DEFICIT TO DIALOGUE, CHAMPIONS TO CRITIQUE

20 years of research in science communication

Melanie Smallman, Department of Science and Technology Studies, University College London.

About me

- Currently lecturer in Science and Technology Studies at UCL
- My research looks at impact of public discussions on policy and role of science and technology in shaping inequalities

But…

I am also a practitioner

- Started work as an Explainer at London's Science Museum
- Ex-press officer
- Founder and Director of Think-Lab
- Communications adviser to UK Environment Chief Scientific Adviser for 7 years
- Still blog and advise

Research Note

PUS

Public Understanding of Science in turbulent times III: Deficit to dialogue, champions to critics

Public Understanding of Science
1–12

DOI: 10.1177/0963662514549141
pus.sagepub.com
SAGE

Melanie Smallman
University College London, UK

PUS

Theoretical/research paper

Science to the rescue or contingent progress? Comparing 10 years of public, expert and policy discourses on new and emerging science and technology in the United Kingdom

Public Understanding of Science
1–19

DOI: 10.1177/0963662517706452
journals.sagepub.com/home/pus
SAGE

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Key messages

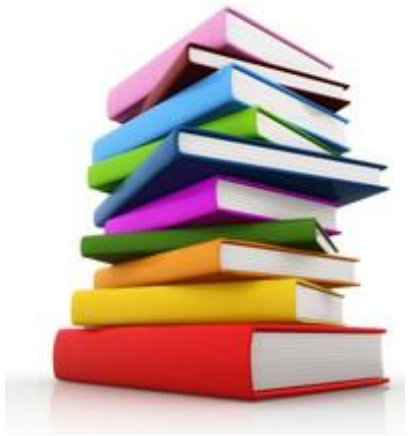
1. Science Communication over the past 20 years characterised as a move from ‘deficit to dialogue’

2. Science communication research has both driven and reflected this change in practice

3. Past ten years’ of public dialogue tells us lots about how public and experts think about science

4. Impact of public dialogue limited because different understandings of how science works in the world

5. Technology can help us understand more in future.



Computer Assisted Text Analysis

Methodological Note

“Ball”

Foot, Match, Score, Team, stadium.

Dress, Music, Dance, Champagne, hotel.


MAC
NITERÓI
EU SÓ VENDO A VISTA
MARCOS CHAVES
21 jun | 01 out
curadoria: Pablo León de La Barra e Raphael Fonseca

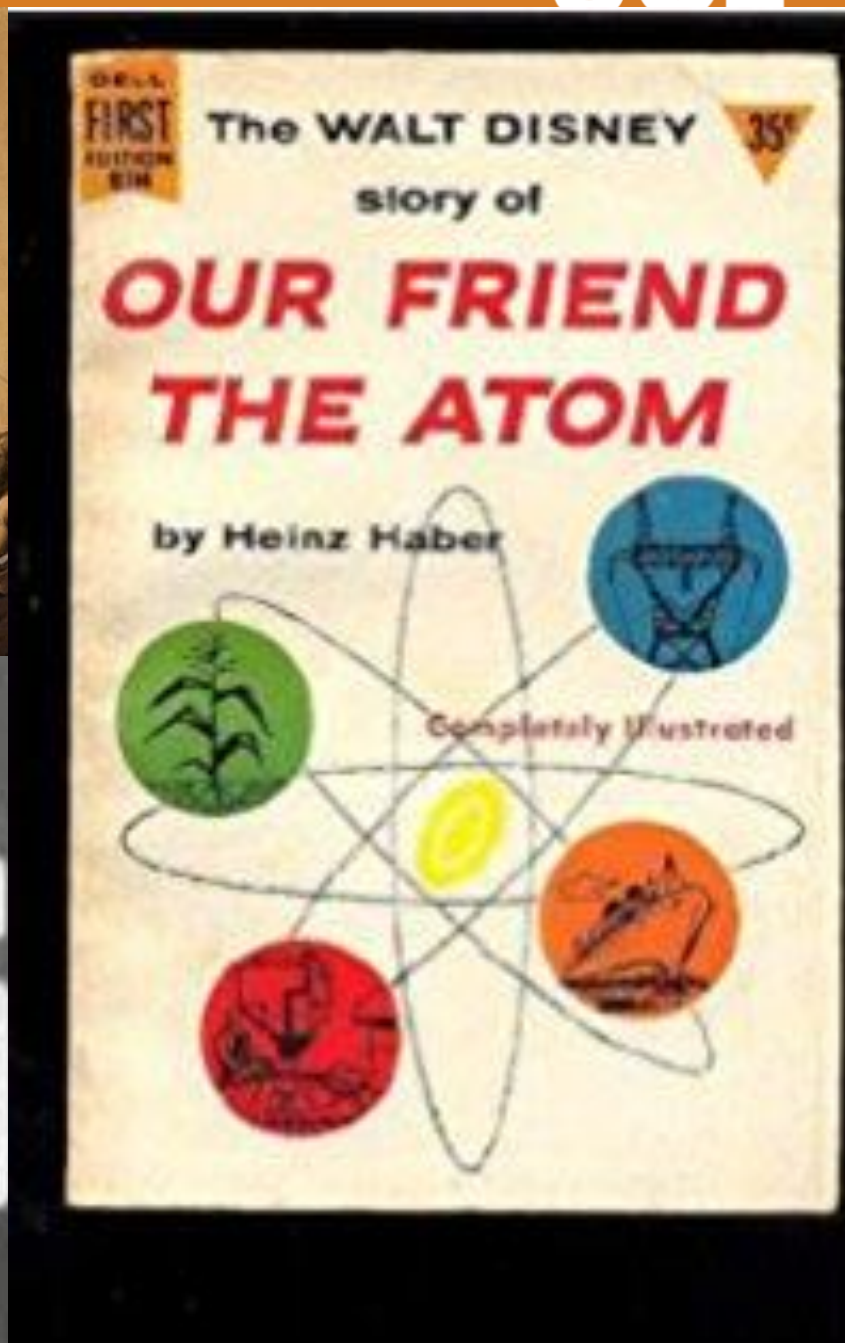
PUS in turbulent times III: Deficit to Dialogue, Champions to Critics (2014).

Looked at discourses in 50 most cited papers in the PUS journal from 1992 to 2010, split into four time periods:

1.1992–1994 (12 papers)
2.1995–1999 (12 papers)
3.2000–2002 (12 papers)
4.2003–2010 (14 papers)

I will describe historic context then research trends in these time periods


TOMORROW'S
WORLD


FIRST
The WALT DISNEY
35¢
story of
OUR FRIEND
THE ATOM
by Heinz Haber
Completely Illustrated

1985: UK's Royal Society 'Bodmer Report' into public's understanding of science

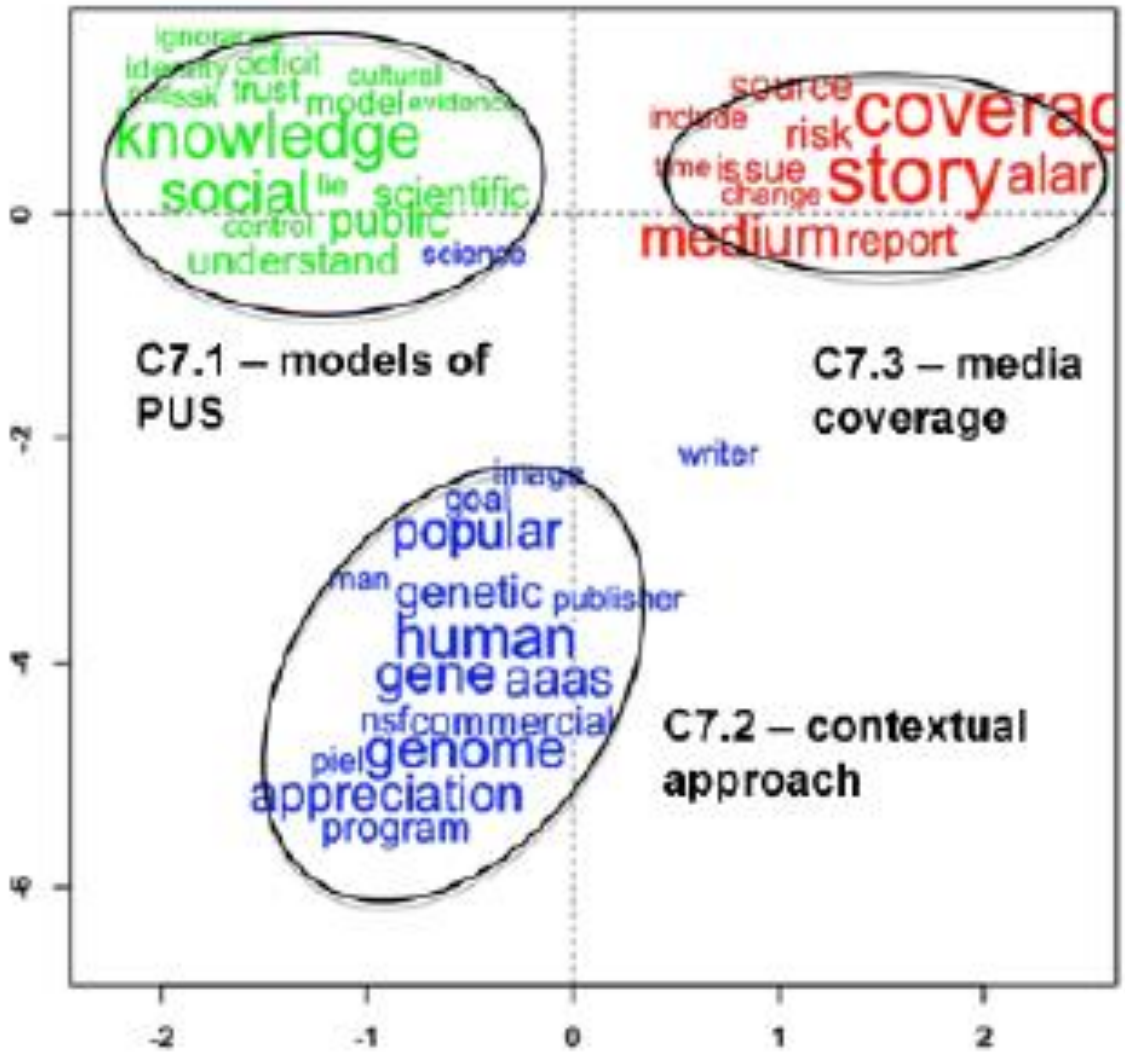
Science and technology play a major role in most aspects of our daily lives both at home and at work. Our industry and thus our national prosperity depend on them. Almost all public policy issues have scientific or technological implications. Everybody, therefore, needs some understanding of science, its accomplishments and its limitations.

“Improving the general level of public understanding of science is now an urgent task for the well-being of the country, requiring concerted action from many sections of society including, most importantly, the scientific community itself.”

PUS Movement ‘born’

- PCST Network (1989)
- MSc Science Communication, Imperial College (1991)
- Public Understanding Science Journal (1992)

Topics of most cited papers 1992-1994: Models and Media



1995 – cracks begin to show

- Belief that greater understanding leads to more positive attitudes informs many practical initiatives in the PUS
- Little evidence to support this
- **Evans and Durant (1995**), The relationship between knowledge and attitudes in the public understanding of science in Britain, Public Understanding of Science

.

- National sample of over 2000 UK respondents
- Understanding of science is weakly related to more positive attitudes in general: but, it is also associated with more coherent and more discriminating attitudes.
- While knowledgeable members of the public are more favourably disposed towards science in general, they are less supportive of morally contentious areas of research than are those who are less knowledgeable.
- Although an informed public opinion is likely to provide a slightly more supportive popular basis for some areas of scientific research, it could serve to constrain research in controversial areas such as human embryology

“May Sheep safely Graze” Wynne (1993)

- Case study on Chernobyl
- Local farmers and radioactivity had very different understandings of the local soils, Grazing conditions and uptake of radioactivity by the pastures
- Different understandings stemmed from their different world views

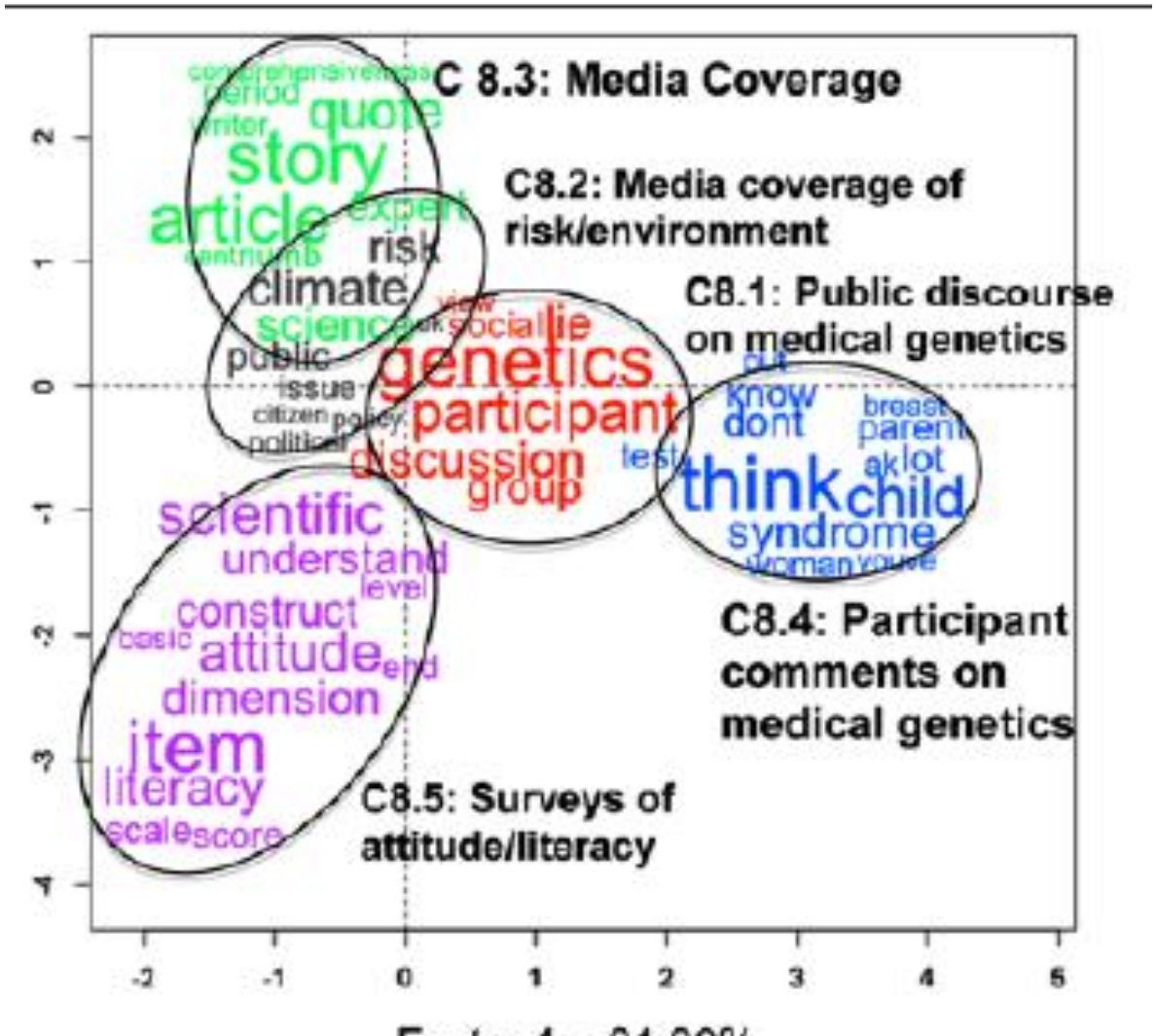
BSE Crisis


Children may have been at risk
New infection linked to mad cow disease
The Guardian
Beef warning sparks panic

BSE Crisis

Brent Spar 1995

1994-1999:emergence of risk and environment



1980s and 1990s:

Participatory technology assessment (PTA) emerging

Broadens knowledge base of decision by involving more perspectives in process of IDing + and – of technologies

Danish Board of Technology – consensus conferences

UK consensus conference on plant biotechnology 1994

Late 1990s

- "Democratic deficit" - citizens increasingly disillusioned with traditional forms of democracy
  - Concentration of power leaving citizens as passive (Ostrum 2000)
  - Social and economic change reducing social connections (Putnam 1993)
  - Globalisation leaving governments powerless (Kelin 2000)

- 1997 New Labour Government – new idea of citizenship, beyond 'consumer', emphsised role of participation

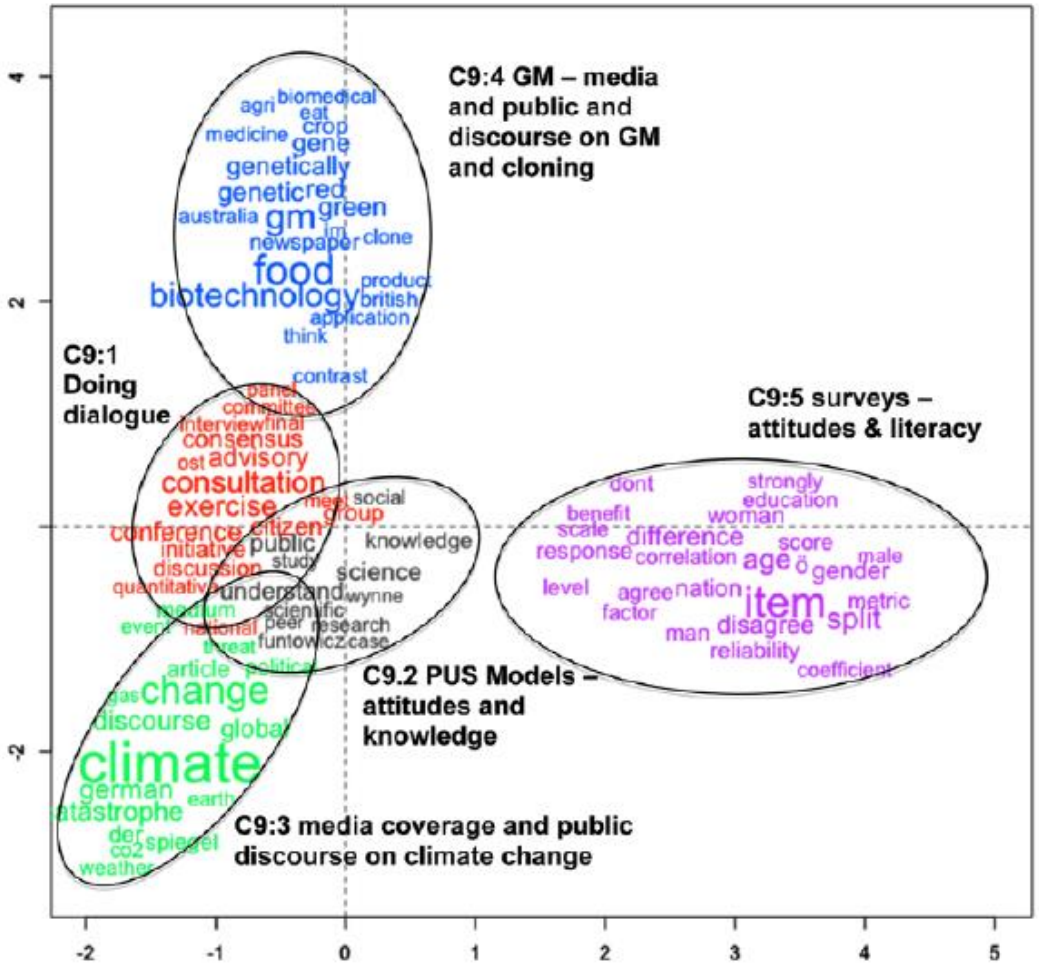
2000 House of Lords Science and Technology Committee Report ‘Science and Society’.

Identified a ‘crisis’ in public trust in way policy uses science

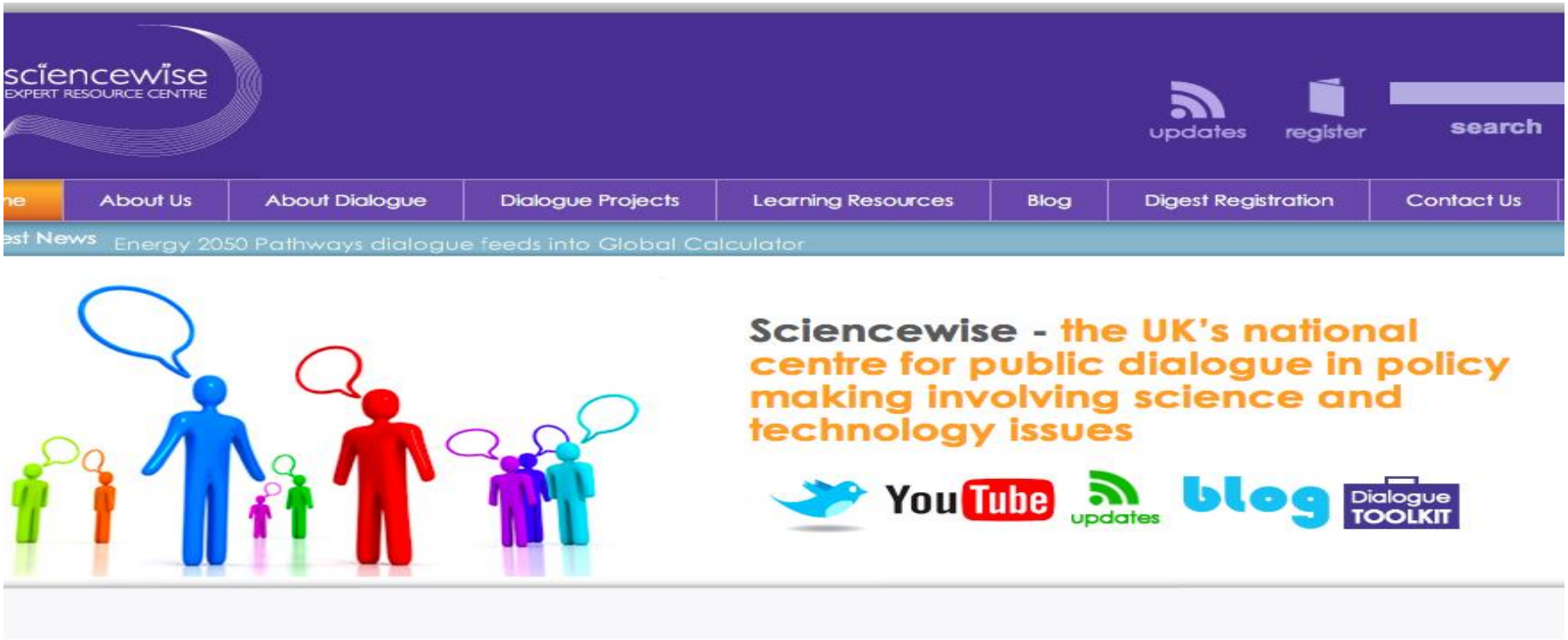
Recommended **“a new mood for dialogue”**

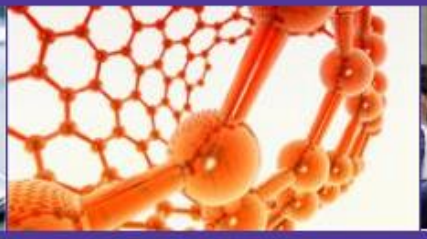
that would **“help the decision maker to listen to public values and concerns; and give the public some assurance that their views are taken into account, increasing the chance that decisions will find acceptance”.**

2000-2002: Doing dialogue - advocates

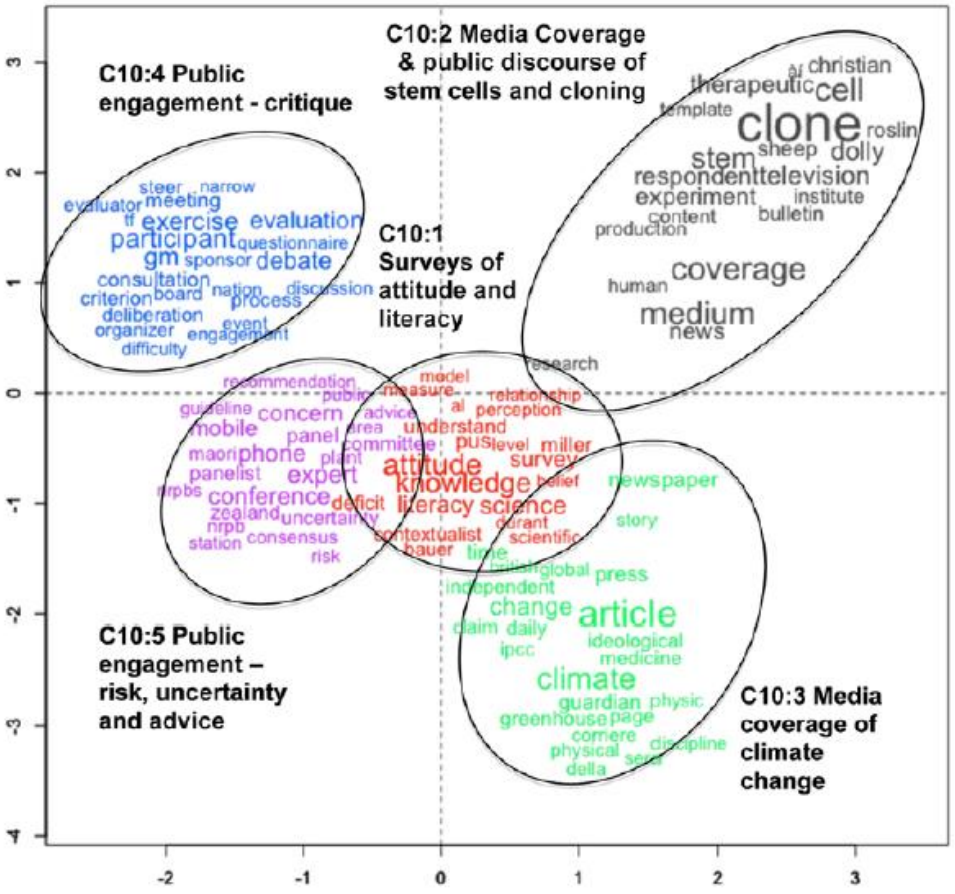


2004: ScienceWise Launched



Bioscience	Data Management and Use	Energy and Climate Change
		
Environment	**Food**	**Futures**
		
Healthcare	**Nanotechnology**	**Public Engagement Practice**
		
Regulation and Governance	**Risk, Resilience and Adaptation**	**Wellbeing**
		

2003-2010: critique of engagement practice



Critiques of engagement

- Fails to hear the public
- Fails to change science
- Fails to change policy

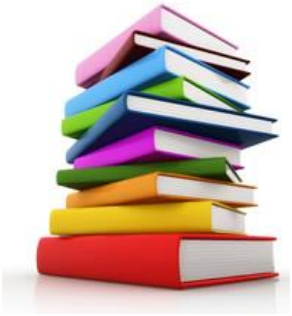
Two distinct imaginaries of how science works in the world

‘Elite’

‘Public’

Smallman 2017.

1. text of reports



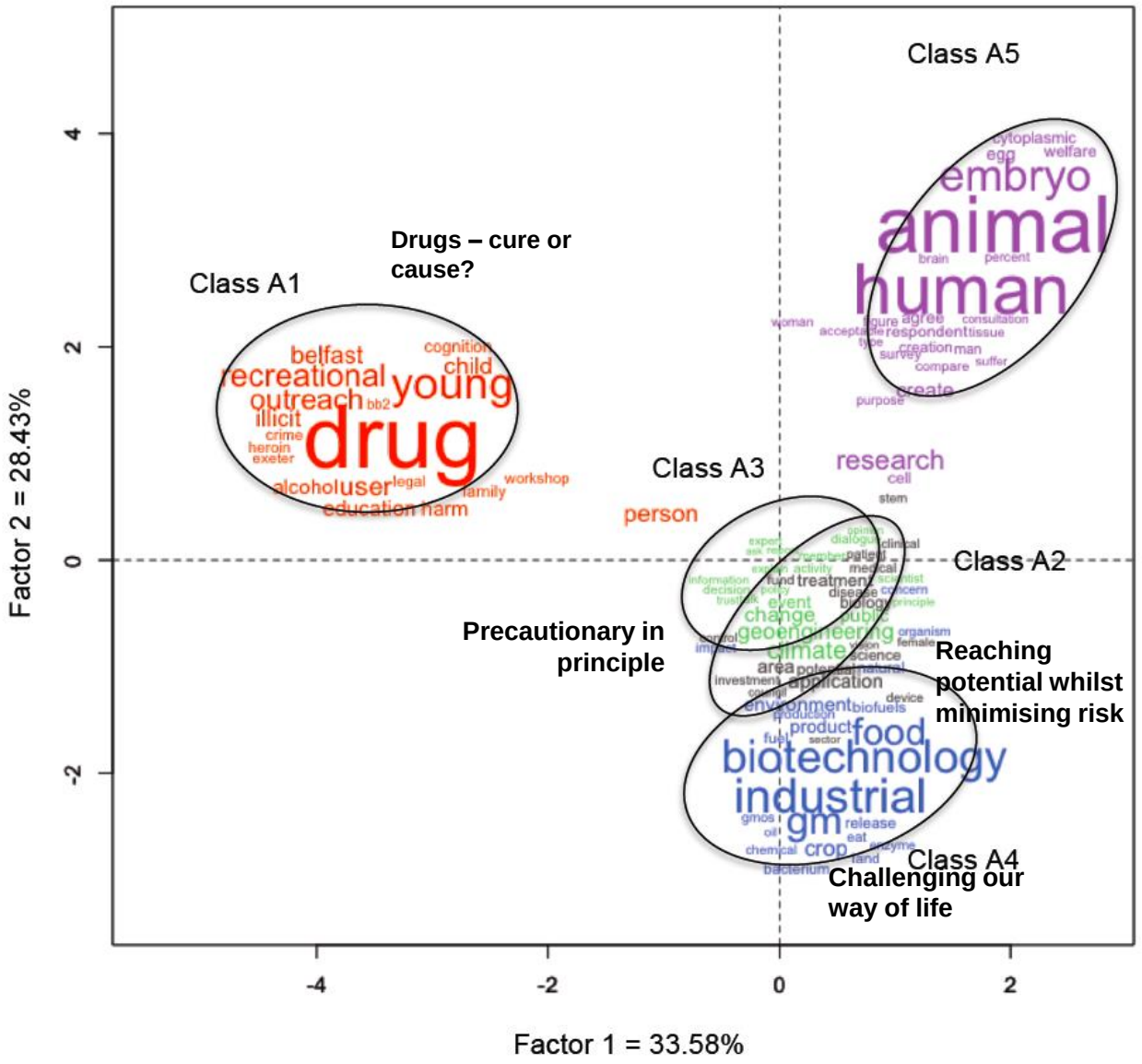
2. Computer assisted text analysis

3. Discourses

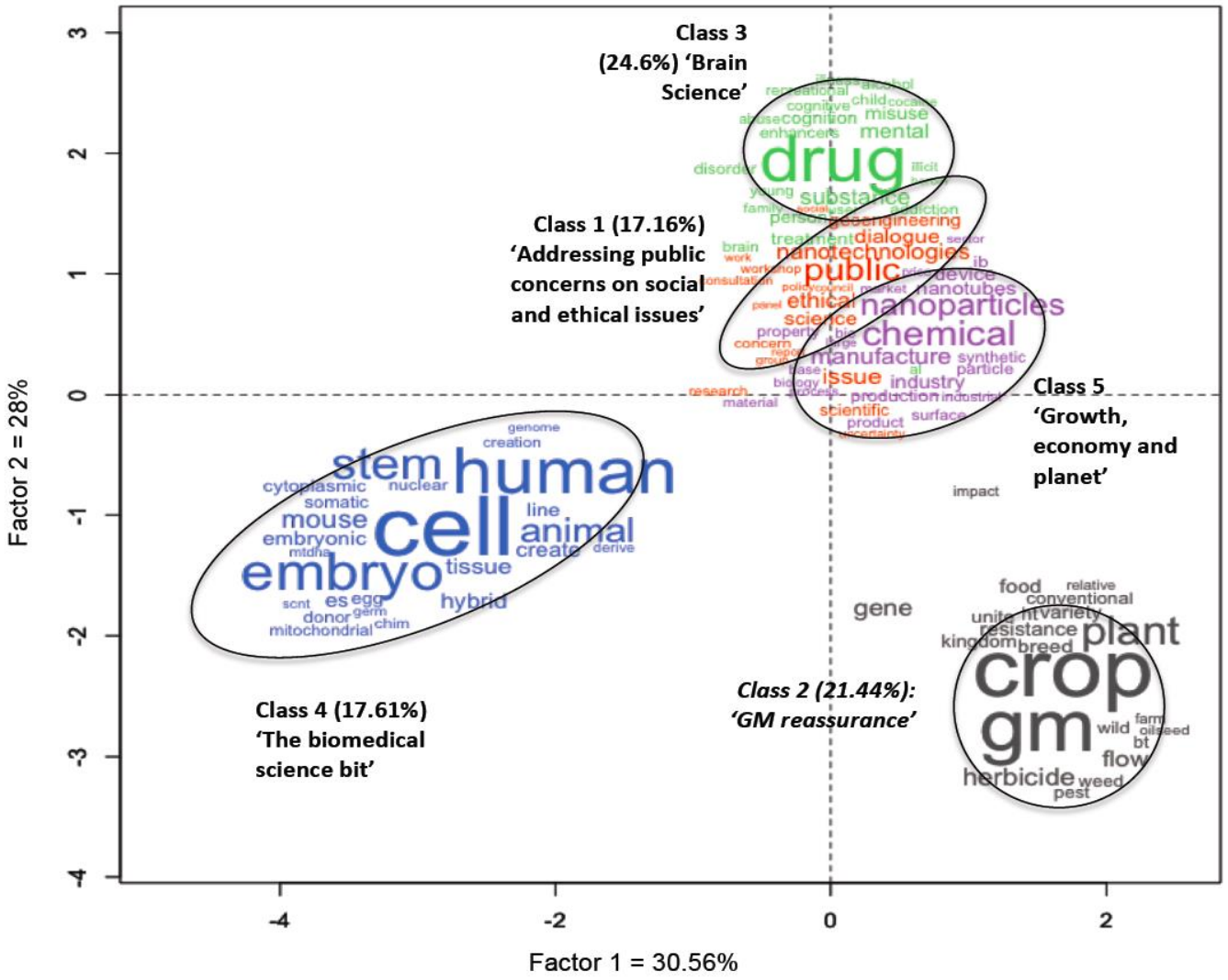
4. Sociotechnical imaginaries

5. Compare

Public


Class A5
Class A1
Drugs – cure or cause?
Class A3
Class A2
Class A4
Messing with nature
Precautionary in principle
Reaching potential whilst minimising risk
Challenging our way of life
Factor 2 = 28.43%
Factor 1 = 33.58%
4
2
0
-2
-4
-2
0
2
embryo
animal
human
drug
young
recreational
outreach
belfast
cognition
child
illicit
crime
heroin
exeter
alcohol
user
legal
family
workshop
education
harm
research
cell
stem
person
treatment
disease
concern
event
change
public
geoengineering
climate
science
area
application
environment
biofuels
product
food
biotechnology
industrial
gm
release
crop
chemical
bacterium
cytoplasmic
egg
welfare
brain
percent
woman
agree
consultation
respondent
tissue
creation
man
survey
compare
suffer
purpose
create

Experts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drug
substance
misuse
mental
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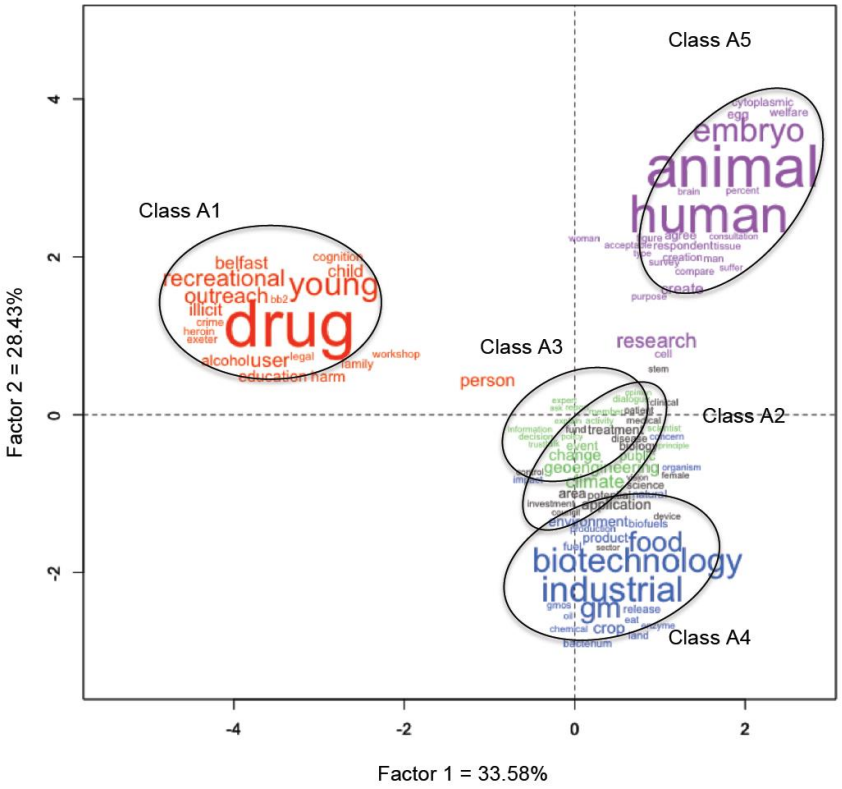
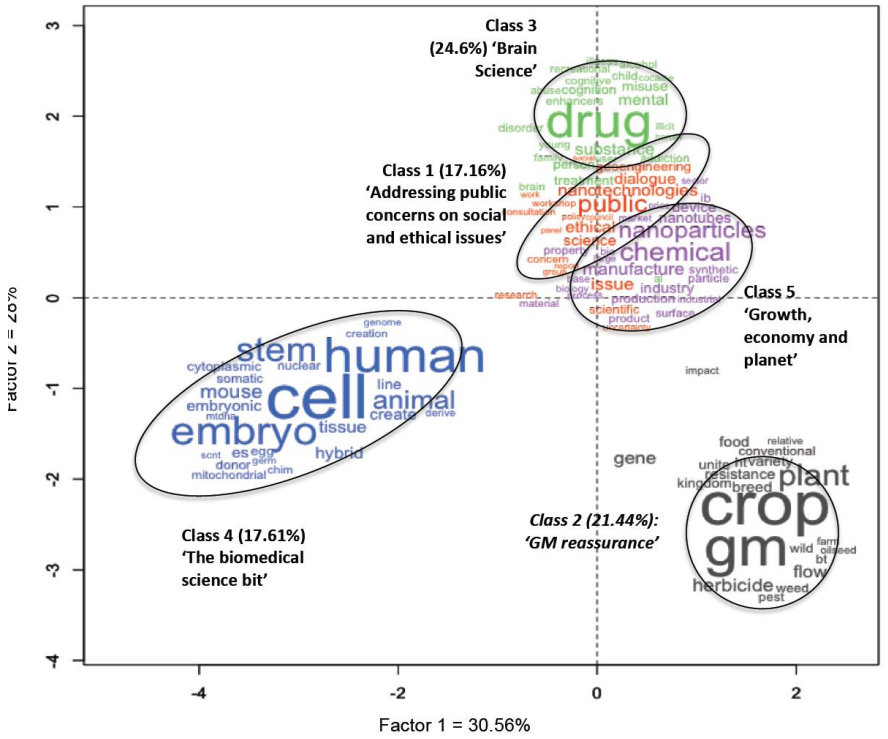
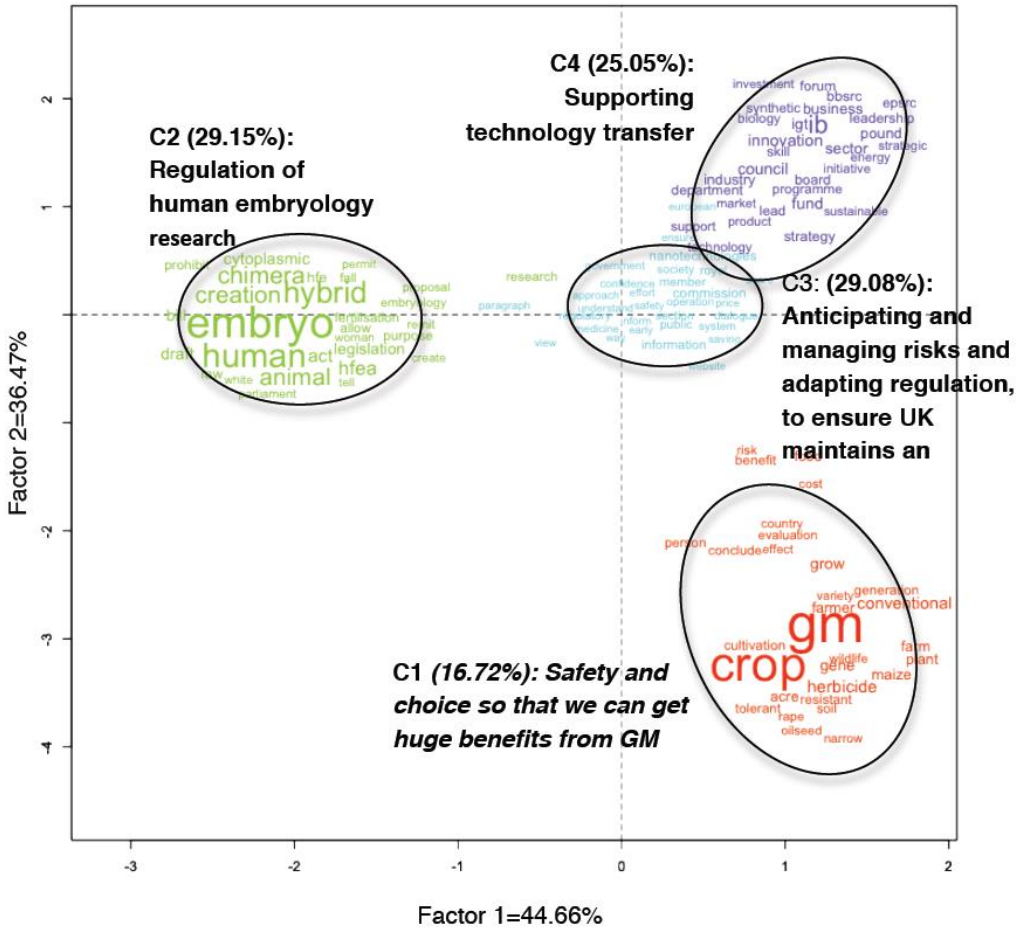
nanotechnologies
public
nanoparticles
chemical
manufacture
issue
industry
science
ethical
stem
human
cell
embryo
animal
tissue
mouse
gene
crop
gm
plant
herbicide
food
resistance
impact
Factor 2 = 28%
Factor 1 = 30.56%
3
2
1
0
-1
-2
-3
-4
-4
-2
0
2

Public

expert



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C4 (25.05%):
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C3: (29.08%):
Anticipating and managing risks and adapting regulation, to ensure UK maintains an
C1 (16.72%): Safety and choice so that we can get huge benefits from GM
Factor 2=36.47%
Factor 1=44.66%

Elite (policymakers and scientists): “Science to the Rescue”

- Science solves problems and provides answers
- Economic focus
- Risk quantifiable and manageable
- Downsides separate and overcome with more knowledge

Public: “Contingent progress”

- Science a force of good but also produces problems
- Unpredictable and depends on circumstances
- Downsides inherent parts of the science
- Challenge is to balance + and -

Two distinct imaginaries* of how science works in the world

‘Elite’

‘Public’

*sociotechnical imaginaries, Jasanoff & Kim 2009.

KEY LESSONS

Key lessons

1. enduring topics

- Media coverage
- Surveys
- Models of understanding

- **But precise focus has changed over time**
- More international (except dialogue)

Key Lessons

2. Case studies have come to dominate

- Important to start to learn overarching lessons
- Technology can help us take a wider view

Key lessons

3. Missing topics

- Quality of messages
- How information is processed
- Role of emotion

(found in other communication fields)

- How we open up the ‘expert’ imaginary to debate
- How different communities experience and imagine science

Key Lessons

4. It's still a fascinating field!

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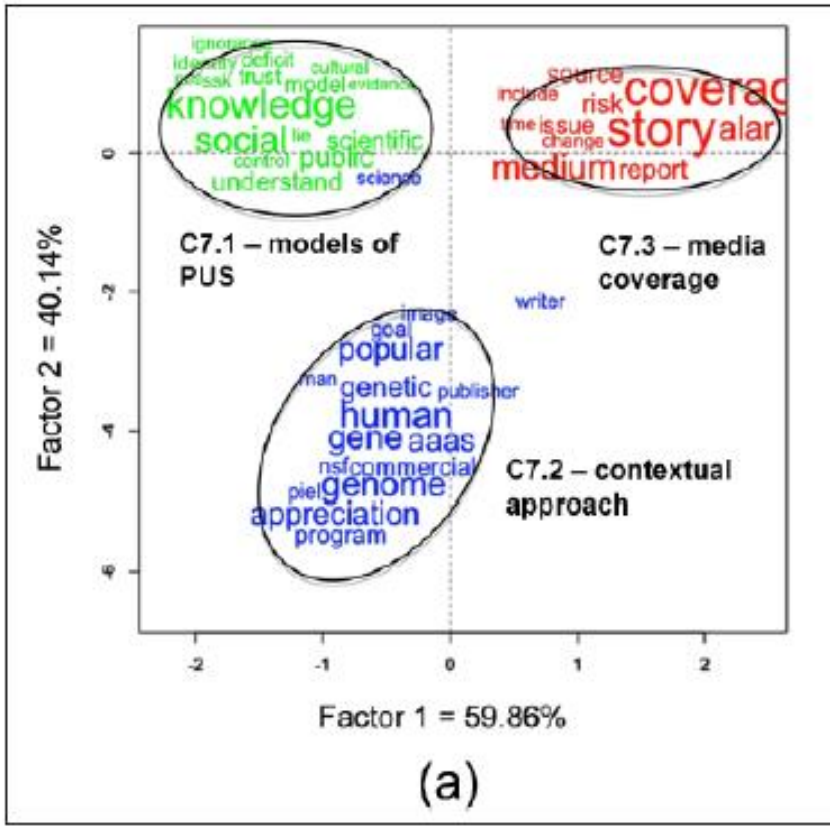
knowledge
social
public
understand
scientific
control
C7.1 – models of PUS
coverag
story
alar
medium
report
risk
issue
C7.3 – media coverage
writer
popular
genetic
human
gene
aaas
genome
appreciation
program
C7.2 – contextual approach
Factor 2 = 40.14%
Factor 1 = 59.86%
(a)

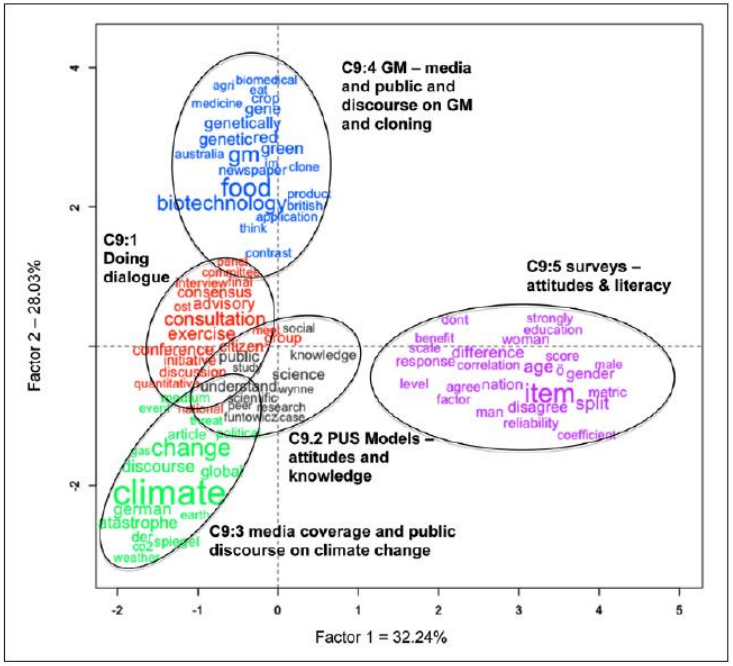

Figure 2. Correspondence analysis: 2000–2002.
PUS: *Public Understanding of Science*; GM: genetic modification.

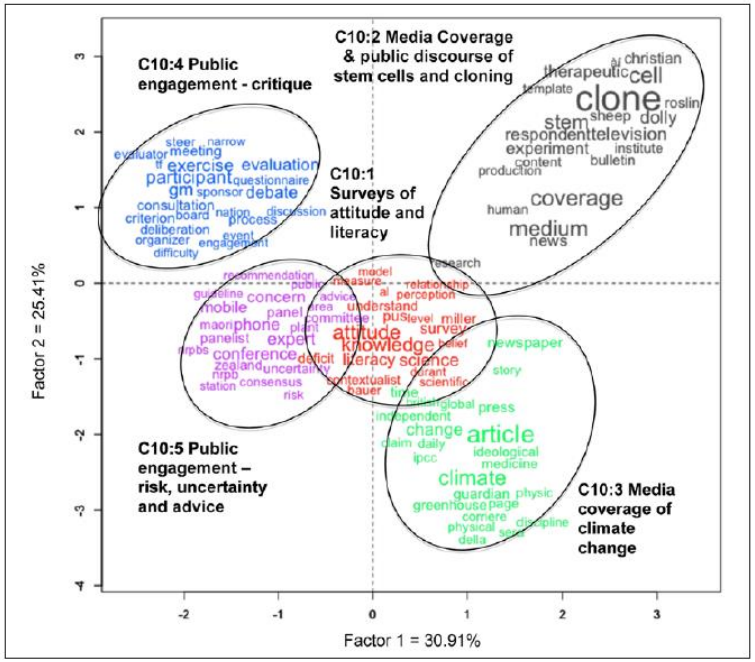

Figure 3. Correspondence analysis: 2003–2010.

Key findings

2. The Past ten years' of public dialogue Research tells us lots about how public & experts think about science

What did people talk about? How?

Looked at:

A. Reports from UK government funded public dialogue events (2000-2010)
B. Analogous ‘expert’ reports from learned societies
C. Government policy reports

Subjects covered:

- Nanotechnology
- Synthetic biology
- GM
- Animal-human hybrids
- DNA database
- Energy
- Stem cells
- drugs

Key findings

	Public	Expert	Policy
Sense of progress	Positive sense of contingent progress	Positive enthusiasm	Positive enthusiasm – benefits assumed not specified
Focus	Focus on people; nature important	Focus on science and uses technical language	Focus on economies and markets, science and citizens
View of social and ethical issues	Social and ethical issues inherent parts of science and technologies	Social and ethical issues seen as epiphenomena	Social and ethical issues seen as epiphenomena
Risk and certainty	Technologies seen as uncertain, unpredictable and contingent	Technologies seen as predictable and manageable with enough research	Unpredictability and contingency of technologies acknowledged, but focus on management
Role of industry	Industry seen as a diverting force	Industry seen as a beneficiary of science	Industry seen as a funder and beneficiary of science
Role of government	Role of government in managing balance and regulating role of industry	Role of government described but not prescribed	Role of government in funding basic research and enabling private sector

Two distinct imaginaries* of how science works in the world

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*sociotechnical imaginaries, Jasanoff & Kim 2009.

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Bringing it all together 1

Moves to democratise science challenging given these different imaginaries:

- How can public imaginary be accommodated in policy?
- How can elite imaginary be opened up for discussion?

Bringing it all together 2

How can this knowledge help us communicate better?

- Clusters of technologies/clusters of approaches?
- Role of nature?
- Understanding what people are really saying?

Bringing it all together 3

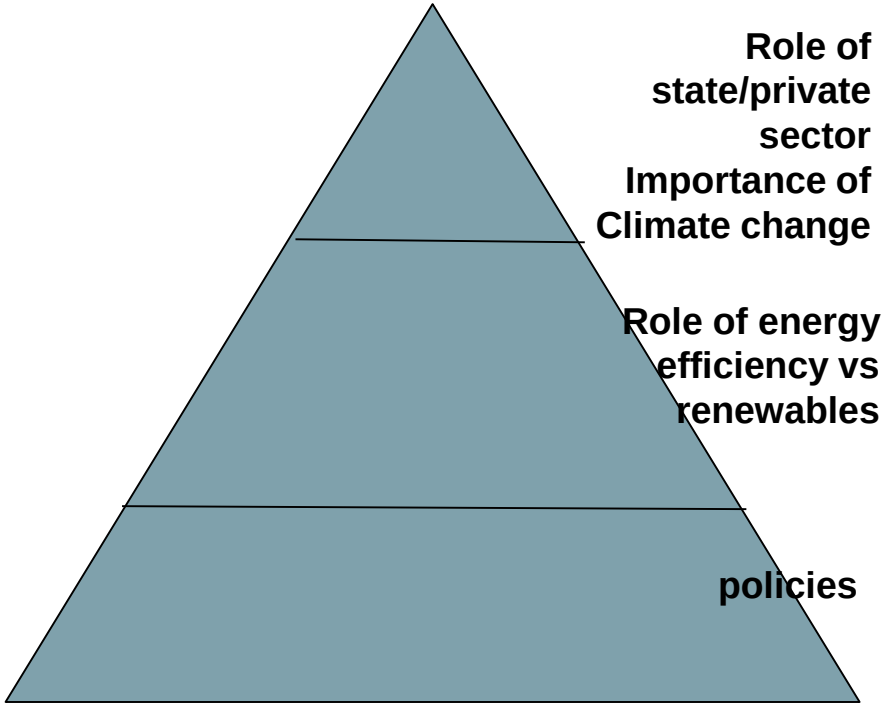
New technologies offer the potential to move beyond case study approaches to research

- Wider views and comparisons enable new patterns to be identified
- Real time analysis.

- **Machinery of policymaking based upon ‘elite’ understandings**
- **Public perspectives misheard as ignorance or resistance**
- **Values of scientists hidden as ‘neutral’**

5. Hierarchy of policy

- Science/public has more influence in particular places and in particular ways
- Meta narrative (ie decisions about the kind of world we want and the kind of issues that need to be addressed) negotiated at political not policy level.



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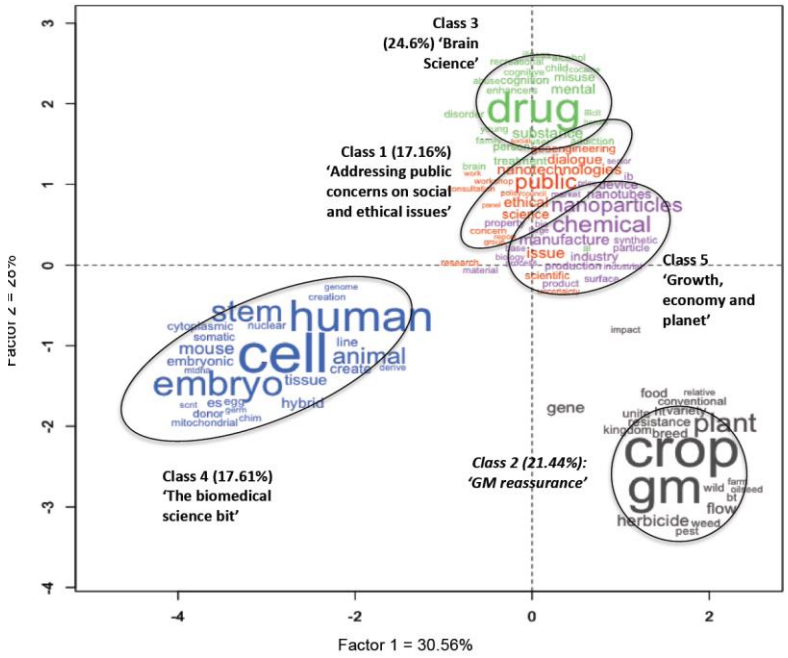
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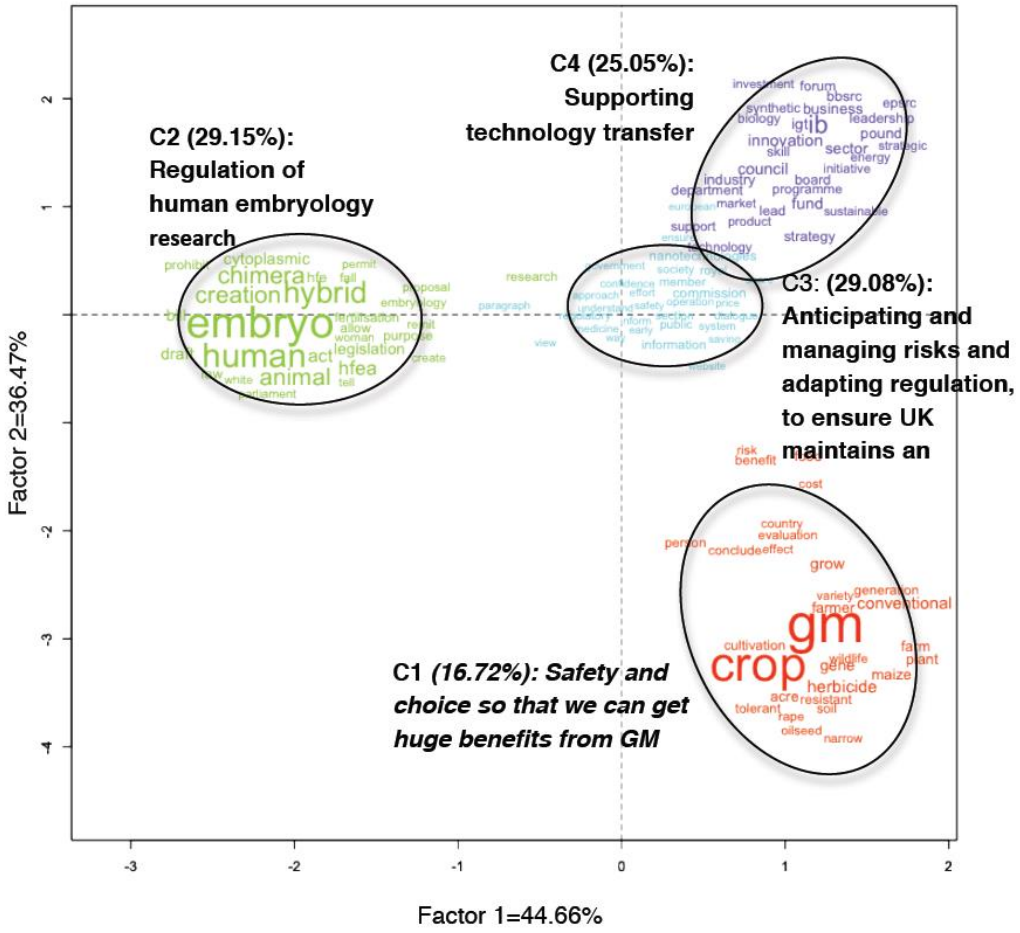
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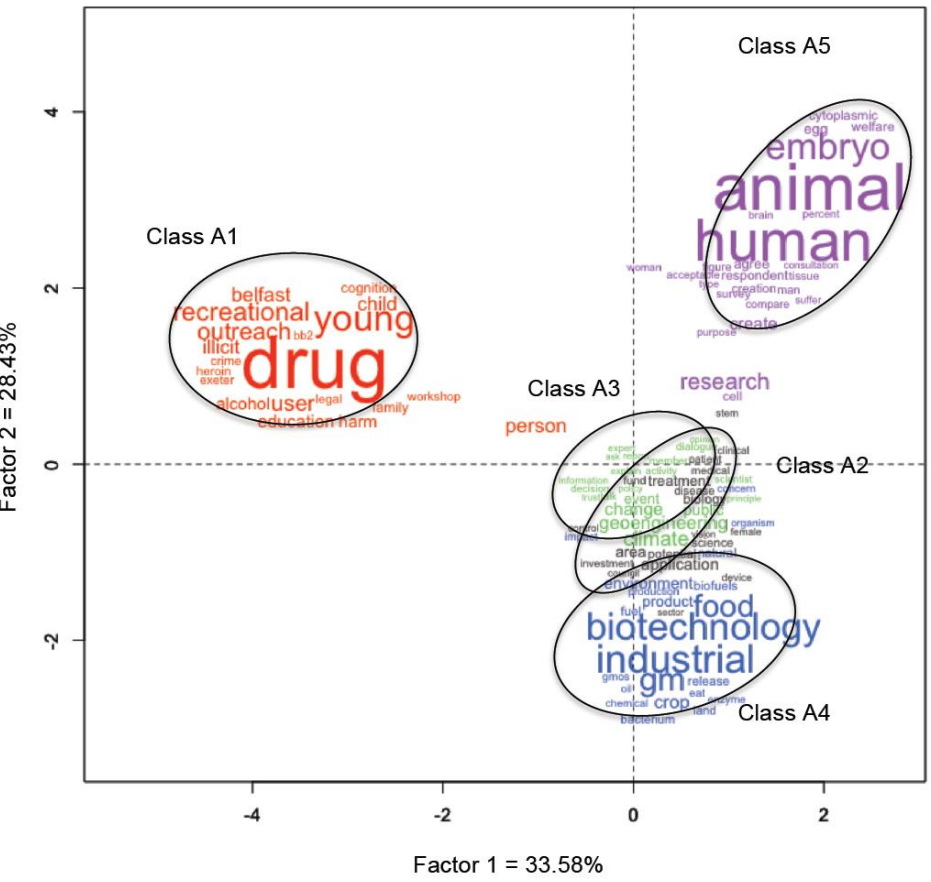
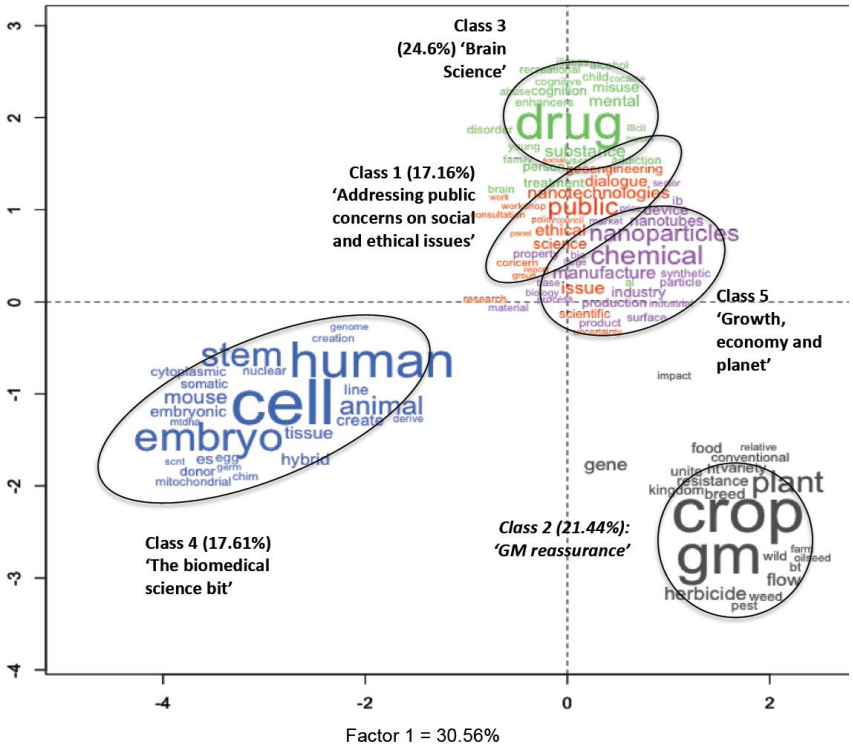
Key Findings
a. Public



1. Sense of progress and potential, but also unease
2. Views cluster around technologies
3. Social and ethical issues discussed as inherent to technologies
4. Role of nature key
5. Industry seen as necessary but diverting influence
6. Issues kept open ‘wait and see’ / contingency

Key findings
b. Strong similarities between expert and policymakers' views

Experts



Policymakers