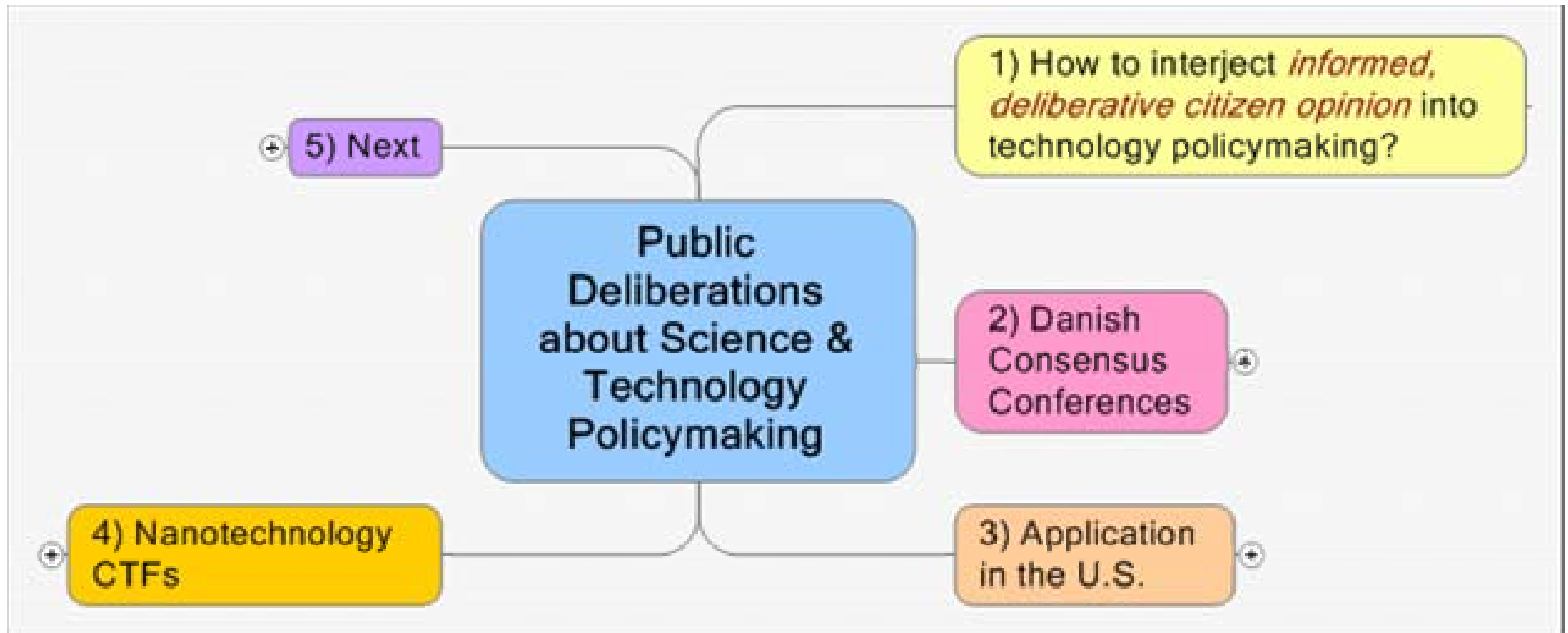


Public Deliberations in Shaping Public Policymaking about Science and Technology

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The Atlanta Conference on
Science and Technology Policy
2006



1) How to interject informed, deliberative citizen opinion into technology policymaking?

Public resistance to new technologies

- Advocacy politics
- Civilian nuclear energy
- Genetically modified foods
- Can nanotechnology avoid public resistance?



2) Danish Consensus Conferences

- Danish Board of Technology
- Consensus conference process
 - Recruiting panelists
 - Background materials
 - Oversight Committee
 - Content experts



3) Application in the U.S.

NC State Research Team

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Dr. Jane Macoubrie

Dr. Carolyn Miller

Dr. Michael Cobb



Research phases

- 2001: Two Citizens' Technology Forums
 - Genetically modified foods
 - Face-to-face (F2F) & Internet-based (K2K)
- 2003: Six CTFs
 - Climate change
 - Internet-only
- 2004: Two CTFs
 - Mixed mode
 - Raleigh & Boston
 - Nanotechnology



4) Nanotechnology CTFs

- Raleigh, NC
- Boston, MA



Raleigh: 1st Prep Weekend (F2F)

Areas of Interest & Concern

Health & Safety

Public Information & Education

Research & Development

Economic Issues

Environmental Impacts

Social Implications



Boston: 1st Prep Weekend (F2F)

Areas of Interest & Concern

Health Risks & Benefits

Education

Environmental Risks & Benefits

Economic Issues

Social Issues



Collaborative Work (K2K)

Traditional Middle Weekend

- Team A (Boston & Raleigh)
- Team B (Raleigh & Boston)
- Questions for Content Experts
- Interrogate Content Experts



Raleigh & Boston: Final Weekends (F2F)

- Review Areas of Concern
- Deliberate over Specific Language
 - Write Final Report



Raleigh Final Report

Objective 1: Address long-term implications of nanotech

- 1. Policies should be general, not specific, in nature
- 2. Policies should be flexible
- 3. Policies should consider long-term ramifications

Objective 2: Foster research & Development

- 1) Increase research funding & private sector investment
- 2. Target govt funding on non-proprietary basic research
- 3. Provide reasonable tax incentives
- 4. Foster nanotech incubators
- 5. Encourage creation of global consortia
- 6. Develop international agreements re: import & export of nanotech products



Raleigh Final Report

Objective 3: Generate guidelines for regulation

- 1. Conduct regular inventories of existing agencies & evaluate existing policies
- 2. Identify regulatory deficiencies
- 3) Create an oversight agency or expand authority of existing agencies
- 4. Publish public directory of nanotech developers & manufacturers

Objective 4: Insure prompt, accurate, unbiased information

- 1. Incorporate general info about nanotech into public & private education
- 2. Require that product claims for nanotech products are true & verifiable
- 3. Establish initiative for continuous public education efforts



Boston Final Report

Nanotechnology Review & Regulation

- a) Agencies must rigorously review nanoscale products
- b) Enactments (e.g. TSCA) inventory policy must be expanded to include nanoscale language & treat nanoscale products as novel substances
- c) Manufacturers should be required to perform additional toxicity & exposure testing of new nanoscale products
- d) Policymakers should consider the impact of the nanotechnology review process on a global scale
- e) NNI's role as advocate and coordinator of regulations should be separated



Boston Final Report

Environmental Impacts of Nanotechnology

- a) Research protocols similar to those used for toxic biological materials should be developed for nanoscience
- b) Existing environmental regulations should be applied rigorously before constructing new regulations
- c) Binding expert advice should be assembled to oversee the environmental impacts of military deployment of nanotechnology
- d) Nanotech research should focus on environmental improvement & remediation as well as environmental toxicities
- e) Steps should be taken to assign proper chemical nomenclature to nanotech products & nanoscale products should be identified as novel substances
- f) Environmental effects of nanoscale product disposal should be researched



Boston Final Report

Nanotechnology Public Education & Awareness

- a) Manufacturers must fully disclose any nanotechnology used in their products
- b) Private & public groups should create information campaigns to educate citizens about nanotechnology



Findings

Pre-test/post-test Questionnaire

Dr. Michael Cobb



External Efficacy

Hypothesis: Participants will believe they can affect government policy decisions after deliberating

- Participants report feeling less externally efficacious after deliberating (larger effect in Boston)



Internal Efficacy

Hypothesis: Deliberation results in increased sense of personal effectiveness

- Participants report feeling slightly more efficacious after deliberating (more in Boston)



Emotions about Nanotechnology

Hypothesis: Participants would describe fewer negative emotions about nanotech

- Participants report feeling significantly more ambivalent about nanotech, with more negative and more positive feelings after deliberating



General Social Trust

Hypothesis: participants become more trusting of others

- Participants did not report feeling significantly more trusting of other citizens after deliberating



5) Next: National Scale CTF

- Center on Nanotechnology and Society-ASU

Univ. of New Hampshire	Georgia Institute of Technology
Univ. of Wisconsin-Madison	Univ. of Colorado-Boulder
Arizona State Univ.	Univ. of California-Santa Barbara

- Mixed mode
 - 1st Prep Weekend: F2F
 - 2d Prep "Weekend": K2K
 - Final Weekend: F2F



National Scale CTF

- Each CTF Independent
 - No effort to reach consensus across all sites
 - Compare Final Reports
 - Provide National Informed, Deliberative Citizen Opinion