Anticipatory Governance:
A Strategic Vision for Building Reflexivity into Emerging Technologies

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- **Research** the societal implications of nanotechnologies
- **Train** a community of scholars with new insight into the societal dimensions of nanoscale science & engineering (NSE)

- **Engage** the public, policy makers, business leaders, and NSE researchers in dialogues about the goals and implications of NSE
- **Partner** with NSE laboratories to introduce greater reflexiveness in the R&D process
NSEC/CNS-ASU Research Programs

Real-Time Technology Assessment
Provides methodological orientation
1. Research and Innovation Systems Analysis
2. Public Opinion and Values
3. Anticipation and Deliberation
4. Reflexivity and Integration

Thematic Research Clusters
Provides thematic focus
1. Equity, Equality and Responsibility
2. Urban Design, Materials & the Built Environment (Nano & the City)

Anticipatory Governance
Provides strategic vision
1. Foresight
   All governance requires a disposition toward future
2. Engagement
   Crucial normatively, strategically, pragmatically
3. Integration
   Scientists know things we don’t, and vice versa
4. Ensemble-ization
   Because none of these works in isolation
Anticipatory Governance as Strategic Vision

A broad-based capacity extended through society that can act on a variety of inputs to manage emerging knowledge-based technologies while such management is still possible.

Anticipate: from *ante-* and *capere*, “to take [into possession]” “beforehand”; related to capable and capacity and not a synonym for “expect,” “predict,” or “foresee”
“Competent social scientists should work hand-in-hand with natural scientists, so that problems may be solved as they arise, and so that many of them may not arise in the first instance.”

Detlev Bronk
Anticipatory Governance – Not Government

• Not “do” or “ban”
  • “Science finds, genius invents, industry applies, man adapts”
  • Moratoriums proposed by ETC Group and Friends of the Earth
• Wide array of mechanisms
  • Regulation
  • Licensing/restrictions
  • Liability/indemnification
  • Intellectual property
  • R&D funding & tax credits
  • Testing
  • Treaties
  • Public Understanding of Science
  • Informal Science Education
  • Public engagement
  • Public action
  • Routinization
  • Codes of conduct
  • Standards
  • Laboratory decisions
Anticipatory Governance for Sustainability: Foresight and Reflection

### Scenarios Matrix

<table>
<thead>
<tr>
<th>Responsibility for Health</th>
<th>Value to Society</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>Individual</td>
<td>Docs R Us</td>
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<tr>
<td>Healthletes vs. Natural Lifers</td>
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<tr>
<td>Institutional</td>
<td>Unlimited Hope in a Box</td>
<td>Doc Blue AI</td>
</tr>
</tbody>
</table>

Outcomes: changed research agenda and strategy

![User Experience Storyboard](image)
Outcomes: changed strategic focus and different communication on museum floor
Anticipatory Governance for Sustainability: Integration and Reflection

Outcomes: “midstream modulation” -- changed discursive and material practice in laboratories
Anticipatory Governance for Sustainability: Risk & Plausibility

Plausibility helps address uses, contexts, and complexities of socio-technical systems that we do not handle well in the risk paradigm.
Citizens should have anticipatory, engaged, and integrated experiences with emerging technologies, as do scientists.
Resources for Anticipatory Governance


Thanks!

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