

How Do We Identify the Publics to Be Engaged in Nanotechnology?

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Collaborators/Co-Authors

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- Bruce Bimber, Univ of California, Santa Barbara
- Rob Ackland and Mathieu O'Neil Australian National University, Canberra, Australia

Low public awareness context for emerging nanotechnologies

- Unprecedented research opportunity
- Unique challenges for research and participation
 - Survey
 - Deliberation
 - Framing

Our assumptions

- Social intelligence approach
- 2-way communication between science and society essential
- Attempt to learn from the past and avoid past mistakes --GM Nation? as downstream
- All methods have trade offs, so multi-method, staged approach makes sense
- Risk perception or, as we prefer, beliefs will be key to understanding behavior
- Risk amplification model at core

Social Amplification of Risk Framework

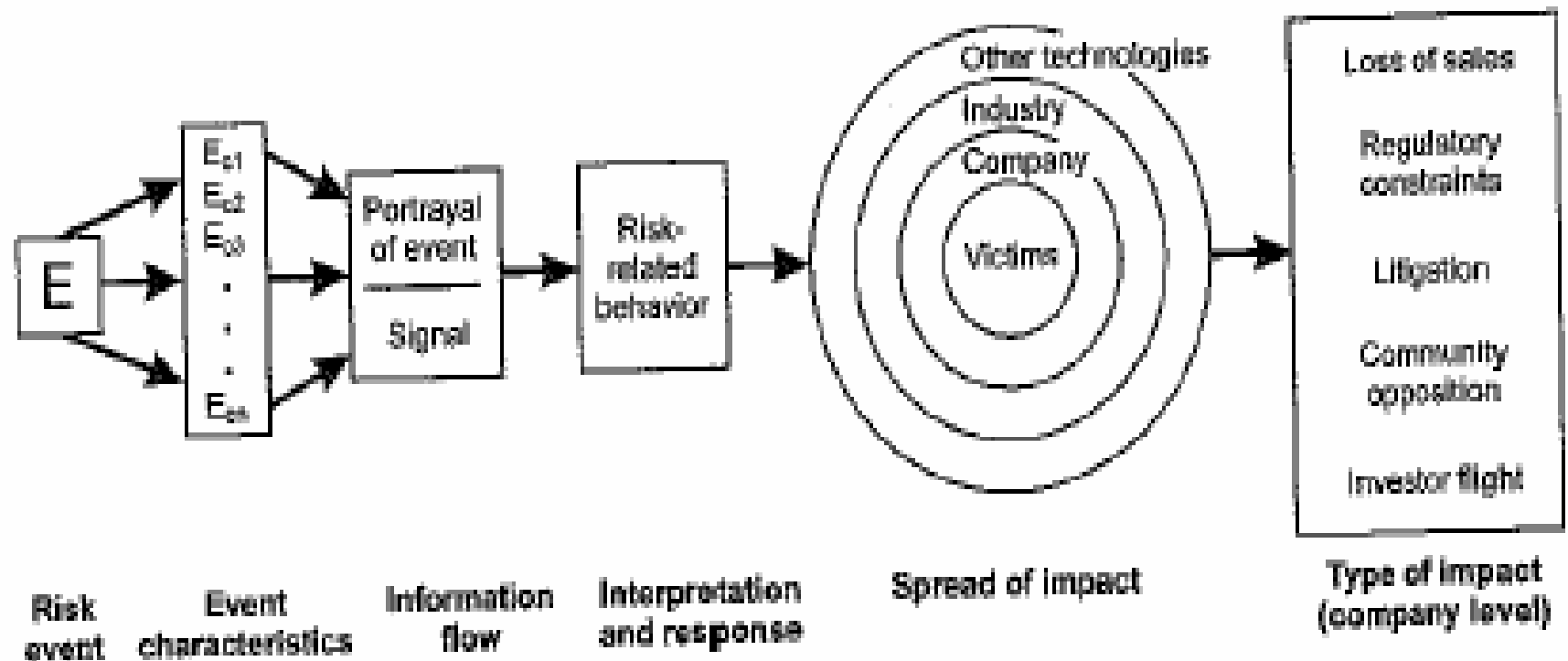
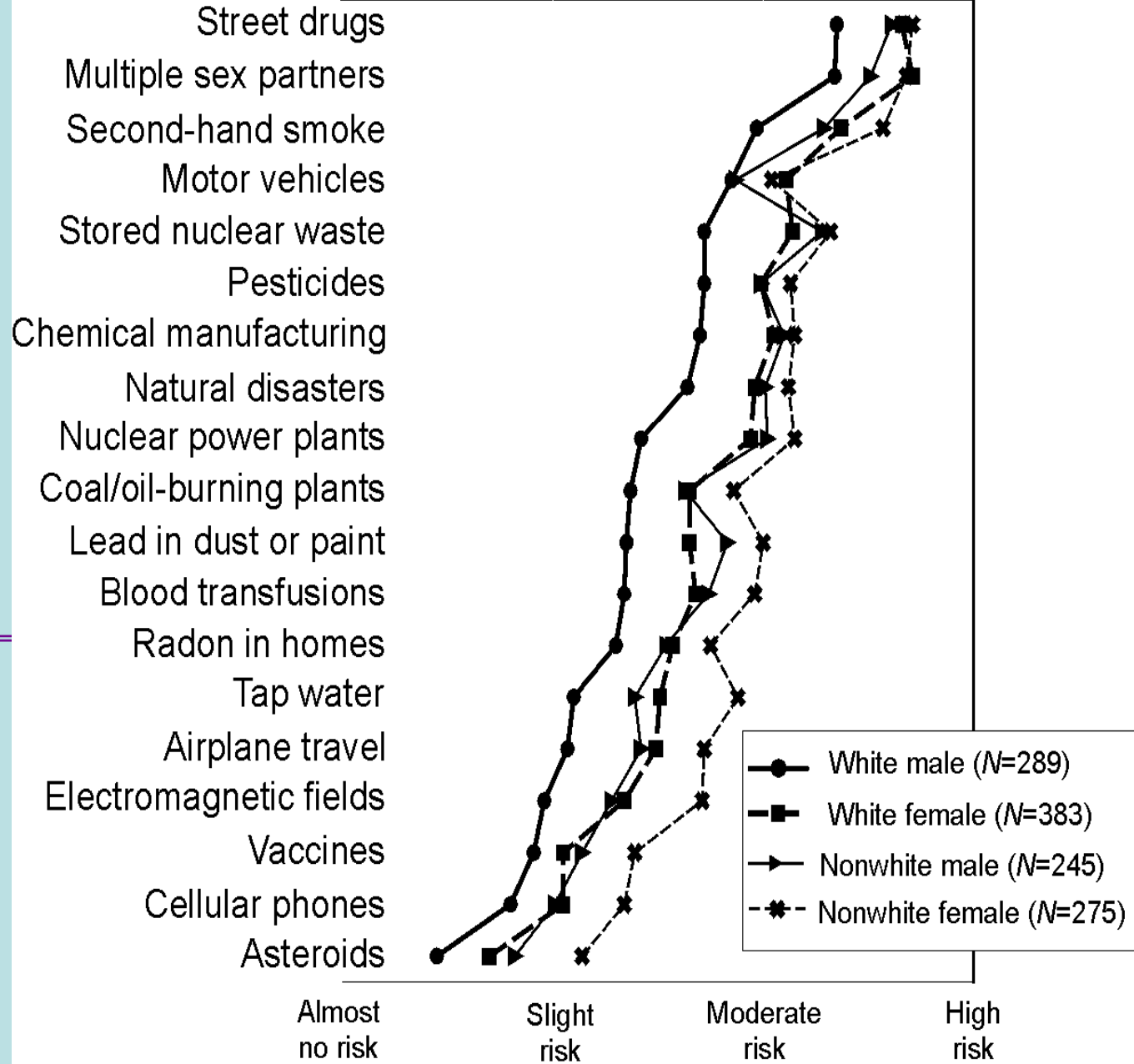


Figure 14.1 *Highly simplified representation of the social amplification of risk and potential impacts on a corporation*

Who are/will be nanotechnology's diverse publics? Individuals

- Sociodemographic contours
 - Gender, ethnicity, class/education
 - Past histories
 - Spatial analysis
 - May be unstable over time, so ongoing studies essential
 - E.g., GM Nation? 2003 survey data showed LESS polarization than in 1996 or 1998 prior surveys (Pidgeon et al. 2005:475)

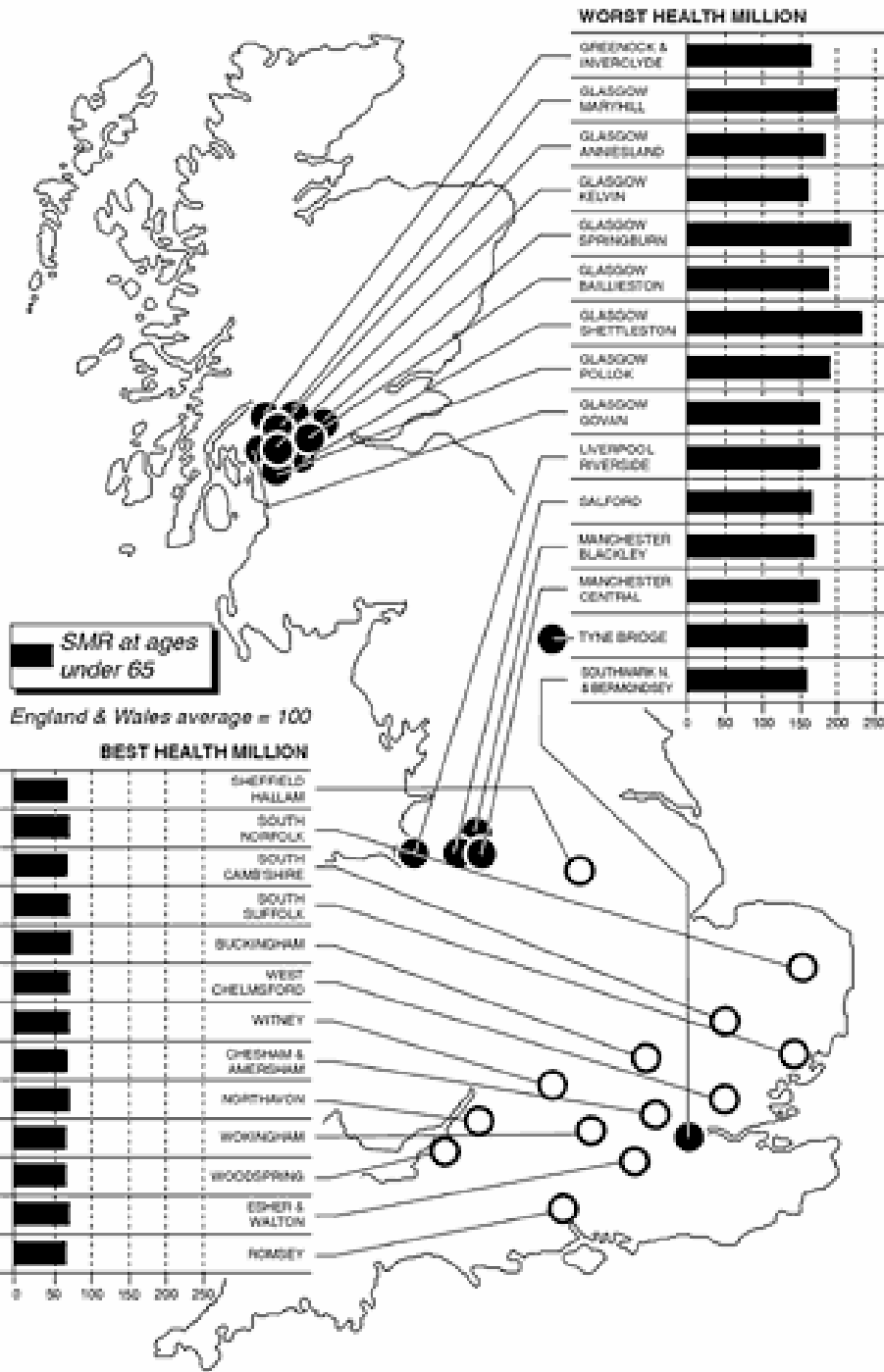
Perceived Risks to American Public: Means by Race and Gender — White vs. Nonwhite



Satterfield, Mertz, and Slovic 2004, *Risk Analysis* 1:115-129

Nonwhite includes Hispanic, African American, Asian, Native American, and multiracial groups. Source: 1997 National Risk Survey.

Spatial Contours of Public Health Inequality



Shaw et al. 1999, reprinted in Gatrell and Rigby 2004, Map of mortality in UK constituencies.

Who are/will be nanotechnology's diverse publics? Groups

Groups

- Established NGOs
- New social movements

Methods (Ackland, Oneil and Bimber)

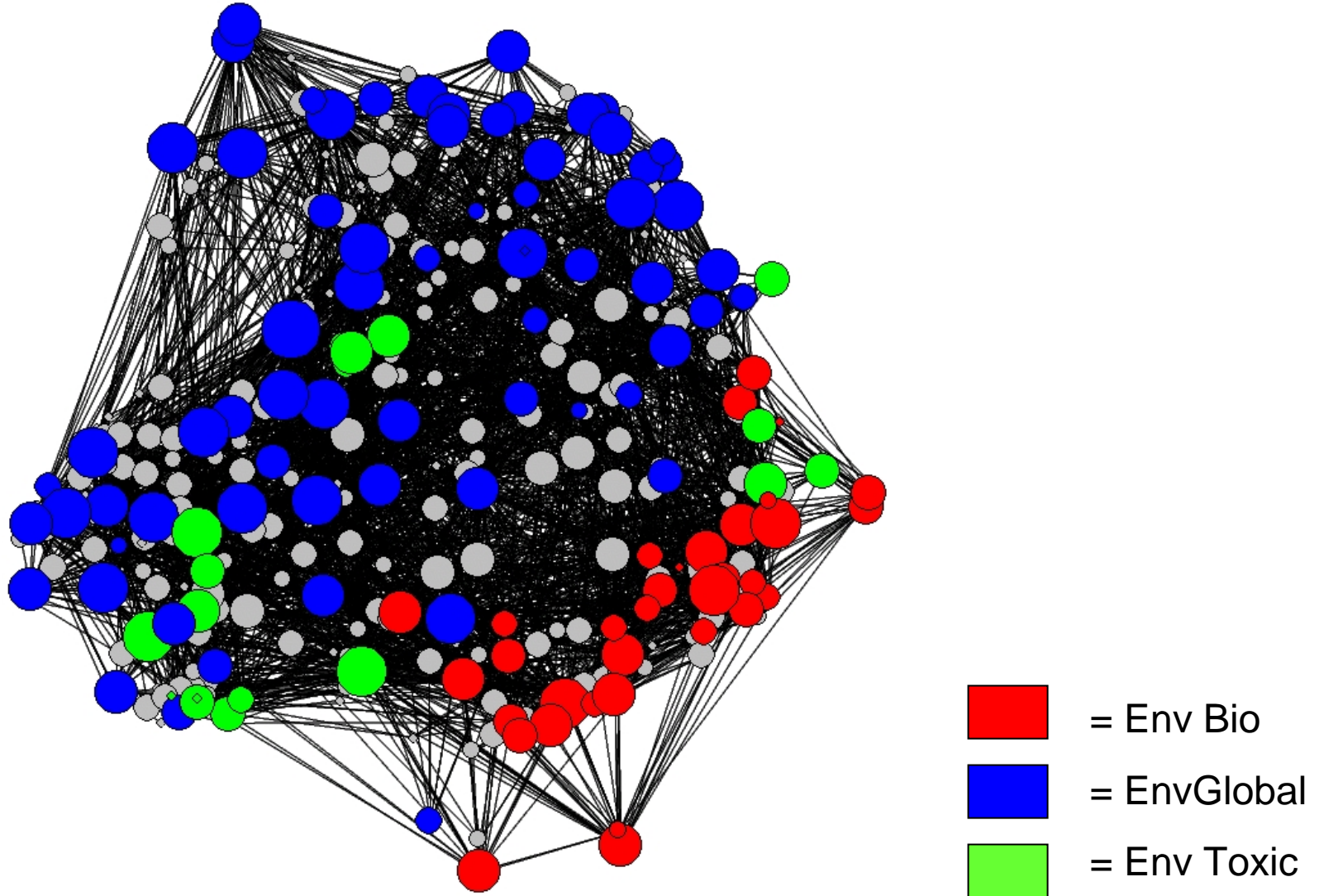
- Web crawling interlinkage study
- Global in focus
- So far, past actors in environment take the lead
- Uptake valence mixed?
- Future—internet organizing can bring new groups, new tactics

Nanotech content by activist classification (n=162 groups)

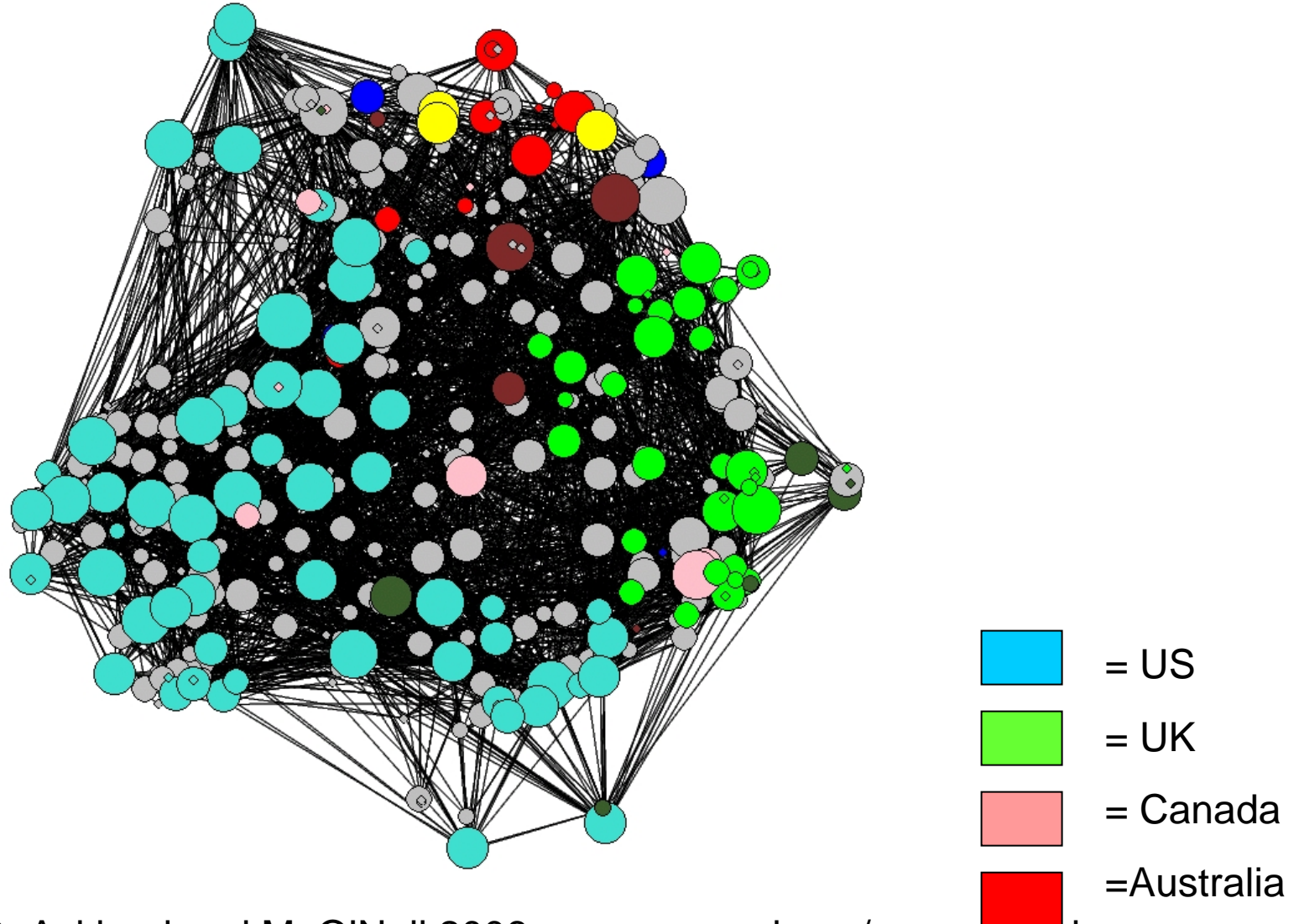
	None	Some	Substantial
Bio (Biotech /GM food / Patents)	63.8	21.3	12.8
Global (Climate / Air / Forests / Resources)	82.6	10.9	5.4
Toxics (Industry/ waste / health)	87.0	8.7	4.3

Ackland and O'Neil 2006

Virtual Observatory for the Study of Activist Networks (VOSON); clustering map by environmental theme, 2006



Virtual Observatory for the Study of Activist Networks (VOSON); spatial proxy--clustering map by country of organization, 2006



Complexity of possible responses

- Analogies critical part of analysis
- An instructive case--GM Nation?

GM Nation Questionnaire: The Structure of Attitudes to GM Food and Crops

Factor 1

(Perceived Risks)

- Negative impacts on environment
- Difficult to ensure other crops are GM free
- More driven by profit than public interest
- Don't know enough about long term effects on health
- Benefits mainly producers

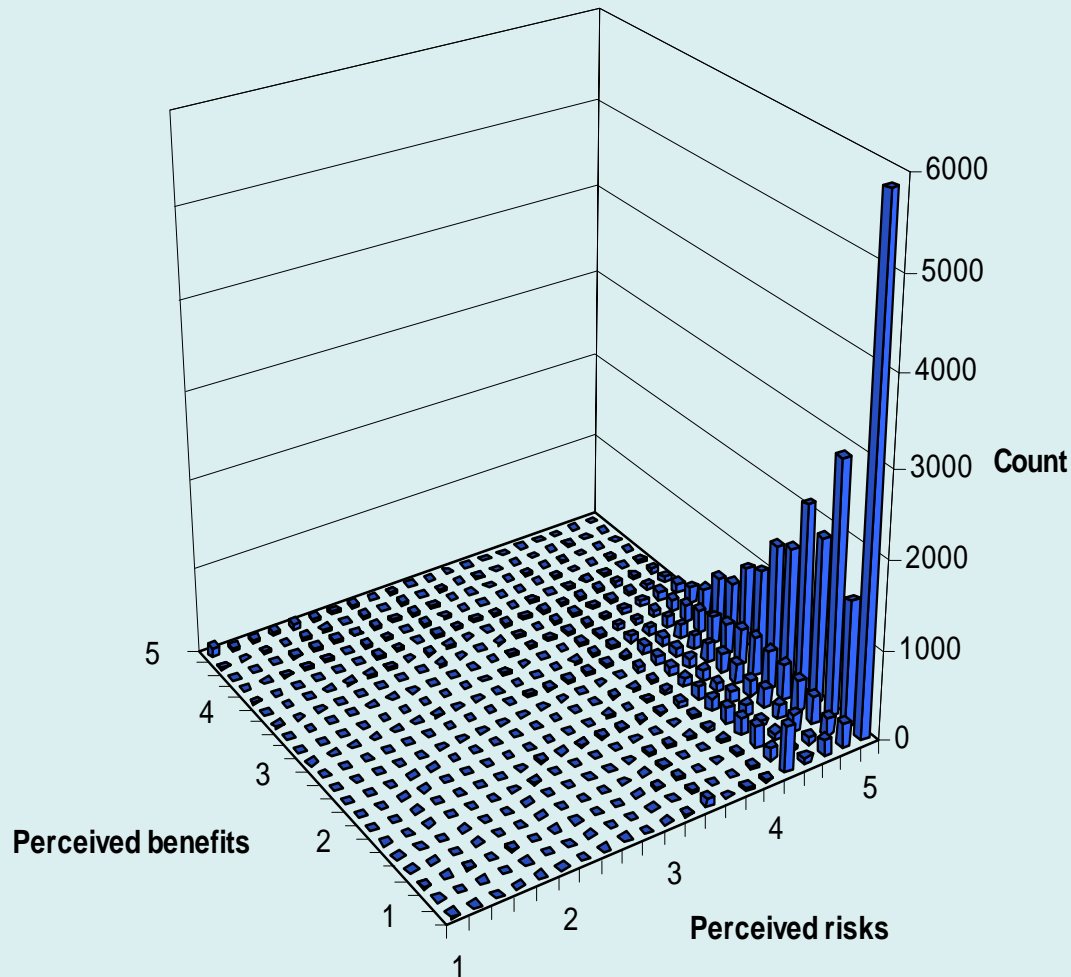
Factor 2

(Perceived Benefits)

- Provides cheaper food
- Benefit people in developing countries
- Benefit environment/using less pesticides
- Helping British farmers to compete
- Useful medical benefits

Perceived Risks and Benefits of GM Food

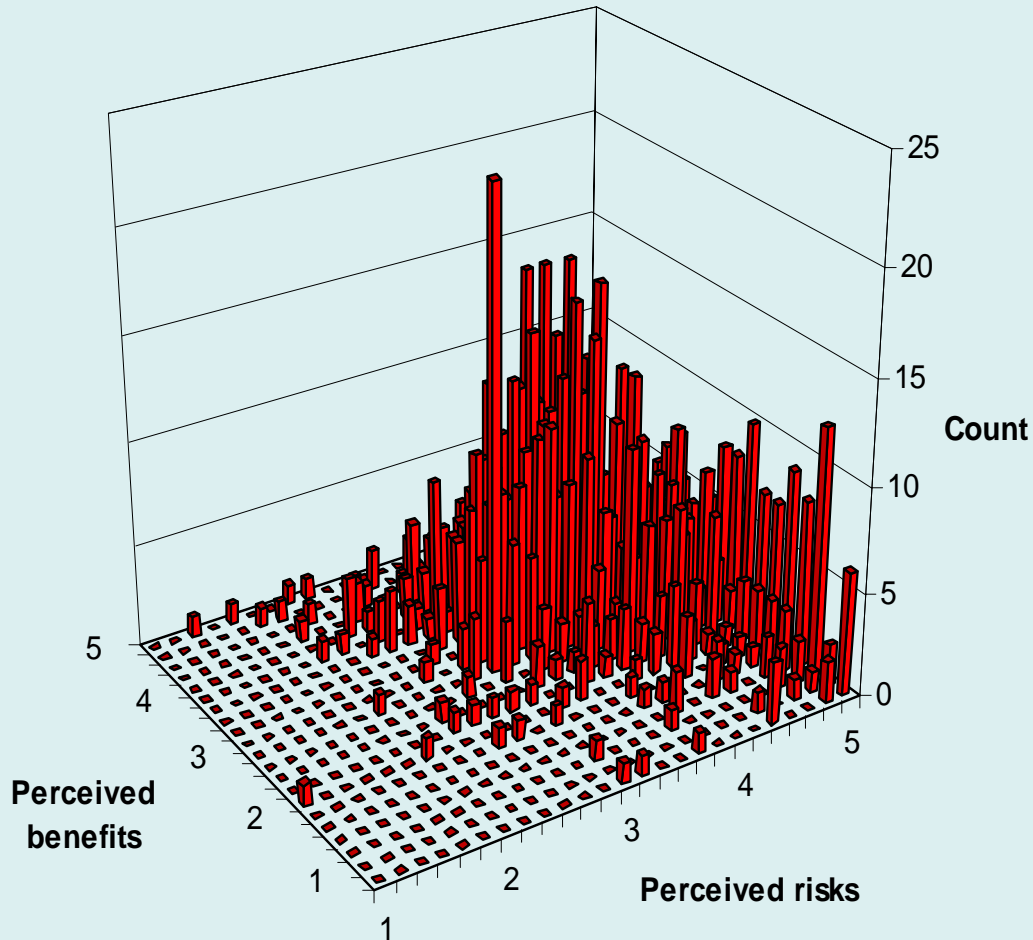
Open GM Nation? (self-selected participants) N=36,557



See Pidgeon, Poortinga, Rowe et al *Risk Analysis*, 25(2), 467-480, 2005

Perceived Risks and Benefits of GM Food

UEA/MORI 2003 (representative national sample) N=1,326



See Pidgeon, Poortinga, Rowe et al. *Risk Analysis*, 25(2), 467-480, 2005

Diversity of technologies // diversity of publics?

- Energy technologies
 - Positive—IT
 - Negative—nuclear
- Health and Human enhancement
 - Positive—human genomics
 - Negative—GM and food/agriculture
- Scale issue important in both

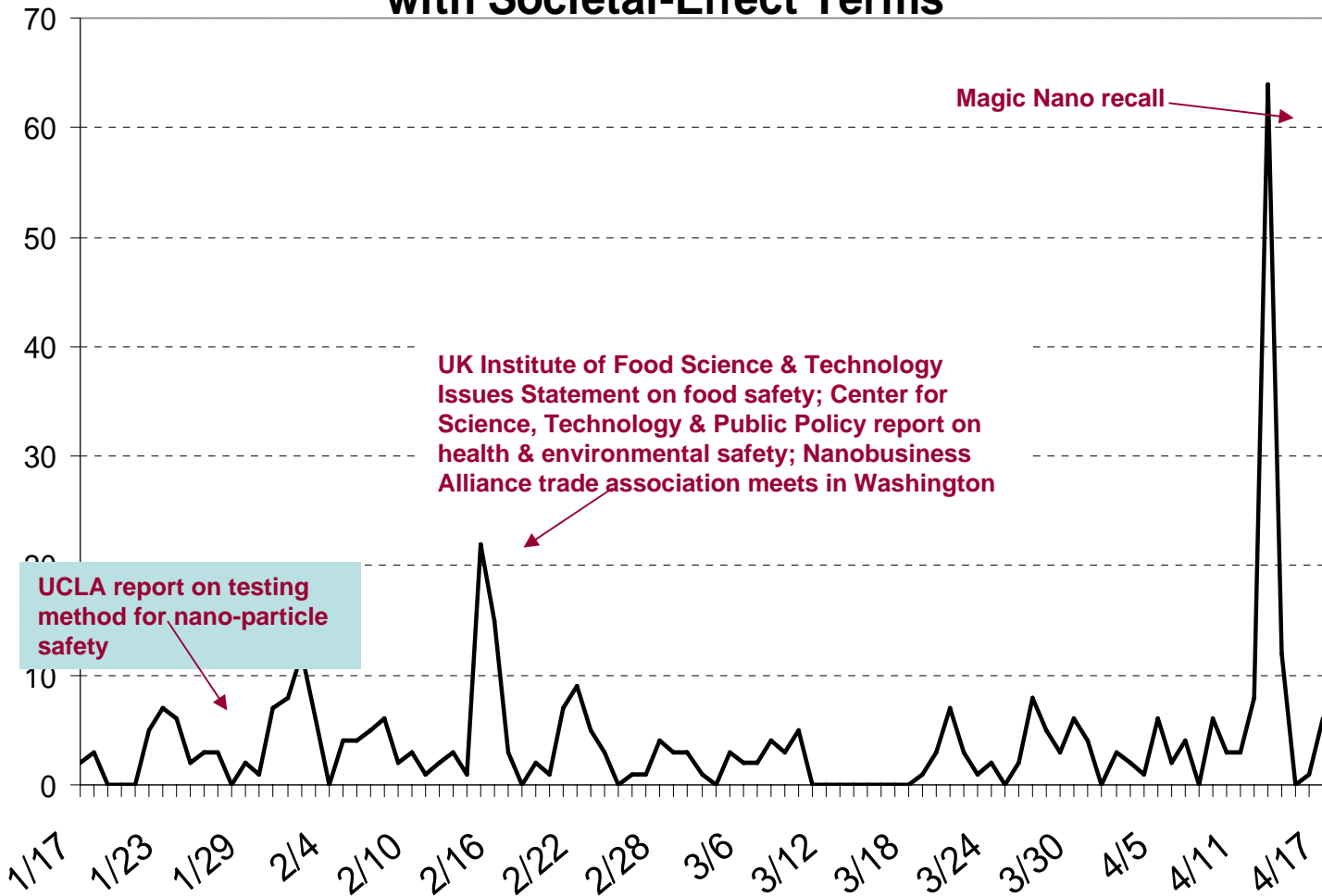
Social amplification of nanotechnology's risks

- Diverse publics for different nanotechnology applications could converge
- The technologies themselves are converging in certain respects
- A single risk event could change the shape and scale of 'the public' overnight
 - Converging views (spillover effects)
 - Possible movie version of *Prey*
 - *The Day after Tomorrow* and climate change risk perception



Differential Impact of Trust-Increasing and Trust-Decreasing Events—Slovic 1993

Global News Stories on Nanotechnology with Societal-Effect Terms



Weaver and Bimber; 4/27/06; Data from Google News

Bimber and Weaver, media framing of nano

Our approach

- Diverse expert study--University and private sector nanosci, nanotoxicologists, regulators
- Preliminary deliberation--‘narrow and deep’, comparative, 2 technologies, 3 countries (US, Canada, UK)
- Survey (risk perception focus)—representative sample (UCSB’s unique GIS context)\
- Activist organizing
- Media framing