Predicting the Future: How Ordinary People Make Sense of Emerging Technologies

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Early U.S. Opinion Climate for Nanotechnology

- **Bainbridge, 2002 (JNR)**
  - 3909 Internet respondents (NOT random)
  - 57.5% agree “human beings will benefit greatly”

- **Gaskell et al., 2005 (PUOS; 2002/3 U.S. data)**
  - 850 U.S. telephone respondents
  - 50% “will improve our way of life”; 12% “no effect”; 4% “will make things worse”; 35% DK

- **Cobb and Macoubrie, 2004 (JNR)**
  - 1536 U.S. telephone respondents
  - Only 21.9% believe risks outweigh benefits
Early U.S. Opinion Climate for Nanotechnology, Part II

- Scheufele and Lewenstein, 2005 (JNR) and pers comm (2007)
  - 10-point scale
  - 32.2% positive (8-10), 42.5% neutral (4-7), 19.3% negative (1-3), 5.9% DK

- Priest, 2005 CBS data (JNR, 2006)
  - 46% “improve”; 13% “no effect”; 6% “worse”; 35% DK/Ref
Nano Impact, 20 Years (2003)

2002/3 U.S. data, N = 850

- **Improve**: 50%
- **No effect**: 10%
- **Worsen**: 5%
- **DK/Refuse**: 35%
Nano Impact, 20 Years (2005)

2005 U.S. data provided by CBS, N = 1200
Comparison of Bio (GM) and Nano Projections

- Improve
- No effect
- Worsen
- DK/Refuse

Nano, 2003
Nano, 2005
Bio (GM), 2005
Is opinion for nano approaching that for bio/GM, or will these statistical differences remain?

Are the concerns for bio and nano fundamentally different or the same?

What will be the effect on public opinion when bio and nano converge?

Are DNA tech and material science culturally the same, or different?
Initial Impressions in North America

- 6 focus groups in U.S. and 3 in Canada, summer 2005 (combined data; NSF study)
- Consistent with survey data
  - Most comments (nearly 90%) positive or neutral
  - Comments about benefits outnumber comments about risks (apx. 179 vs. 155)
  - Socioeconomic impacts (including privacy issues) account for about 1/3 of risk comments
  - Concerns over disruption (job loss), distribution (access to benefits)
  - Environment also resonates
Extending Social Theory to Predict Agbionano Reactions

- What happens to opinion climate when nano and bio (med, ag) bio converge?
- Social Amplification of Risk Framework
  - Social institutions can amplify or attenuate risks – but which ones, when, and why?
- Media as one important social institution
  - One institution among many; not sole influence
  - Respond to envisioned threats (“surveillance” function)
  - News values reflect social values (Gans)
  - Threats to values, norms, expectations (*not just probability of physical harm*)
Expanded Vocabulary of Risk

- “Lay” publics don’t use expert definitions
- Risk concept intertwined with...
  - Ethical concerns
  - Distributional concerns
  - Concerns over social disruption
- Resembles broader concept of “threat” as developed for understanding media function
- Multiple “publics” for science interpret equivalent media, messages differently, and may see different threats (Priest 2006, PUOS)
Things that might be seen as risky
Things “experts” see as risky
Things ordinary people may see as risky (or threatening)
Predictions?

- Nanobio in agriculture will not raise exactly the same concerns as agricultural (or other) biotech have up to now
  - "Materials don’t have ethics":
    - Altering the material world does not create the same reaction as altering the “natural” or biological world
    - Nanotechnology applications often involve ordinary, familiar consumer products (not foods)
    - Medical nano applications will be seen as inherently positive (not lacking benefit)
Predictions?

- Agricultural biotechnology did raise issues of distributional and procedural justice
  - Impacts on family farms and environmental integrity (threat to Gans’ “pastoralism” value)
  - Idea that people weren’t consulted (threat to expectations for “altruistic democracy” and “responsible capitalism”)
Predictions?

- Nanotech *is* likely to raise parallel concerns in these areas, *possibly producing amplification effects* for other risks
  - Need more research on this
- Other social actors, institutions may direct media and public attention to particular concerns (*resource mobilization theory*)
  - Likely to require fewer resources when related to preexisting shared social values
UNDERSTANDING ACTUAL PUBLIC CONCERNS

- Need to think more broadly than risk (narrowly defined) and its regulation to concept of “threat”
- Need to think in terms of multiple publics with different values and concerns
  - These publics are active audiences for media messages
  - Media often reflect public values and concerns, not just those of the scientific community
ADDRESSING ACTUAL PUBLIC CONCERNS

“Public engagement” as more than an outreach exercise
- Not just “calming fears”
  - No “nanobot” hysteria apparent in any available data, for example
- What are people’s real concerns?
- How can societal impacts be mitigated?