

The logo for the Governance Studies Program (GSD) is a circular emblem with multiple concentric rings. The letters 'GSD' are prominently displayed in the center of the emblem.

**PROGRAM ON GOVERNANCE FOR SUSTAINABLE
DEVELOPMENT**

**Bren School of Environmental Science & Management
University of California at Santa Barbara**

<http://www.gsdprogram.org>

**Navigating the Sustainability Transition:
Implications for Governance**

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What is the problem?

- **There is a growing gap between reality and the content of the intellectual capital we commonly draw on to understand the behavior of socioecological systems.**
- **This gap now threatens to undermine efforts to create effective arrangements to govern human-environment interactions.**



Common but Dubious Assumptions

- ✓ We typically assume – implicitly if not explicitly - that ecosystems, social systems, and socioecological systems have relatively benign dynamics in the sense that changes are gradual, system flips are rare, restoration is feasible, and adaptation is both possible and affordable.
- ✓ While these assumptions are analytically attractive, their usefulness is open to question, especially in an era of global environmental changes and global social changes (or globalization) which have given rise to human-dominated ecosystems
- ✓ In fact, relying on such assumptions may turn out to be a liability in efforts to govern highly dynamic systems effectively.



Types of Change

- **Nonlinear changes - thresholds, tipping points, and system flips**
 - Going to scale and the race to the bottom
- **Abrupt changes – cascades, chain reactions, and emergent properties**
 - Socioeconomic or political collapse, climate change
- **Complex changes – results of multiple, interactive drivers**
 - Loss of biodiversity
- **Irreversible changes – limitations of restoration ecology or restoration sociology**
 - Spirals vs. cycles
- **Limits to adaptation**
 - Necessity is not always the mother of invention



Implications for Governance

- **Harnessing reflexivity**
- **Enhancing adaptive capacity**
- **Coping with uncertainty**



Harnessing Reflexivity

- **The dynamics of reflexive systems**
 - Systems in which expectations about the future affect current behavior/actions
 - Positive/amplifying feedbacks (e.g. financial panics) vs. negative/dampening feedbacks (e.g. counter-cyclical measures)
 - Self-fulfilling and self-denying prophecies
- **Anticipatory responses**
 - Counter-cyclical measures in socioecological systems in contrast to economic systems – going on a planetary diet
 - Risk management/governance – developing socioecological insurance/emergency preparedness?
 - Social learning – shifting consumption patterns/avoiding traps or addictions
 - Encouraging social movements as well as devising incentive systems – behavioral changes and epidemiological processes



Enhancing adaptive capacity

- **Monitoring**
 - **The development of leading socioecological indicators**
 - **Comparison with leading economic indicators, the UNHDI, and so forth**
- **Early warning**
 - **Crying wolf vs. being asleep at the wheel**
 - **Warning signals when the system approaches or crosses thresholds**
- **Adaptive management**
 - **Opportunities for natural experiments (e.g. states in the US, provinces in China)**



Coping with uncertainty

- **Socioecological systems are complex and indeterminate**
 - **But imperfect information cannot be an excuse for inaction**
- **Precautionary measures**
 - **Striking a balance between worst case and best case analysis**
- **Heuristics or rules of thumb**
 - **Best practices**
- **Targeted research**
 - **Pasteur's Quadrant – research that is basic and applied at the same time (e.g. drivers of consumer choice)**



Governance systems are complex and dynamic, too

- **Nonlinearities and institutional collapse/
opportunities for growth**
 - Punctuated institutional equilibrium
- **Irreversibility**
 - Limits to the “adaptive cycle” model with regard to socioecological systems
 - Spirals vs. cycles
- **Uncertainty**
 - Limits to forecasting institutional development
 - Social choice and the supply of governance



What is to be done?

- **Four principles**



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Principle #1

- **Take full advantage of opportunities to improve knowledge through the use of simulations, scenarios, and other analytic procedures that allow us to explore the dynamics and emergent properties of complex and indeterminate systems.**
 - **The role of projections rather than predictions (e.g. GCMs, GEO scenarios)**



Principle #2

- **Draw a clear distinction between the core elements or defining features of governance systems and the operating rules or policy instruments used to implement them.**
 - **Example: Ecosystem-based management (EBM) vs. instruments like protected natural areas, zoning systems, or ITQs**
 - **Example: Decarbonization vs. instruments like taxes or cap-and-trade arrangements**



Principle #3

- **Monitor closely both the behavior of socioecological systems and the performance of governance systems and create arrangements that make adjustments or mid-course corrections relatively easy.**
 - **Example: the Montreal Protocol provisions on acceleration of phaseout schedules**



Principle #4

- **In cases where adaptive capacity is limited, build firewalls and redundancy into institutional arrangements to minimize the likelihood of systemic collapse.**
 - **Challenge: Rising interdependencies and the prospects of cascades or chain reactions**
 - **Examples:**
 - **Backup systems in adaptation to climate change**
 - **Ex situ as well as in situ protection of biodiversity**



Thank you



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