# Understanding environmental knowledge controversies

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# Project Aims

- The relationship between science and policy is under urgent review with the Treasury, amongst others, identifying the improvement of public engagement in science as a priority.

- This project moves engagement upstream, developing a new approach to interdisciplinary environmental science that requires social and natural scientists to re-evaluate their practices and involves non-scientists *throughout* the research process.

- This approach is developed through an empirical research focus on diffuse environmental issues associated with rural land management, taking *flooding* as its working case study and drawing lessons for related issues, particularly, pollution.

# How to make public science more public?

- Scientific knowledge claims and technologies are increasingly routinely subject to public controversy - from GM to nanotechnology
- Research designed to ‘settle’ environmental uncertainties can anticipate being the subject of public interrogation and dispute
- Such ‘knowledge controversies’ should be seen less as a troublesome problem to be avoided than as a creative process to be harnessed by public policy and public science

# Project objectives

- *First*, an analysis of the *production of environmental science*, asking how particular 'knowledge technologies' (*e.g.* hydrological models) become 'hard-wired' into institutional procedures, and with what consequences for public controversy and engagement (led by Sarah Whatmore, University of Oxford)

- *Second*, an analysis of flooding events that develops an integrative methodology using *Minimum Information Requirement (MIR) modelling* to forecast the in-river and floodplain effects of land management practices at a variety of scales and visualise them in ways that enable public engagement (led by Stuart Lane, University of Durham)

- *Third*, and building upon these, the development and evaluation of *Competency Groups* as the basis of a new way of doing interdisciplinary public science, drawing lessons for other diffuse environmental issues, such as pollution, and beyond RELU to other research contexts (led by Neil Ward, University of Newcastle).

# Objective 1: The production, circulation and contestation of environmental science

- How are environmental knowledge claims and technologies produced?
- How do they become ‘hardwired’ into the protocols of government and commercial organisations? And
- How and why do they become subject to scientific dispute and public controversy, with what consequences for public engagement and trust?

# Objective 2: an integrative methodology for forecasting flood risk

- To forecast the in-river and floodplain effects of land management practices
- Using Minimum Information Requirement (MIR) modelling techniques to
- (i) handle the potential catchment impacts of different decisions at a variety of scales and to
- (ii) visualise these impacts in ways that invite and enable public interrogation and engagement.

# Objective 3: Developing and evaluating a new approach to interdisciplinary public science

Our approach has two key dimensions

- *A 'radical' mode of interdisciplinarity* that requires participating social and natural scientists to engage constructively with the working assumptions and methods that under pin each others' research practices and, in so doing, to re-evaluate their own.

- *An 'upstream' mode of public involvement* that requires participating scientists to engage constructively with the different environmental knowledge claims and practices of concerned publics, building these perspectives into the research process from the outset

- The combination of these two dimensions closely resembles the kind of '*transdisciplinary*' practice advocated by Marilyn Strathern (2004)

# Competency Groups

- A methodology for translating these ‘transdisciplinary’ principles into research practice associated with the Belgian Philosopher of Science *Isabelle Stengers*.

- Competency Groups (CGs) involve (i) social and natural scientists and (ii) scientists and non-scientists *working together* from the outset of a research project in order to generate new collective skills (or competences).

- CGs require a sustained commitment from all participants to learning to negotiate each others’ different ways of ‘framing a problem’ and to appreciate the different kinds of ‘expertise’ each brings to the collaborative process of environmental knowledge production.

| Modes of Public Involvement | | Modes of Scientific Interdisciplinarity | | |
|---|---|---|---|---|
| | | Multi-disciplinary | Functional Interdisciplinary | Radical Interdisciplinary |
| | Public Understanding | | | ↑ ↑ |
| | Binary | | | ↑ ↑ |
| | Integrated | ←←← | ←←← | Competency Groups |

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SUMMARY

- Developing  and evaluating a new approach to interdisciplinary public science
- Through a study of diffuse land management practices that affect water environments.
- Focusing on the ways in which efforts to locate and manage flood risk become subject to scientific dispute and public controversy