Societal Deliberation: Formal and Informal Behaviours

Simon French and Nikos Argyris
simon.french@warwick.ac.uk
System 1 and System 2 Thinking

- **System 1**
  - ‘intuition’ or ‘gut reaction’
  - superficial analysis/interpretation of the relevant information
  - based on much simpler forms of thinking on the fringes or outside of consciousness. ⇒ **FAST**

- **System 2**
  - conscious analytical thought
  - detailed evaluation of a broad range of information. ⇒ **SLOW**
  - often based on a rule that is assumed to provide the ‘correct’ answer or solution;
  - Note System 2 does not mean forgetting emotions and values.
What does this mean?

- In modelling and analysis
- In communicating
- In just about everything ....

... we need to communicate, discuss and analyse using System 2 thinking but remember that our colleagues, our customers, our stakeholders, the public, etc. may – probably will – respond using System 1 thinking.

Moreover, we are ourselves subject to System 1 thinking!
Prescriptive Decision Analysis

System 1: Descriptive Decision Studies
provide models of how people do make inferences and decisions

System 2: Normative Decision Theory
provide a model of how people should make inferences and decisions

Prescriptive Decision Analyses
seek to guide decision makers towards the ideals encoded by normative theories within the context of a real, often ill-defined problem, mindful of their cognitive characteristics
Edwards (1954) pointed to this tension between
– behavioural decision making (System 1 thinking)
– normative decision theory (System 2 thinking).
Since then decision analysts have been building methods of
– structuring problems,
– eliciting judgements,
– exploring and communicating results
to build prescriptive analyses that support individuals and small groups of decision makers
The Bayesian DA Paradigm

Consequence Models
\[ y = c(a, \theta) + \varepsilon \]
\[ \varepsilon \sim p_{\varepsilon}() \]

Data
Observe data:
\[ X = x \text{ from } p_X(x | \theta) \]

Science
Model uncertainties with probabilities

Bayes Theorem
\[ p_\theta(\theta | x) \propto p_X(x | \theta)p_\theta(\theta) \]

Decision?

Public debate: simpler models, possibly focusing entirely on values (MAVT)

Values
Model preferences with multi-attribute utilities

Combine \Rightarrow Advise
\[ \max_{a \in A} \int \varepsilon(c(a, \theta)) p_\theta(\theta | x) \, d\theta \]

Politics

Scientific advisory groups and reports: complicated models

feedback to future decisions

Consequence Models
\[ y = c(a, \theta) + \varepsilon \]
\[ \varepsilon \sim p_{\varepsilon}() \]
Societal Deliberation

To support larger groups of decision makers and stakeholders

– larger than can meet and deliberate as a whole
– communities or society as a whole

We need to recognise a similar distinction:

– Societal System 1 Deliberation
– Societal System 2 Deliberation
Societal Deliberation

Societal System 1 Deliberation
- Informal, *de facto working* of communities and society
- Twitter, side discussions, protest, media, etc.
- Social amplification of risk theory

Societal System 2 Deliberation
- Formal, *de Jure* governance
- Referendums, formal stakeholder consultation, representative government, etc.
Our community has been leading in building approaches to bring Social System 1 and 2 Deliberation together in emergency planning and recovery.
There is still much to do …

- Need to build processes that draw the science into debate across whole communities
- We need to work at the formal governance so that it is logically consistent
  - Resilience and emergency procedures are not well rehearsed and tested in financially constrained communities
  - Current processes sometimes lean towards controlling informal deliberation rather than listening to it
- More technically we need consider equity vs uncertainty
  - How do you protect populations fairly and equitably when the risks to which they are exposed vary and are uncertain?
Our Challenge

Our community is leading in Europe
  -- certainly in the domain of emergency planning and response
  -- arguably in a much wider domain of societal decision making

We need to continue to develop methods of societal deliberation that recognise and use formal governance but are sensitive to informal deliberative behaviours in communities and society
Thank you
In all cases...

... and in subsequent proposals and studies, three broad criteria:

– Health including stress
– Cost
– Socio-Political Acceptability.

But what about

– Wider economic impact?
– Environmental impact?

and should equity be a criteria in some sense?
Culture

It is particularly important to understand the culture of:

• The decision makers
  – Regulators, government departments, etc.
  – Includes their (informal) responsibility, authority and accountability

• Their stakeholders
  – The public, operators, local and national communities
  – Recent socio-political history in relation to societal decisions
In the 1960s Hofstede studied how organisations reacted to risk and took decisions across the world. He identified 5 dimensions that differentiated their behaviour:

- Power distance
- Masculinity vs Feminity
- Individualism vs Collectivism
- Uncertainty Avoidance vs Uncertainty Accommodation
- Long vs short term orientation

Much work since then has refined these, but one needs to be sensitive to inter- and intra-organisational cultures in developing decision analyses.
Stakeholders: Cultural Theory

Societies are not uniform:

**Individualist/Entrepreneurs:** risks present opportunity, save those that threaten freedom of choice and action within free markets.

**Hierarchists:** fear threats to social order and believe technological and environmental risks can be managed within set limits.

**Fatalists:** do not knowingly accept risks but accept what is in store for them.

**Egalitarians:** fear risks to the environment, the collective good and future generations.

⇒ words such as **risk, impact, score, ...** are not neutral.
Science and Values

• Science – what might happen
  – seldom a single science view
  – subjective, controversy, debate
  – uncertainty

• Values – how much it matters if it does
  – subjective
  – often relate to intangibles
  – different stakeholder perspectives
Societal Decisions

Issues

Science
- What might happen

Uncertainty modelling

Preference modelling
- How much it matters if it does

Values

Democratic Principles
- Equity

Decision/Risk Analysis
- Multiple perspectives
- ‘Rational’ assimilation of evidence

Decision Quality
- 'Rational' assimilation of evidence
The Bayesian DA Paradigm

Consequence Models
\[ y = c(a, \theta) + \varepsilon \]
\[ \varepsilon \sim p_\varepsilon(\cdot) \]

Consequence Modelling

Data
Observe data
\[ X = x \] from \[ p_X(\cdot | \theta) \]

Science
Model uncertainties with probabilities

Bayes Theorem
\[
p_\theta(\theta|x) \propto p_X(x|\theta)p_\theta(\theta)
\]

Decision?

Values
Model preferences with multi-attribute utilities

Decision and Risk Analysis

Consequence Modelling

Statistical Inference and Forecasting

Decision and Risk Analysis

Combining Advice
\[
\max_{a \in A} \int u(c(a, \theta))p_\theta(\theta|x)d\theta
\]

Feedback to future decisions
The Bayesian DA Paradigm

Consequence Models
\[ y = c(a, \theta) + \varepsilon \]
\[ \varepsilon \sim p(\varepsilon) \]

Data
Observe data
\[ X = x \text{ from } p_X(x | \theta) \]

Science
Model uncertainties with probabilities

Bayes Theorem
\[ p_{\theta}(\theta | x) \propto p_X(x | \theta)p_{\theta}(\theta) \]

Decision?

Public debate:
simpler models, possibly focusing entirely on values (MAVT)

Values
Model preferences with multi-attribute utilities

Combine \implies Advice
\[ \max_{a \in A} \int c(a, \theta)p_{\theta}(\theta | x) \, d\theta \]

Scientific advisory groups and reports: complicated models

Politics

feedback to future decisions