The role of the university in turbulent times: Navigating the conversation between today and tomorrow in pursuit of sustainability

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The talk

- A sustainable university
  - Responsibility 1.0 scientific integrity
  - Responsibility 2.0 science for society
  - Responsibility 3.0 science with and for society
- A framework of responsible innovation
- Next steps for dialogue in turbulent times
Robert Merton, 1942: To produce reliable (and reproducible) knowledge accomplished by enforcing institutional norms (CUDOS)

➢ Communalism
  ✓ all scientists should have common ownership

➢ Universalism
  ✓ scientific validity is independent of status

➢ Disinterestedness
  ✓ scientific institutions act for the benefit of a common scientific enterprise

➢ Organised Skepticism
  ✓ scientific claims should be exposed to critical scrutiny

Associated with the linear model

➢ Innovation seen as inherently steerless and 'good'

➢ Basic scientists do not and should not consider applications

➢ But applications will emerge from basic science

➢ And the nations that support the basic science will gain economic rewards

➢ Macro-economic justification of Research and Innovation
✓ Honesty
✓ Scrupulousness
✓ Transparency
✓ Independence
✓ Responsibility

➢ “Responsibility means, among other things, acknowledging the fact that a researcher does not operate in isolation and hence taking into consideration – within reasonable limits – the legitimate interests of human and animal test subjects, as well as those of commissioning parties, funding bodies and the environment. Responsibility also means conducting research that is scientifically and/or societally relevant.”
Responsibility 1.0:
Supporting people

✓ Equality
✓ Diversity
✓ Inclusion
The five myths

I. Myth of infinite benefit
   ✓ investing in science inevitably leads to benefits in society

II. Myth of unfettered research
    ✓ science is most productive without societal interference

III. Myth of accountability
     ✓ science can and should police itself

IV. Myth of authority
    ✓ scientists know best

V. Myth of the endless frontier
   ✓ science embodies the human desire to grasp the underlying workings of nature
The five myths (revisited)

I. Myth of infinite benefit
✓ investing in science inevitably leads to benefits in society
❖ what about scientific controversies?
❖ can/should they have been anticipated?

II. Myth of unfettered research
✓ science is most productive without societal interference
❖ what does the evidence say? who should set scientific priorities?

III. Myth of accountability
✓ science can and should police itself
❖ is it competent to do so?

IV. Myth of authority
✓ scientists know best
❖ what is the role for local or indigenous knowledge?

V. Myth of the endless frontier
✓ science embodies the human desire to grasp the underlying workings of nature
❖ what, if any, is the role of values? Are not values part of the scientific endeavour?
Scientific controversies
Science-based policy?
The Lund Declaration 2009 called upon Member States and European Institutions to focus research on the grand challenges of our times by moving beyond rigid thematic approaches and aligning European and national strategies and instruments. During the last six years, European institutions, member states, and associated countries have taken important steps to align and coordinate resources and shift the focus towards society’s major challenges.

Today Europe still faces a wide range of major challenges and business as usual is not an option. The Lund Declaration 2015 therefore emphasises the urgency of increased efforts in alignment at national and European level and that investments in research and innovation better and more rapidly be exploited to the benefit of society.

It identifies four priority areas, each with defined priority actions, and calls on all stakeholders to take these priorities into account in their field of responsibility.

Responsibility 2.0 science for society

### Pillar 1: Excellent Science
- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

### Pillar 2: Global Challenges and European Industrial Competitiveness
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

#### Clusters
- Joint Research Centre

### Pillar 3: Innovative Europe
- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology

### Widening Participation and Strengthening the European Research Area
- Widening participation and spreading excellence
- Reforming and Enhancing the European R&I system
MISSION AREAS:

- Adaptation to climate change, including societal transformation
- Soil health and food
- Climate-neutral and smart cities
- Cancer
- Healthy oceans, seas, coastal and inland waters

#HorizonEU | #EUmissions
Context for internalisation

- Collective problems we face are global and interconnected
  - Solutions also need to be global and interconnected
- New (digital) technologies provide radical new opportunities
- Internalisation is predicated on goals and values that need to be cherished
  - Commitment to excellence (research and education) and to realising potential (of science and individuals)
  - Commitment to do our part to benefit science, industry, and society
  - Commitment to the productive and peaceful development of our planet
  - Commitment to capacity building and expanding the academic base
- Yet most public funding (still) tends to be national
Is ‘science for society’ sufficient?

‘Does new science and innovation not create new dilemmas and challenges?’

‘Does society not define grand challenges in plural ways?’
Grand challenges as “wicked problems”

The politics of scientific knowledge: whose knowledge and with what (seen and unforeseen) effects

- Difficult or impossible to solve
- Can legitimately be defined in different ways
- Stakeholders have radically different world views and different frames for understanding the problem
- Often have no clear precedent
- Nor a clear solution or goal state
- Every problem is a symptom of another problem

Examples
- Climate change
- Eradication of exogenous pests
- Food security
- Genetically modified foods
- Nuclear energy
- Obesity
- Offshore oil prospecting
- Pandemic influenza
- Reduction of agricultural greenhouse gases
- Social injustice
- Water quality
Responsibility 3.0
science with and for society — responsible innovation

“a way to open up research and innovation activities, allowing all societal actors to work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of European society”
(European Commission 2013)

“taking care of the future through collective stewardship of science and innovation in the present”
(Stilgoe, Owen and Macnaghten 2013)
What is responsible innovation?

➢ “Helping society to get better at the conversation between today and tomorrow”

(Robert Madelin: 2016)
What is responsible innovation?

“The future could be otherwise”
(Alan Irwin 2016)
What is responsible innovation?

“We have delegated ‘what is good’ to the market”
(Rene von Schomberg: 2016)
A (radical) rationale for RRI

“unless we find ways to shape science and innovation in tune with widely shared social values, future changes will occur without explicit societal shaping, commonly driven by the power of incumbent interests and the delegation of ‘the good’ to market forces”
1. What is ‘responsible innovation’ – and what is different about it?

2. Why is it important – and why now?

3. Implications for UK research councils?
A framework for responsible science governance
Collingridge’s control dilemma

➢ When a technology is young enough to influence its future trajectory, you can’t know where it will lead.

➢ When a technology is mature enough for you to have a good idea of its consequences, it’s too late to change it – it’s locked-in.
Modes of responsibility in science governance
Reconfiguring responsibility

• From retrospective... (*accountability* and *liability*)
• ... to prospective (*care* and *responsiveness*)
• ... and collective
• Reconfiguring role responsibilities and general responsibilities
• Second-order (or meta-)responsibilities
Where Are We Going?
legitimacy
Response: responsive science

Responsible innovation needs to respond to kinds of questions that publics typically ask of Scientists and innovators, or would like to see scientists ask of themselves:

a. Purposes
b. Trust
c. Inclusion
d. Speed and direction
e. Ethics and trade-offs
New lines of questioning on responsibility aligned with public concerns

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<tr>
<th>Product questions</th>
<th>Process questions</th>
<th>Purpose questions</th>
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<tr>
<td>What are the likely risks and benefits?</td>
<td>How should research and innovation take place?</td>
<td>Why should this research be undertaken?</td>
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<td>How will the risks and benefits be distributed?</td>
<td>How should standards be drawn up and applied?</td>
<td>Why are researchers doing it?</td>
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<td>What other impacts can we anticipate?</td>
<td>How should risks and benefits be defined and measured?</td>
<td>Are these motivations transparent and in the public interest?</td>
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<td>How might these change in the future?</td>
<td>Who is in control?</td>
<td>Who will benefit?</td>
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<td>What don’t we know about?</td>
<td>Who is taking part?</td>
<td>What are they going to gain?</td>
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<td>What might we never know about?</td>
<td>Who will take responsibility if things go wrong?</td>
<td>What are the alternatives?</td>
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<td>How do we know we are right?</td>
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Anticipation

- From predictive to participatory
- Expectations and Imaginaries
- Tools
- Anticipatory Governance
- Vision assessment
- Scenarios
- Barriers to anticipation
- Guston, 2012; van Lente, 1993;
- Fortun, 2005; Barben et al, 2008

Inclusion

- The ‘new’ scientific governance
- Dialogue and ‘mini-publics’
- The challenge of legitimacy
- Input and outputs
- Wilsdon and Willis, 2004; Grove-White et al, 1997;
- Goodin and Dryzek, 2006; Irwin et al, 2013;
- Lovbrand et al 2011

Reflexivity

- From 1st to 2nd order
- Tools
- Codes of conduct
- Midstream Modulation
- Wynne, 1993; Schuurbiers, 2011;
- Swiestra, 2009; Fisher et al, 2006

Responsiveness

- Answering and reacting
- Diversity and resilience
- Value-sensitive design
- De facto governance
- Political economy of innovation
- Responsibility as metagovernance
- Pellizoni, 2004; Collingridge, 1980; Friedman,
- 1996; Stirling, 2007; Kearnes and Rip, 2009
What is known?
What is plausible?
What is possible?

‘What if’ questions

Increasing resilience
Shaping agendas for socially-robust research
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Indicative techniques and approaches</th>
<th>Objectives of techniques and approaches</th>
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<tr>
<td>Anticipation</td>
<td>Foresight</td>
<td>Identification and appraisal of possible and plausible impacts of research and innovation pathways</td>
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<td>Horizon scanning</td>
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<td>Scenarios</td>
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<td>Technology assessment</td>
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<td>Risk assessment</td>
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<td>Life-cycle assessment</td>
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<td>Vision assessment</td>
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<td>Socio-literary techniques</td>
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How serious and continuous is the discussion?

How early are citizens consulted?

How much care is given to group design?

How diverse is the group?

Quality of dialogue as a learning exercise
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<td>Inclusion</td>
<td>Consensus conferences, Citizen assemblies, Focus groups, Science shops, Deliberative mapping, Multi-stakeholder partnerships, Lay membership of expert bodies, User-centred design, Open innovation</td>
<td>Public and stakeholder deliberation on the visions, impacts and broader socio-economic questions associated with research and innovation</td>
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Institutional reflexivity
A public matter
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<td>Reflexivity</td>
<td>Multidisciplinary collaboration and training</td>
<td>Socio-technical integration and interdisciplinarity in research and innovation practice</td>
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<td>Embedded social scientists and ethicists in laboratories</td>
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<td>Mid-stream modulation</td>
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<td>Ethical technology assessment</td>
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Leadership and openness

Capacity to respond to three dimensions above

Capacity to embrace diversity

Capacity to change direction

‘Responsiveness’

Commitment to the public interest
Alignment of actors
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<td>Responsiveness</td>
<td>Constitution of grand challenges and thematic research programmes</td>
<td>Policy and governance mechanisms for the practical implementation of responsible innovation</td>
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<td>Regulation and standards</td>
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<td>Open access and other mechanisms of transparency</td>
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<td>Niche management</td>
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<td>Value-sensitive design</td>
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<td>Codes of conduct</td>
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<td>Alternative intellectual property regimes</td>
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‘Formal Adoption by EPSRC in 2013’
Collaborative Project for Technological Convergence Related to Enabling Technologies

Assessment criteria

➢ Excellence
➢ Impact
➢ Implementation
➢ Responsible innovation
  ✓ reflections on intentional and unintentional impacts of the technologies they are developing
  ✓ involve relevant stakeholders in these activities
Next Steps for responsible innovation and internationalisation
Understanding public attitudes

Global lessons from GM crops

Dialogues on gene editing in livestock

Dialogues on responsible innovation on the biosciences
The different futures that lie ahead.

+1.5 °C

+2 °C

+3 °C
Institutional embedding

With funders

With universities

With training
Thanks