UTOPIAN VIEWS ON RISK GOVERNANCE OF EMERGING TECHNOLOGIES

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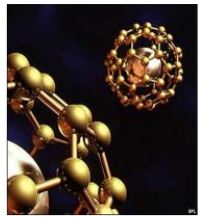
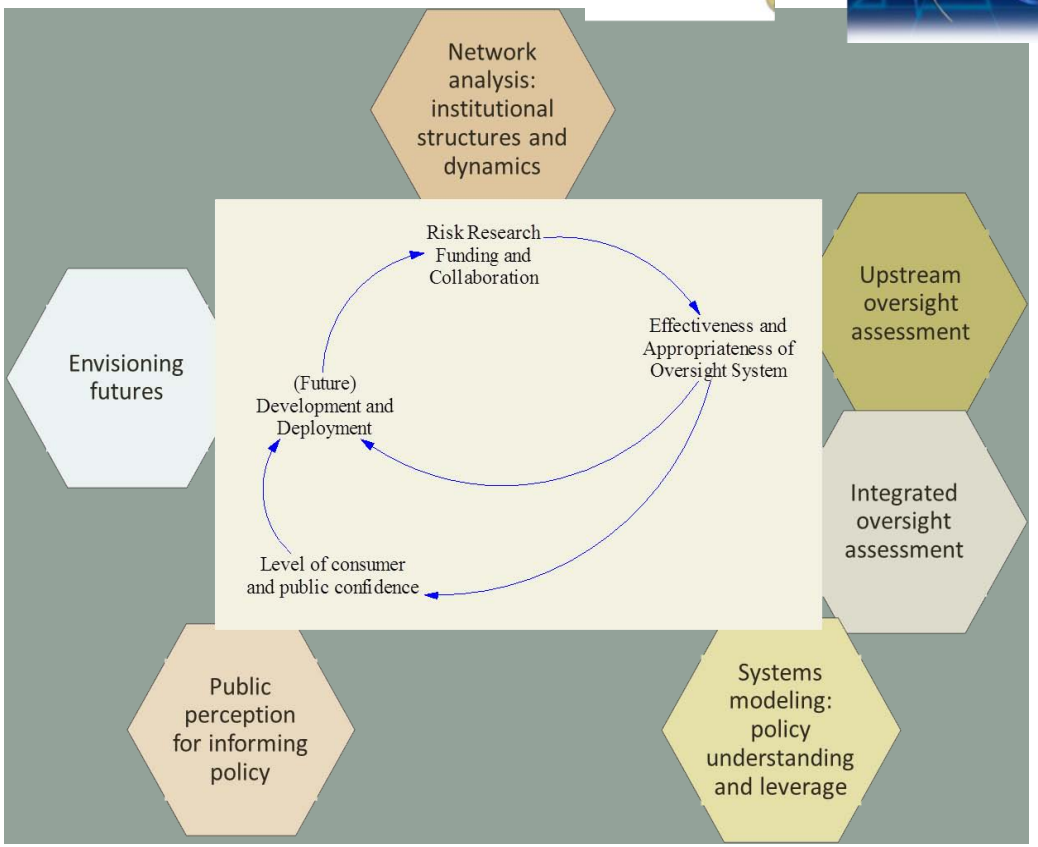
HUMPHREY SCHOOL OF PUBLIC AFFAIRS

UNIVERSITY OF MINNESOTA

Context

- I have a portfolio of research in risk governance:
- but this talk is based more broadly on my impressions from that work, the work of many others, my experiences as a natural scientist, risk assessor in government, social scientist, and risk governance scholar….
- And as a person.



ASK BROADER QUESTIONS ABOUT TECHNOLOGY AND SOCIETY

Even in risk governance context and national/international decision making context…

Broaden risk governance questions

- What kind of world do we want?
- What is the harm? Who is framing the questions?
- Whom do we trust to do the analysis?
- How will they keep us informed? When will we have input?

Images taken from
www.nextnature.net

APPRECIATE THE HETEROGENEITY OF VALUES

But don't be stifled or overwhelmed by them

- But don't let them create inaction or stop participatory risk governance
- Differing cultural values, world views about technology and society--within and between countries dependent on issue
- People and scholars may not agree, but they can "agree to understand"
- **Acknowledge** when decisions conflict with other national or sub-national viewpoints

OPEN THE BLACK BOX ON THE NATURE OF SCIENCE, RA AND RM PROCESSES

Honest Broker (R. Pielke) Approach

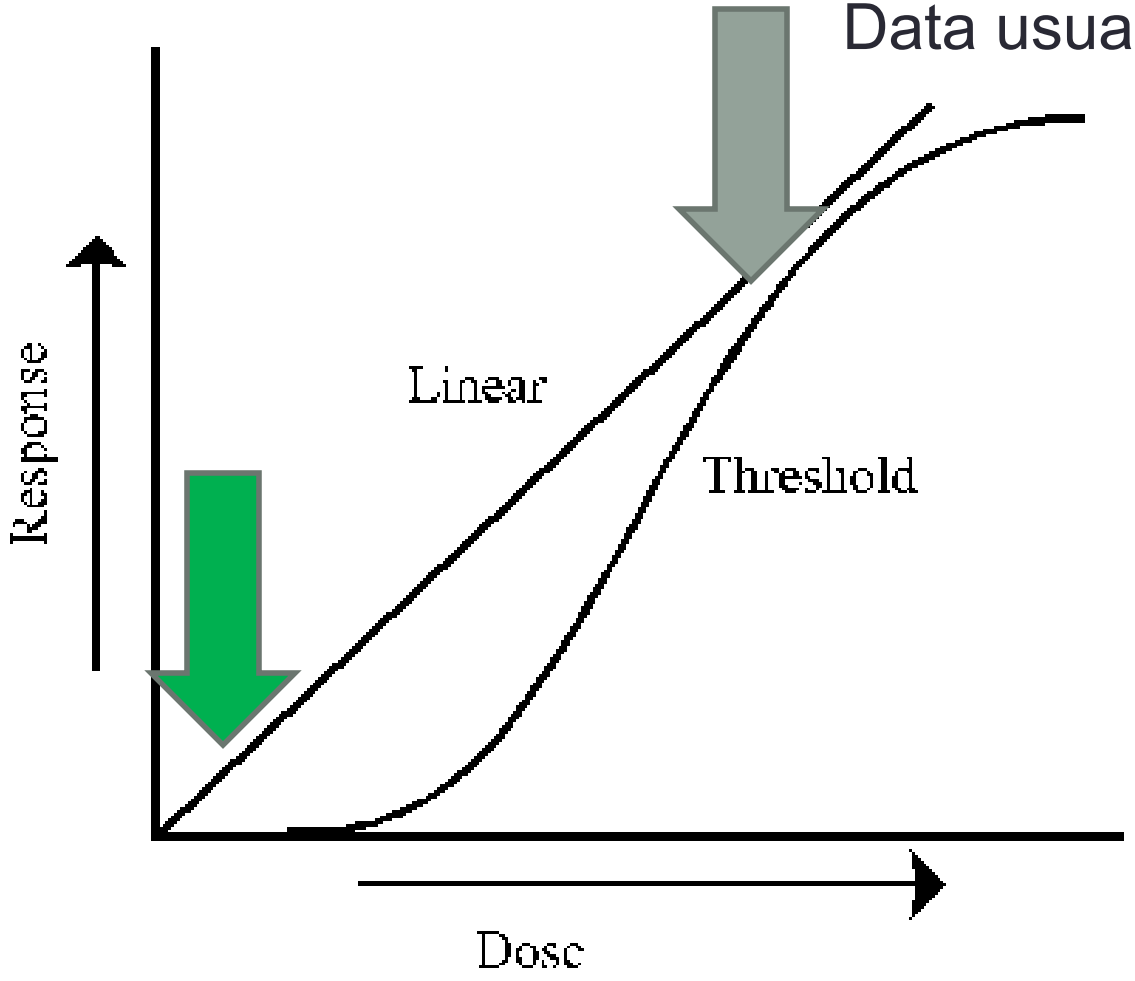
Values in risk analysis

- When is the RA being conducted?
- Why is the RA being conducted?

- Who is conducting it?
- Where is it being conducted?

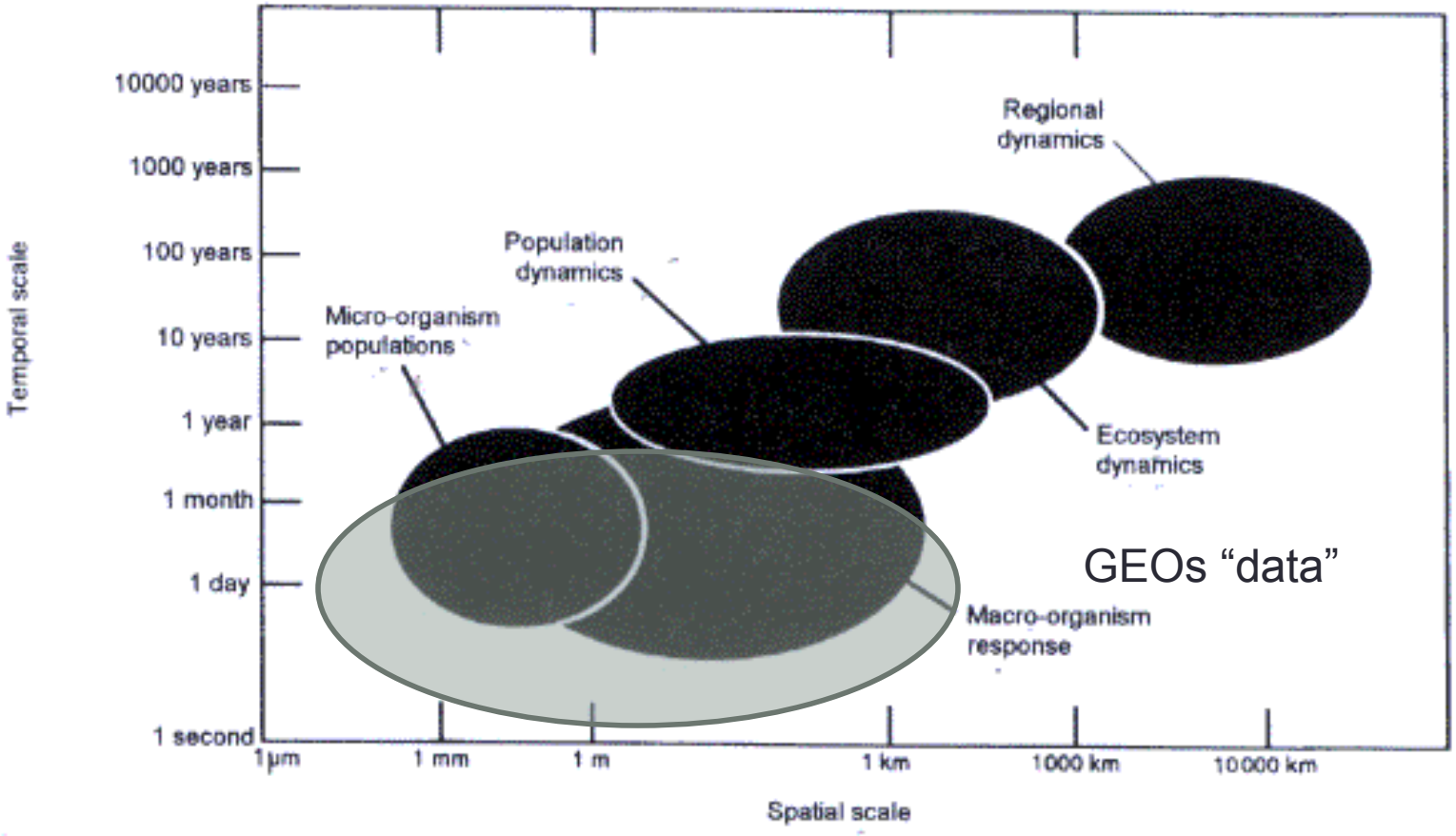
- What is being considered in the RA?
- How are the data interpreted?

Interpretation of data



What do you assume down here?

Value choice—
time frame and spatial scale



Suter II, G.W. (1993) *Ecological Risk Assessment.* Lewis Publishers, Boca R

New communication strategy?

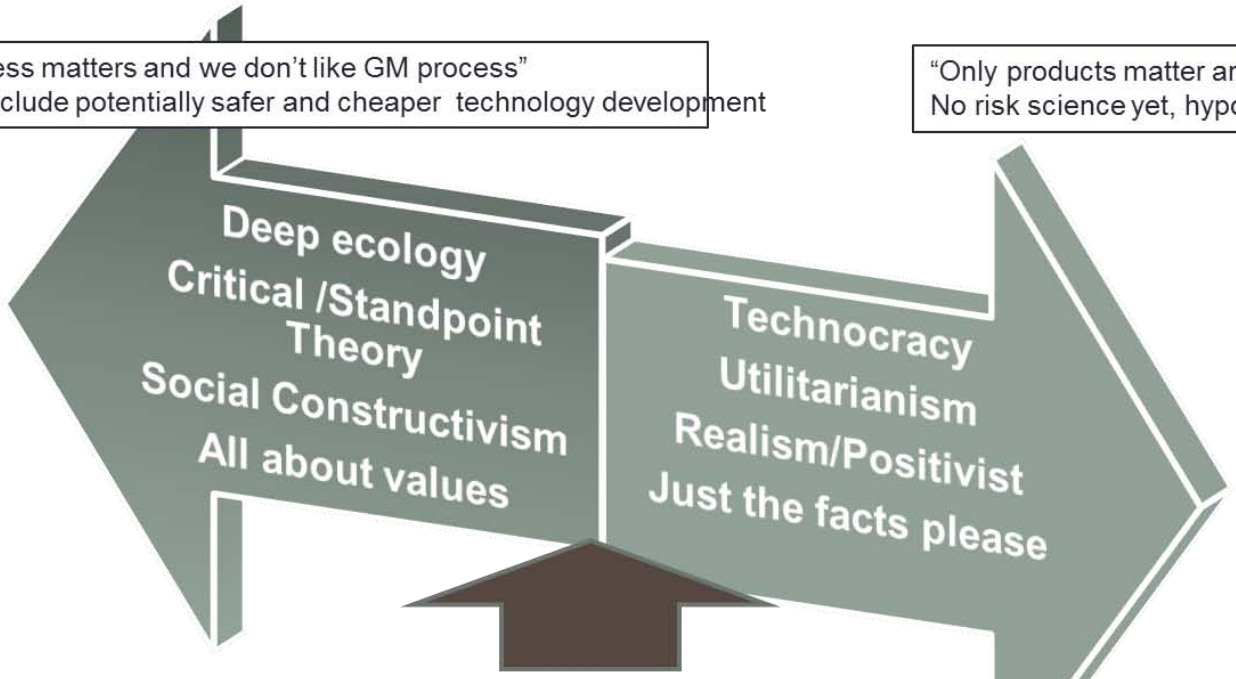
- Cannot achieve “no risk”
- Safety is NOT determined by risk assessment
- Uncertainty, ambiguity, and complexity exist in science, and risk science especially
- Make explicit the criteria on which decisions are based
- Take a “honest broker” (Pielke 2010) approach

FIND MIDDLE GROUND BETWEEN SCIENCE-BASED AND VALUE BASED FRAMEWORKS

GMOs, for example

"Only process matters and we don't like GM process"
CONS: Preclude potentially safer and cheaper technology development

"Only products matter and impacts"
No risk science yet, hypocrisy, lack of trust



CRITICAL REALISM
STRONG OBJECTIVITY
ANALYTICAL DELIBERATIVE RA

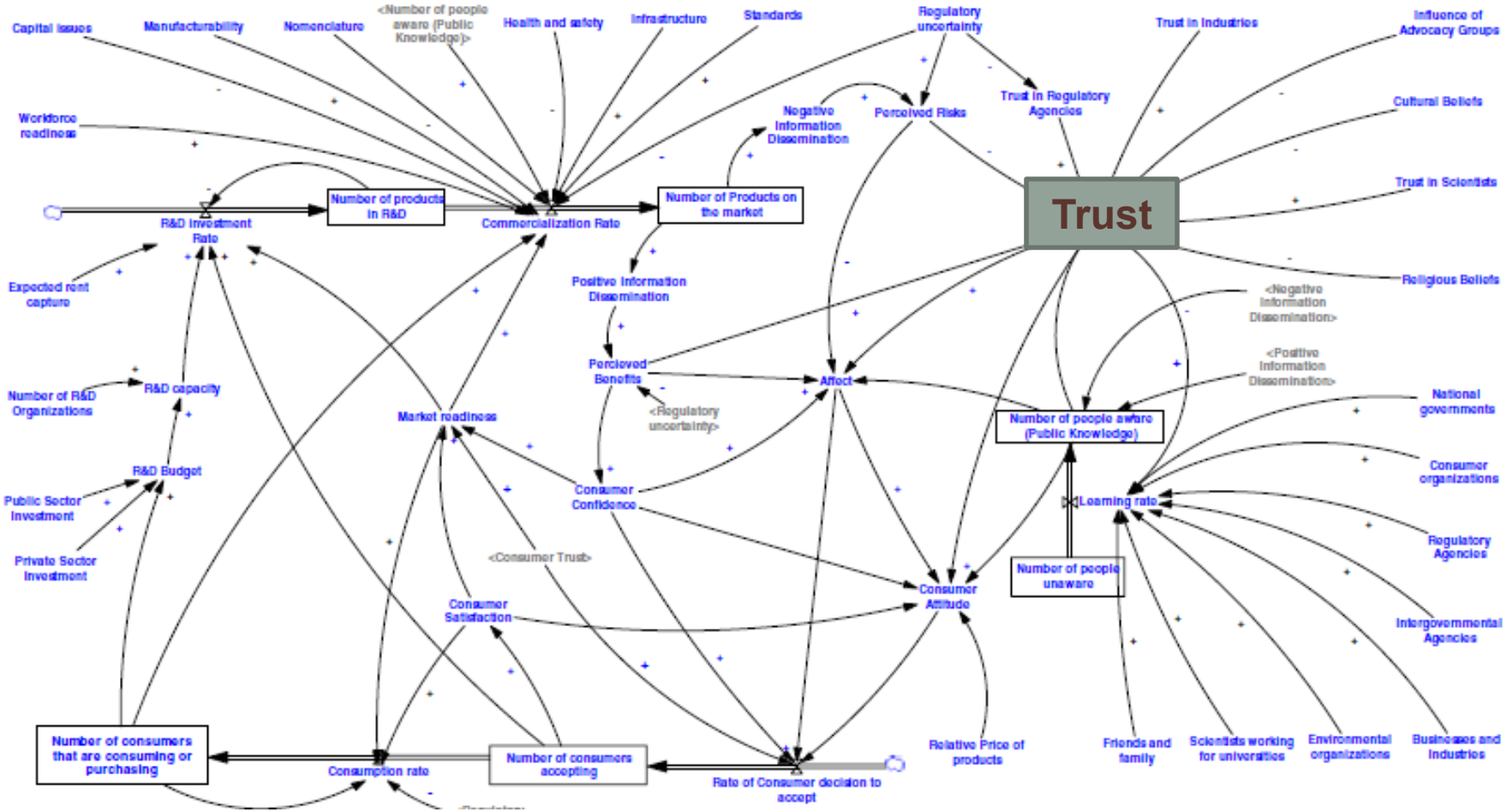
THINK IN SYSTEMS

Risk World is not linear

Engage “Interested and Affected Parties” in process of “systems mapping”

Systems Map :Risk Governance of Agrifood Nanotechnology

Yawson and Kuzma, *Consumer Policy 2010*



CONVEY A VISION FOR AN "IDEAL INTERNATIONAL FRAMEWORK"

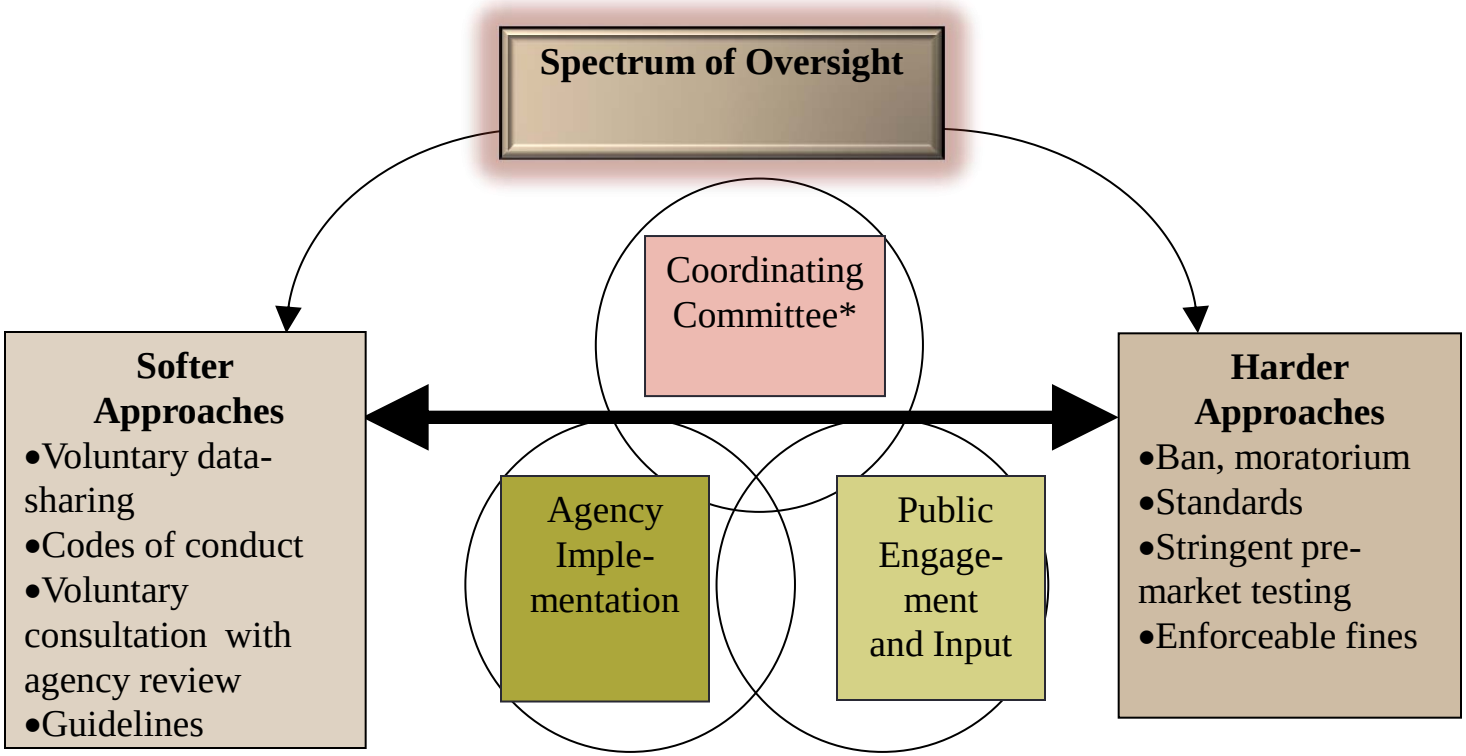
Be unrealistic, then ask the realists about barriers and alternatives

Framings of Risk Governance

- EPA Ecological Risk (1998)
- Problem Formulation and Options Assessment (1998)
- Analytical-Deliberative Process (1996)
- International Risk Governance (2005=2008)

Vision of Dynamic Oversight

Ramachandran, Paradise, Wolf, Kuzma, and Fatehi et al. 2011



* with citizen, governmental, academic, industry, tribal, and NGO representation

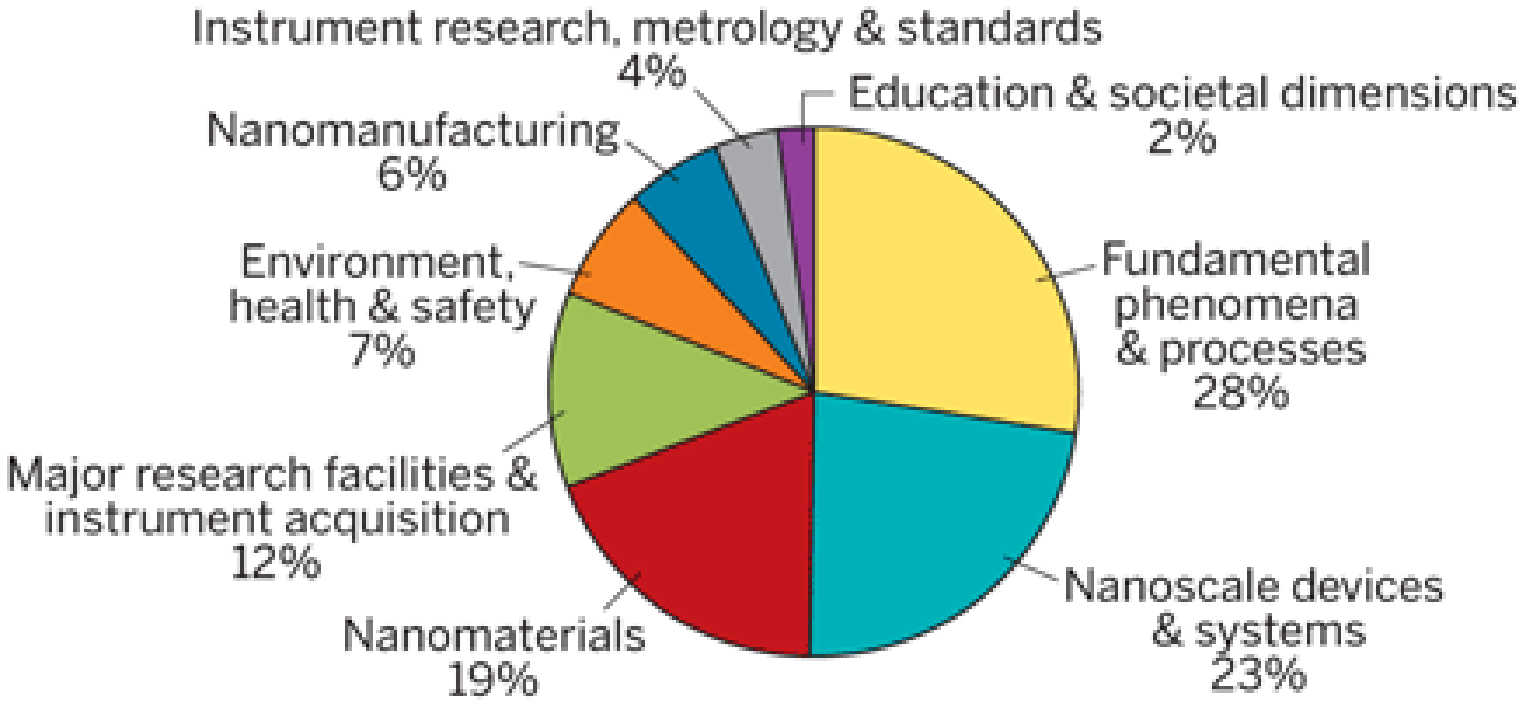
Principles

- Anticipates convergence
- Inclusive
- Public empowerment
- Learning among groups
- Respectful
- Multiple iterations
- Preparedness at all stages
  - (including post-market)
- Transparent
- Adequate resources
- Continuous
- Evolving
- Information-generating
- Information- and value-based

FUND RISK SCIENCE AND SOCIETAL IMPLICATIONS RESEARCH AND DIALOGUE AT (NEARLY) THE SAME LEVEL AS TECHNOLOGY DEVELOPMENT

International funding mechanism?

U.S. Nanotechnology Initiative



Proposed 2011 federal funding = $1.8 billion

LOOK TO THE FUTURE ”

Need for “Futures Thinking and Analysis

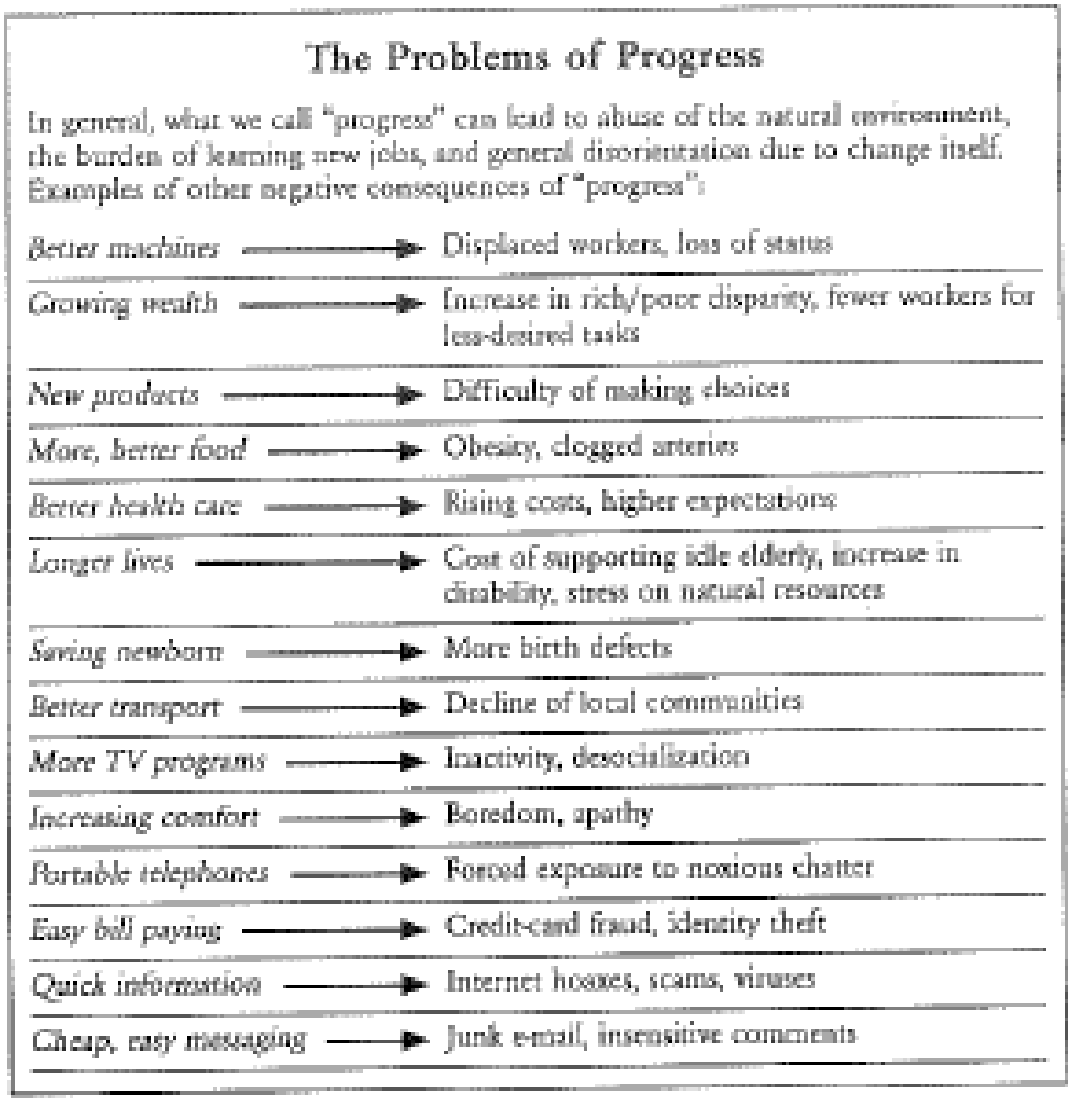
Scan the horizon

Develop methods for preparation

Cornish (2004)

- Six Supertrends

- Technological Progres
- Economic Growth
- Improving Health
- Increasing Mobility
- Environmental Declin
- Deculturation



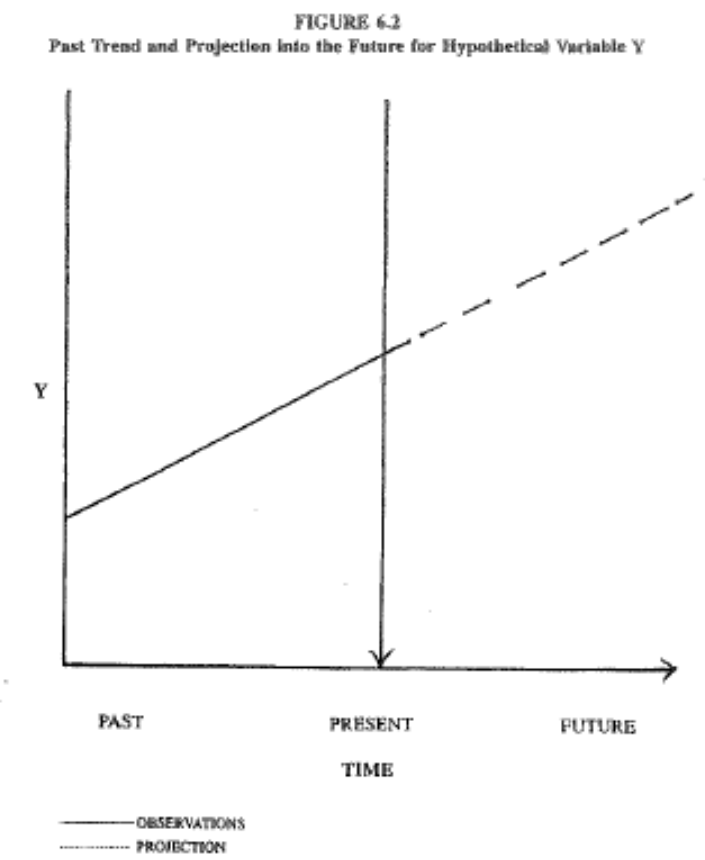
The Problems of Progress

In general, what we call "progress" can lead to abuse of the natural environment, the burden of learning new jobs, and general disorientation due to change itself. Examples of other negative consequences of "progress":

Better machines	→	Displaced workers, loss of status
Growing wealth	→	Increase in rich/poor disparity, fewer workers for less-desired tasks
New products	→	Difficulty of making choices
More, better food	→	Obesity, clogged arteries
Better health care	→	Rising costs, higher expectations
Longer lives	→	Cost of supporting idle elderly, increase in disability, stress on natural resources
Saving newborn	→	More birth defects
Better transport	→	Decline of local communities
More TV programs	→	Inactivity, desocialization
Increasing comfort	→	Boredom, apathy
Portable telephones	→	Forced exposure to noxious chatter
Easy bill paying	→	Credit-card fraud, identity theft
Quick information	→	Internet hoaxes, scams, viruses
Cheap, easy messaging	→	Junk e-mail, insensitive comments

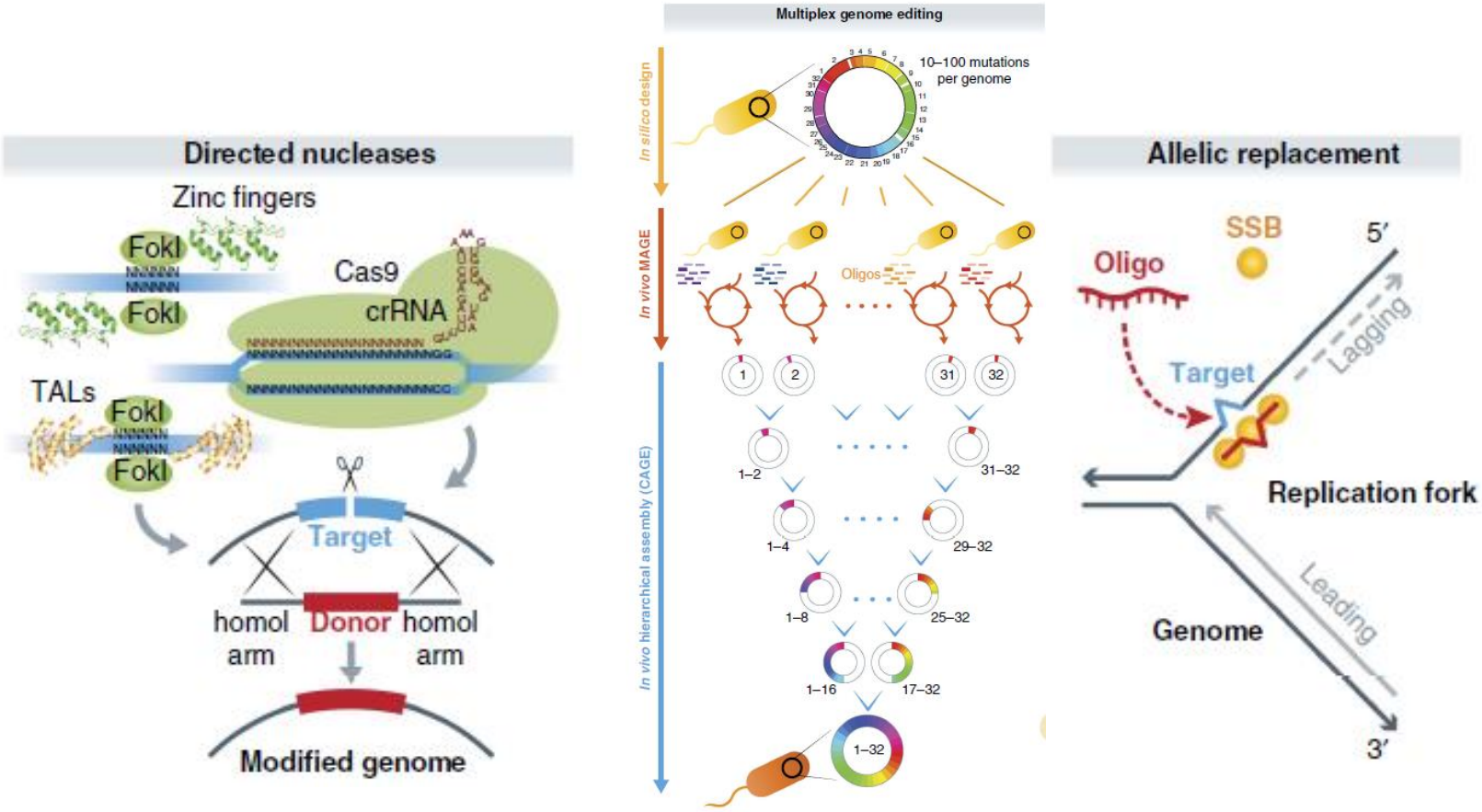
Future Studies Methods (Bell 1994)

- Correlations—variable predictions
- Time series extrapolation
- Survey Research
- The Delphi Method
- Simulation Modeling
- Gaming
- Monitoring
- Content Analysis
- Participatory Futures Praxis
- Social Experiments
- Ethnographic Research



“genome editing”

Esvelt & Wang 2013



Technology Analysis & Strategic Management, 2013
http://dx.doi.org/10.1080/09537325.2013.850657

Routledge
Taylor & Francis Group

Mapping the emerging field of genome editing

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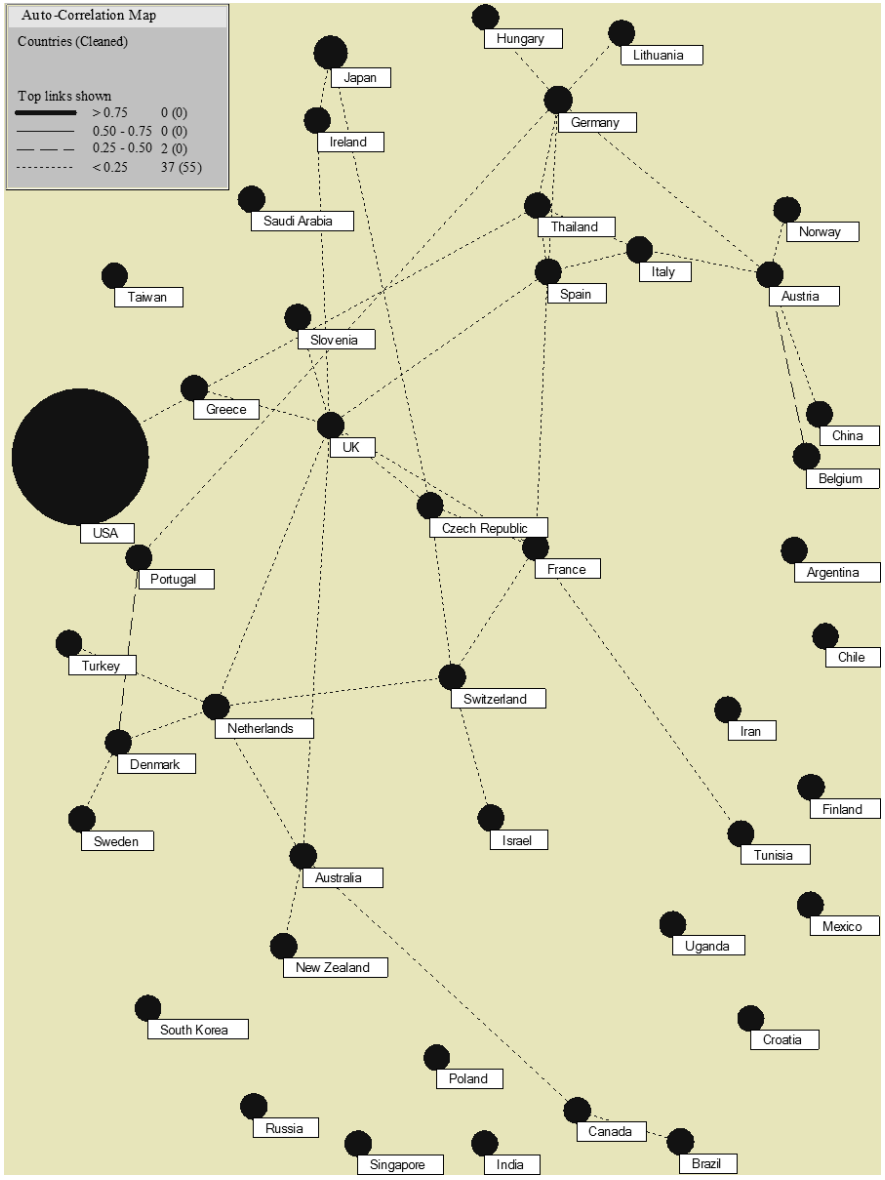
Targeted genetic modification (TagMo) technologies are being used for new approaches to genetic engineering often called 'genome editing'. These approaches are in the early stages of development, and basic understandings of what TagMo is, of its likely future, and how it should be governed are still being established. In order to inform these discussions and increase their transparency, we map the scientific landscape of TagMo using advances in tech mining and bibliometrics and in consultation with experts in the field. We assess the sub-topics and disciplines associated with TagMo research, and the actors, institutions, and nations involved, while making observations about the funding of research and the collaborative patterns among actors. The technology assessment approach used in this article has important implications for anticipatory governance of TagMo plant products. It is designed to help scientists, managers, and policy-makers understand trends in TagMo technological development in order to prepare for future governance.

Keywords: targeted genetic modification; biotechnology; governance; bibliometrics; genome editing



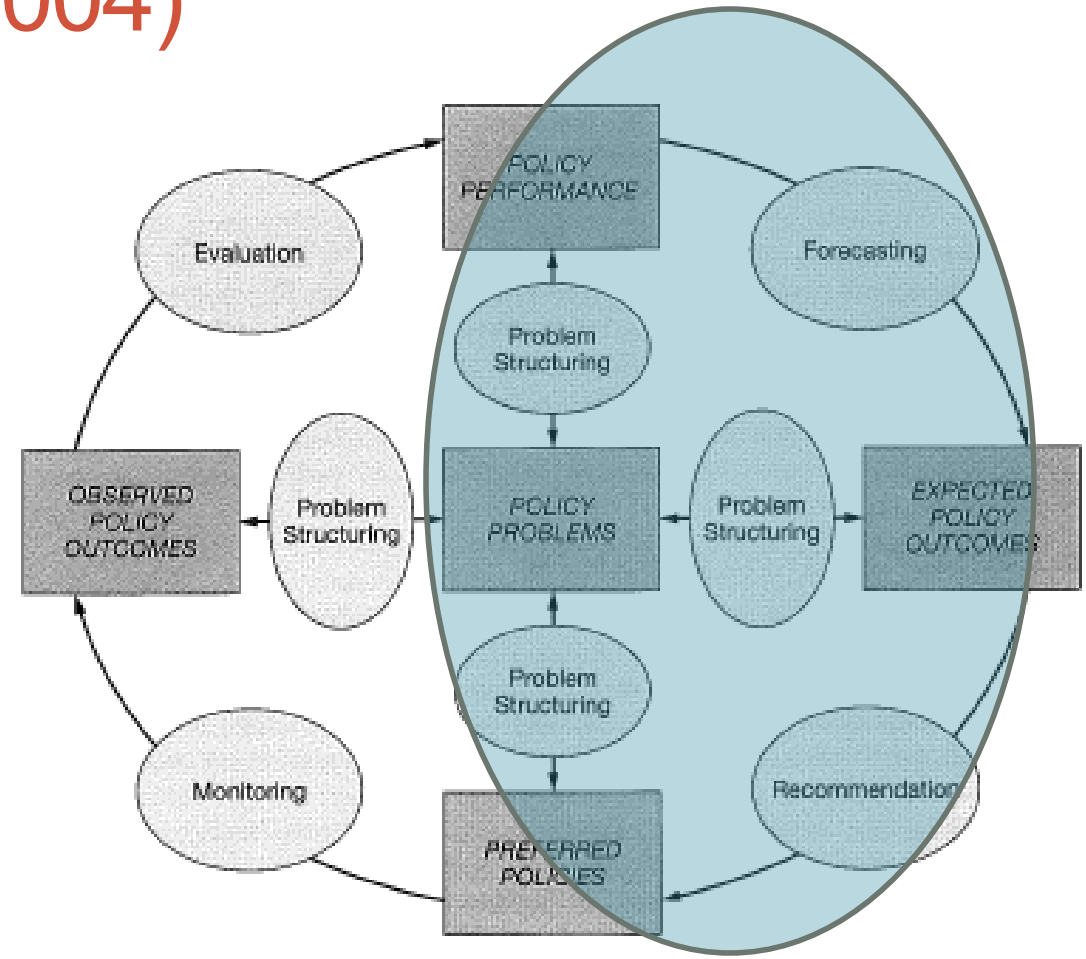
What are features of landscape

- Explosion of articles and applications (Moore's Law)
- Concentrated—a few "owners"
- Few partnerships with LDCs
- Little Collaboration among U.S. funders/regulators
- Few U.S. risk studies (if any)
- Products entering market
- Regulatory Avoidance approach in United States

LEARN FROM HISTORY

Remember the stories

The integrated policy analysis process (Dunn 2004)



THINK “PEOPLE-OCRACY”

Technocracy as a value system

- "Theory of rule by technical experts"
- Dates back to Plato, but coined in 1920s

- Technical experts conceived narrowly in case of emerging technologies and U.S. risk analysis & decision making
- "Rule by reason"

- Generally biased direction towards technological optimism, determinism
  - Becomes unacceptable (or impossible) to "hinder" or slow the progress of technology.

Anti-deficit thinking

- Not a technocracy (science experts), democracy (voting on risk), elitist-ocracy or STS-ocracy (bunch of risk scholars)
- Analysts from all sides strive to appreciate and respect approaches, biases, and perspectives of fellow scientists and scholars, and “interested and affected parties
- No one has the “corner on the truth”
- *When we visit here, we are not Japanese, Americans, Chinese, etc. “We are all just people” (Patrick)*
- ”

MORE WORKSHOPS LIKE THIS!

How can we move forward?

- As an international community of scholars
- As a representation of cultural and disciplinary views?
- As people who care about technology, risk, and society?
- As people who experience risk and benefits from technology?
- **Engage more practitioners, keep the dialogue going, and *be bold and brave* in creating new ways to move forward.**

Thank you for this kind invitation! & Acknowledgments

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