Social Amplification of Risk and Public Perception of New Technologies: Lessons Learned from Biotechnology

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UK / Japan Nanotechnologies Workshop, Royal Society 11-12th July 2005

THE
GRIM
REAPER

Social Amplification of Risk

- **Need to explain the <u>dynamics</u> of controversy**
- **Risk events not just 'probability' but become portrayed through powerful signs, images and symbols**
- **Secondary (ripple) effects can be as important as immediate impacts**

See Pidgeon, Kasperson and Slovic (eds) (2003) *The Social Amplification of Risk*. Cambridge: CUP.

RISK EVENTS AND THEIR CHARACTERISTICS

↓ ↓

A. SOURCES	B. TRANSMITTERS	C. RECEIVERS
→	→	→
Scientists	Media	General Public
Agencies	Institutions	Affected People
Interests Groups	Interest Groups	Group Members
Eyewitnesses	Opinion Leaders	Socially Exposed

↑ ↑ ↓

← ← (feedback) ← ←

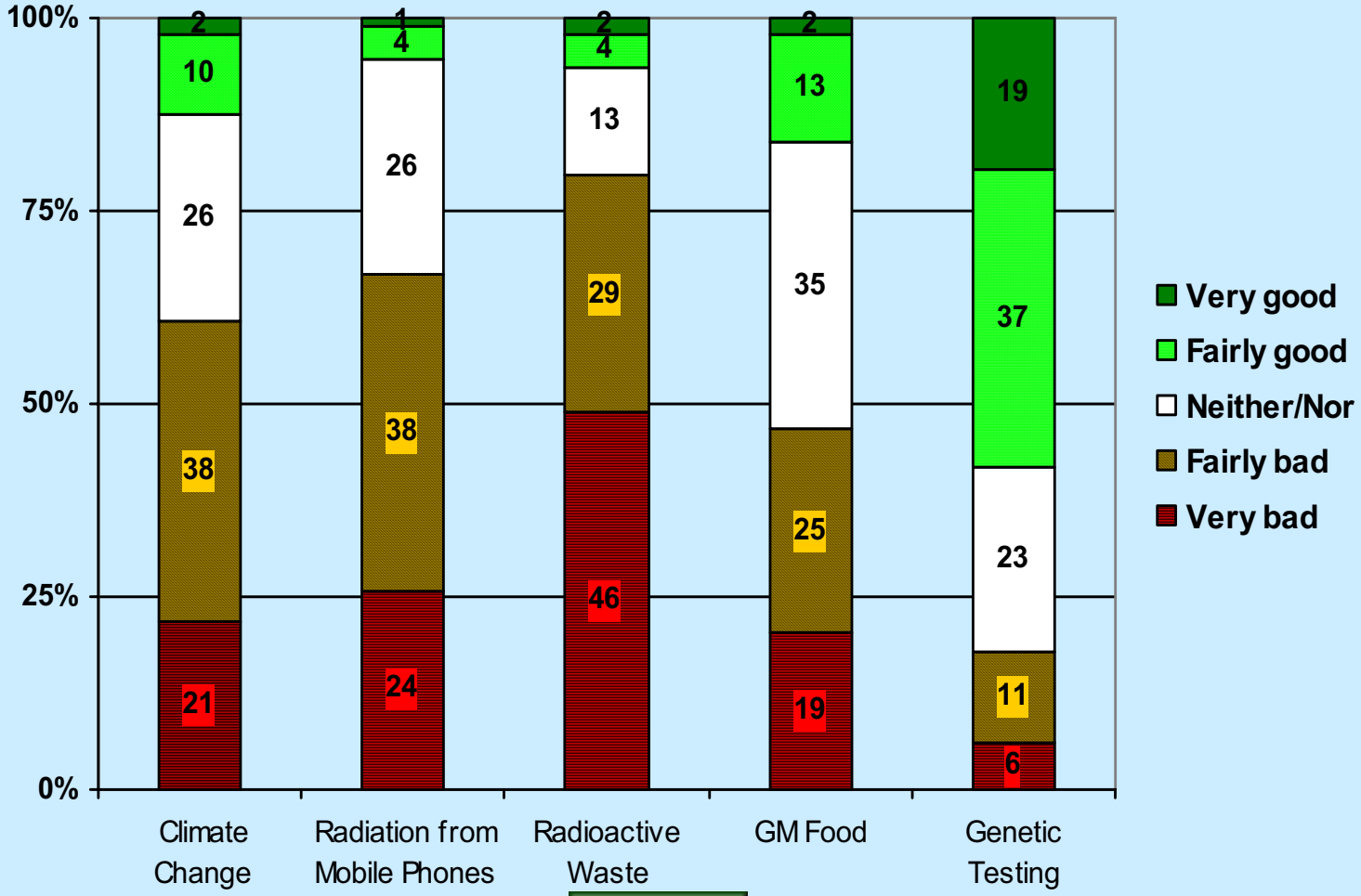
The Social Amplification of Risk Framework: Sources, Transmitters and Receivers (Pidgeon et al, 2003)

Public Attitudes to GM Technologies

- **We know people are highly favourable to 'science and technology' in the abstract**
- **Attitudes to GM are complex: there is no single 'GM' in people's minds**
- **Medical (red) applications viewed more favourably than agricultural (green)**

In general how do you feel about …(2002)

(N=1,547)



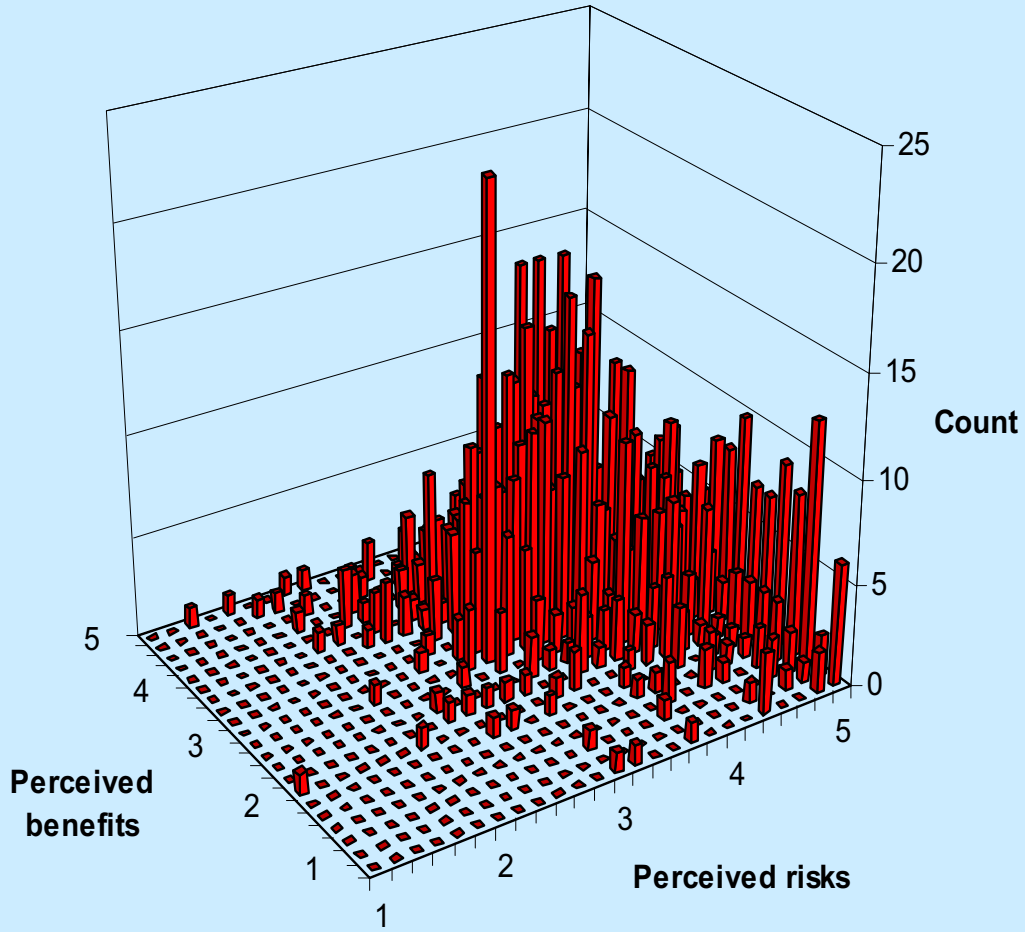
Public Attitudes to GM Agriculture: Quantitative Findings

- **Turning to GM agriculture – a source of significant controversy**

- **A significant proportion of the population (30%) are highly negative about GM agriculture, while as many as 50% are ambivalent (see both risks and benefits).**

Perceived Risks and Benefits of GM Agriculture

(N=1,363; source Pidgeon et al, 2005, *Risk Analysis*, v 25, 247-480)



Public Attitudes to GM Agriculture: Qualitative Findings I

- **Overall an <u>ambivalence</u> about GM**

- **Worries about the <u>long-term health and environmental impacts</u> ('we are all being placed in a big experiment').**

- **Ethical concerns about scientists '<u>tampering with nature</u>'.**

Public Attitudes to GM Agriculture: Qualitative Findings II

- **Distrust of risk regulation and of biotechnology industry motives.**

- **Concerns about the distribution of risks and benefits.**

- **The historical context is critical (in the UK food scares such as BSE, coupled with extensive media reporting of scientific disputes)**

Royal Society /RAE Survey: Awareness of Nanotechnology (Jan. 04)

Heard of and able to provide any definition of nanotechnology
(n=1005)

19% Yes 81% No (inc Don't Know)

A majority (68%) of the 172 respondents who could offer a definition thought nanotechnology will improve our way of life in the next 20 years as compared to 4% who said it will make things worse?

See: *Nanoscience and Nanotechnologies: Opportunities and Uncertainties* Royal Society / Royal Acad. Eng, 2004, London, pp 59-62.

Royal Society /RAE Survey: Definitions of Nanotechnology

Primarily:

- Micro or small scale technology and science/ miniaturisation / small robots, droids / atoms and molecules / very small measurements

Plus some mention of

- Computing / internet / microchips / circuits
- Implanting / in the body or blood / medical / regeneration

(n= 172)

Royal Society /RAE Qualitative Workshops (December 03)

- **Enthusiasm for the possible ways that nanotechnology would <u>benefit their and others lives</u>**

- **Concern over any l<u>ong-term uncertainties</u> associated with nanotechnology**

- **<u>Role and behaviour of institutions</u> – who can be trusted to ultimately control and regulate nanotechnology?**

- **(limited) ethical concerns over <u>messing with the building blocks of nature</u>**

See: ***Nanoscience and Nanotechnologies: Opportunities and Uncertainties*** **Royal Society / Royal Acad. Eng, 2004.**

Lessons Learned from GM I?

- **There are both similarities <u>and</u> differences between GM and nanotechnologies (other powerful analogies and icons also exist: e.g. nuclear, chemicals, IT)**

- **The broad range of nanotechnologies will ensure some will gain ready acceptance while others will not**

- **Who is seen to benefit, as well as trust in regulation of uncertainties/ risks, will be critical.**

Lessons Learned from GM II?

- **Open and honest communication by governments, scientists and industry (particularly in the event of the first major nanotechnology 'accident').**

- **With GM dialogue came 'too little too late'. Hence the need for early ('Upstream') dialogue with public and stakeholders**

2004 - ‘Upstream’ Engagement and Emerging Technologies

- **Dialogue and deliberation amongst affected parties about a *potentially controversial risk issue* at an early stage of the Research & Development process and in advance of significant applications or controversy**

see: ***Nanoscience and Nanotechnologies: Opportunities and Uncertainties*** **Royal Society / Royal Acad. Eng, 2004, London Ch 7.**

also: **Demos *See Through Science*, 2004, London**

‘Upstream’ Engagement and Nanotechnologies – Some Issues

- **As applications are currently uncertain, engagement over what? And with what methods?**
- **As awareness is very low what is the implication of trying to engage with people about this issue, now?**
- **What if engagement generates controversy and unwarranted beliefs about risks?**

Concluding Comments

- **The social dynamics of controversy and amplification of risk will be important**
- **'Upstream' engagement presents significant challenges as well as opportunities**
- **Whatever does happen nanotechnologies are unlikely to play out in precisely the same way as GM did (hence a need for tracking of attitudes over time)**