

Nanotechnology & The Human Sciences

Brenton Faber, Ph.D.

Professor

NC State University

bdfaber@ncsu.edu

Work to date:

- Clarkson University group
 - Funding by Sloan Foundation & NSF
- NC State group
 - Projected funding from NSF

Clarkson group

- Funding from Alfred P. Sloan Foundation
 - Investigate expert/inexpert learning in corporate education



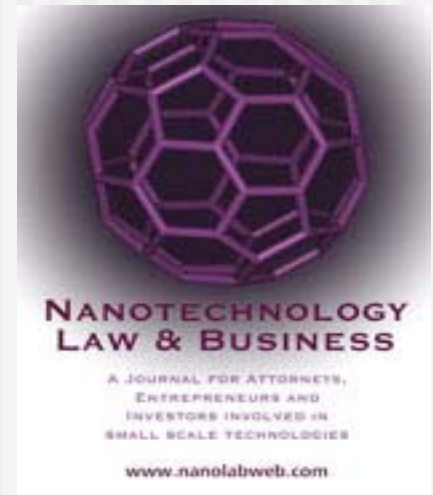
Clarkson group

■ Corporate Education Project

- Technical training was impeded by employees' attitudes about
 - Individual vs. group orientation
 - Loyalty to organizations
 - Work versus leisure time
 - Authority and hierarchy
 - Prospects for the future
 - Tolerance for difference

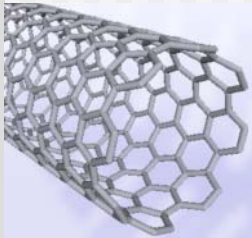
Clarkson group

- NSF Grant No. 0423400 - Public Understanding of Nanotechnology
 - how nanoscale science and technology are represented in written media from 1986-2006
 - Largest database of newspaper articles about nanotech
 - www.nano.eserver.org
 - *Nanotechnology law & business review*
 - *Technical Communication Quarterly*



Clarkson Group

- NSF NUE Grant No. 0407261
- Societal Dynamics of Nanotechnology



<http://web2.clarkson.edu/projects/nanomat/Contents/contents.html>

NC State group

■ Motivation: Public Interface of Nano

Medicine: patient noncompliance with prescribed medications*

- results in over 125,000 deaths each year from cardiovascular disease alone.
- 10-25% of all hospital and nursing home admissions.
- 50% of patients take the drug as directed.
- most common cause of nonresponse to medications.
- 37% of patients understand what [their physician] is saying.
- 46% of adults misunderstood at least one drug label.

We can develop better meds - doesn't mean people will actually take them or take them the way they should

motivation

2003 ETC Group

- moratorium on research involving molecular self assembly and self-replication.

2006 Friends of the Earth (Australia)

- avoid sunscreens, cosmetic products with embedded nanoparticles
- end to commercial releases of sunscreens, cosmetics, and personal care products that contain engineered nanomaterials.

2008 Soil Association (UK's largest organic certification group)

- products would not be certified as 'organic' if they contained additives made by the nanotechnology industry.

2008 European Commission

- new methods for regulating "novel foods" including nanotech additives in foodstuffs.

motivation

2008 American attitudes towards nanotech*

- 29.5% of respondents - nanotechnology was morally acceptable.
 - Concluded nano linked to stem cell, GMO in US perceptions
 - Especially among people with self-reported strong religious beliefs.
[↑ religiosity = ↓ trust in nano]



*(Scheufele 2008)

Current Projects

Truth in advocacy "fact checking"

- Are stakeholder, advocacy group, or public opinions formed within an appropriate and accurate understanding of science?

Survey research and data collection

- Can we determine what specific groups of people think about new technologies? Geography, income, education, religion?

Focus group research

- Can we better understand how people make decisions and form opinions about technology?

NC State Group

Perception research

- How do people make sense of new technologies?
- Genetic modification, synthetic biology, nanotech

Early research:

- Economic development
- Methods for improving efficiency
- Medical applications



PCOST

- Public Communication of Science Technology
 - **“Assessing the Narratives of Nanotechnology: From representation to “truth in advocacy” NSF (Social Studies of Science)**

Determine which predominant media representations of nanotechnology are also held by various publics, disaggregated by various social criteria (geography, income, gender, race).

Assess and report the scientific accuracy of these representations (a process we call “Truth in Advocacy” or TIA).

Framing experiment embedded within a nationally representative survey - evaluate the persuasiveness of prevailing media representations, and whether TIA is correlated with narrative effectiveness.

PCOST

- Risk business: Risky decisions under uncertain conditions (NSF)
 - Compare and evaluate how experts and lay people define and respond to issues of risk and uncertainty in the field of environmental toxicology. Create courses and modules on risk evaluation, decision making, & communication.
- National Center Environmental Impacts of Nanotechnology
 - South Carolina project lead - PCOST to lead societal aspects research (selected to advance from pre-proposal)
- Interface of Bioprocess Engineering & Nanotechnology
 - New project with Professor J. Bruno-Barcena (NCSU)

Publications

- *Nanotechnology Law and Business Review*
- *J. of Nanoparticle Research*
- *Nanomedicine,*
- *Nano Today,*
- *Nanotoxicology*
- *IEEE Technology and Science*

Contact

Brenton Faber

Professor

NCSU

bdfaber@ncsu.edu

discourse-and-change.org

David Berube

Professor

NCSU

dmberube@ncsu.edu