management in the Philippines, North Sulawesi.

Orders of Outcomes



Some Hypotheses

- There are major benefits in comparative analysis
- Goals and strategies must be tailored to existing governance traditions and capacity
- Learning-by-doing builds capacity most effectively
- Focus monitoring and evaluation on behavioral change
- Plan for long-term investments: goal achievement requires decades
- Empowered, decentralized constituencies generate resilience

Anticipated Results

Well documented insights and conclusions on:

- factors most critical to the building epistemic communities of scientists, planners and decision makers
- what knowledge and what practices instigate progress towards sustainability
- what institutional designs and processes promote adaptive governance
- what to monitor in order to assess impacts on behavioral change

Thank you