Developing a Deeper Conversation.

CRUISSE
Challenging Radical Uncertainty in Science, Society and the Environment

David Tuckett and Lenny Smith
RISCS Community Meeting 23-24 May 2018
...bringing decision-makers in industry, government and the third sector together with academia

...starting from decision-maker defined issues – i.e. the real world problems created by different types of uncertainty, as they are experienced by practitioners

....an interdisciplinary network to deliver a detailed guide to “Uncertainty Triage”, and a Code of Practice for making resilient decisions under uncertainty.

**Resisting Certainty: Bringing Reflective Assistance.**
Some participants in the CRUISSE Network
Some Real World CRUISSE Problems

- How to prepare for and regulate autonomous vehicles.
- How to anticipate and mitigate humanitarian disaster [Action research participation pilot project]
- How to respond to competitor innovation or the changing demand for oil and gas.
- How to exploit digital opportunity for the NHS?
- How to prevent or mitigate flooding? [2 pilot projects]
- What should be said and done if there is a 24 hour plus power outage? [Theatre Engagement pilot project]
- How to help farmers to respond to weather and climate change.
- What is a resilient policy for critical infrastructure and cyber security and, more generally, regulation? (Ethnographic pilot projects)
Modern Traditional Analysis

Modern Creative Analysis

Acceptance of Partial Solutions and Limited Insight

Sixteen Years of Focusing on the System
Uncertainty…concerns events where it is not possible to define, or even imagine, all possible future outcomes, and to which probabilities cannot therefore be assigned…..A capitalist economy generates previously unimaginable ideas, new products and new technologies.. (Mervyn King p 127)

For decision-makers? A problem of knowledge including of the emotional response to not knowing?

Box 3 should not be an excuse for paralysis

Modelling skills remain useful but need to be viewed as part of a wider interdisciplinary tool box for decision-making, the contents of which seem currently to be almost unknown to many decision-makers.

A tool box (code of practice) can be begun to be drawn from the fruits of accurate knowledge of the human social, psychological, political and institutionally driven behaviours that characterise the context in which models will be used and what they will be used for and by whom.
To overcome paralysis requires conviction.

- Cognition and emotion are intertwined. (Emotion as metacognition)
- Knowledge - as contextually constructed through narrative.
- Models? Reified representations of the world or imaginative cognitive prosthetics that may be useful?
- Mental states are organisers of thought.
  - Ds and Is
  - Phantastic Object narratives
  - Groupthink/Groupfeel

Making decisions resilient and adaptive?

- Use metrics and monitoring devices which are contextually valid (with appropriate assumptions and framing)?
- Attend to organization design - decision-making and decision justification occur in social systems – defensive decision-making is a Ds Outcome.
CNT
Selecting and supporting action under (radical) uncertainty

Reproduced from Tuckett and Nikolic, 2017
Weather-Like Challenges & Climate-like Challenges
Is Computation Always the Best Way Forward?

Climate-like tasks are “one off.”
Potentially rather high impact.
If this result was based on a new-fangled simulation, how would you develop enough confidence in the simulation to test the bomb?

Communication of uncertainty
IPCC “not likely”: from 34% to 0%
CIA  “not probable”: ~25% +/- 12%
Notice the “uncertainty storms”!

The point is we cannot do this for all thresholds and ranges; we extract only information which is in the ensemble forecast: it is not a probability!

Figure 52: Daily FDE plots for NCEP hi resolution forecast at LAG for one degree error for likely success level 3 in 4.
Some pointers

- prove the security team is working
- are security initiatives paying off?
- what problems to spend money on next
- can you project an outcome based on an investment?
- how much will it cost to provide a metric?
- what raw data does your organisation collect?