

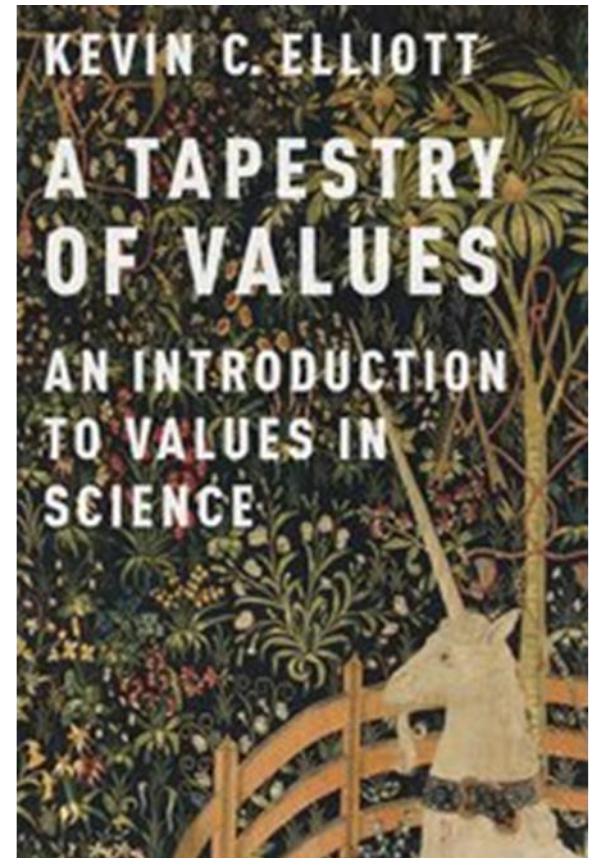
Managing Values in Science and Risk Assessment

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The Big Picture

- **My main claim:** in risk assessment (and science more generally), we will do better if we strive for a “value-management ideal” rather than a “value-free ideal”
- This requires thinking deeply about two things:
 - How to communicate about value judgments
 - How to make value judgments responsibly



Oxford University Press, 2017

Outline

- Explanation of the two ideals
- Argument against the value-free ideal
- Sketch of what's involved in employing the value-management ideal



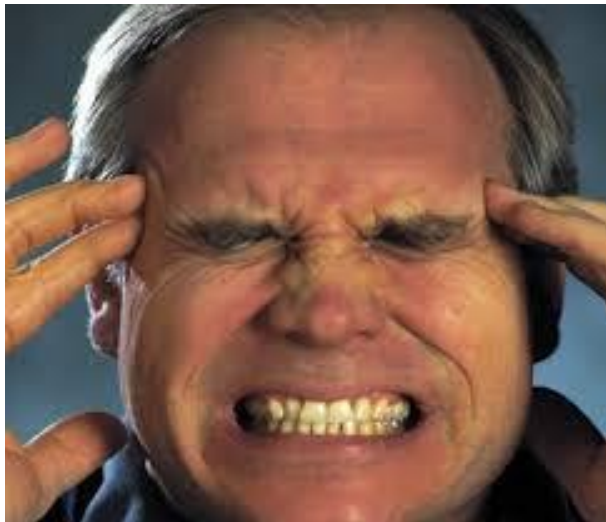
Explanation of the Two Ideals

Terminology

- **Value judgments** (choices that are not settled by logic and the available evidence)
 - What topics to study
 - What questions to ask about those topics
 - What the aims of inquiry should be
 - How to interpret ambiguous evidence
 - What standards of evidence to demand
 - How to frame and describe results
- **Values** (things that we regard as desirable and that guide or are impacted by these judgments)
 - Economic growth, sustainability, public health, animal welfare, equity, justice

Responding to Value Judgments

- Two different approaches:
 - Value-free ideal: we should try to exclude values from activities like evaluating hypotheses or assessing risks
 - Value-management ideal: rather than trying to exclude values from scientific reasoning and risk assessment, we should develop ways to handle them as responsibly as possible





Argument against the Value-Free Ideal

Problems with the Value-Free Ideal

- It's typically not feasible to do policy-relevant science, let alone risk assessment, without making value judgments in ways that support some values over others:
 - Making assumptions, modeling choices, and interpretations
 - Choosing standards of evidence
 - Choosing terminology, categories, and framing
- So, the value-free ideal can prevent needed reflection and communication about the values that guide or are affected by this research

Assumptions, Models Interpretations



- Risk assessment
 - Estimating exposures
 - Extrapolation from high to low doses, from animals to humans, from less sensitive to more sensitive individuals
 - Weighing differing sources of information (e.g., computational, in vitro, animal, epidemiological)
 - Choosing what to measure (death, tumors, organ weight, enzyme and hormone levels, etc.)
 - Choosing methods and models (trading off accuracy versus speed)

The Social Benefits of Expedited Risk Assessments

Carl F. Cranor¹

Risk Analysis, Vol. 15, No. 3, 1995

Standards of Evidence

- James Hansen, 1988:
“Global warming...is already happening now”
 - Alan Robock: “What bothers a lot of us is that we have a scientist telling Congress things we are reluctant to say ourselves”
 - But Hansen says he “weighed the costs of being wrong versus the costs of not talking” and concluded it was time to “stop waffling, and say that the evidence is pretty strong that the greenhouse effect is here”

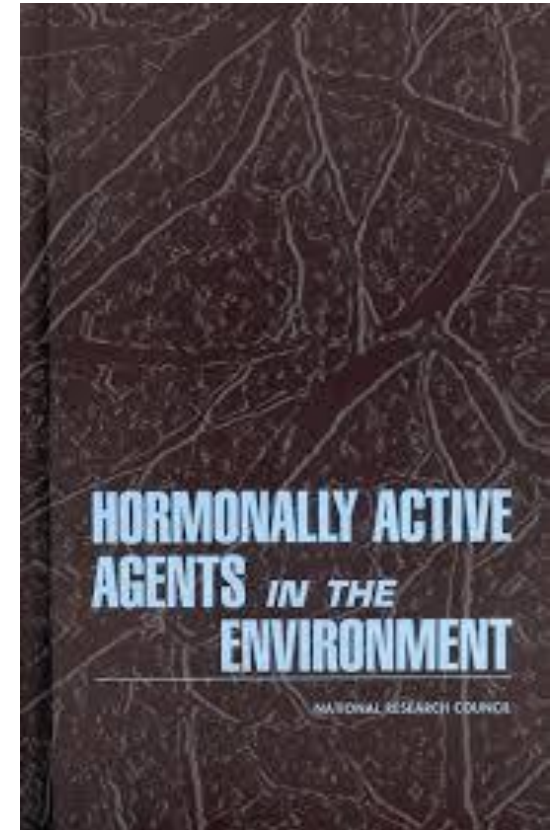


Terminology, Categories, Framing

- Endocrine disruptors vs. hormonally active agents
- Alien, exotic, invasive, non-native species vs. superabundant or harmful species
- Genetic modification vs genetic engineering and gene editing
- Greenhouse effect vs global warming vs. climate change

Rules of the name

To avoid offense, WHO says no people, places, food, or animals in new disease names



Overview of the Problem

- Scientists working on risk assessment or policy-relevant topics frequently have to make judgments that are guided by or that end up serving some social values over others
- Therefore, trying to avoid thinking about values is likely to result in less thoughtful responses to these judgments





Sketch of an Alternative: The Value-Management Ideal

An Alternative Ideal

- Strive to **manage values well** by improving at least two aspects of scientific practice:
 - Communicating openly about value judgments
 - Making value judgments responsibly

Value-Management Ideal

- Communicating about values and value judgments could be relatively *explicit*:
 - Conflict-of-interest disclosures
 - Acknowledgment of value-laden choices that could yield differing results



The anglerfish deception

The light of proposed reform in the regulation of GM crops hides underlying problems in EU science and governance

Fern Wickson & Brian Wynne

EMBO reports VOL 13 | NO 2 | 2012

Need for Communication: Examples

Despite findings that tiny amounts of BPA impact health, FDA sticks to its message

A massive effort to get federal health officials and academic scientists on the same page doesn't appear to be working.



Environmental Health News

EFSA and Member States vs. IARC on
Glyphosate: Has Science Won?

CORPORATE EUROPE OBSERVATORY

EURACTIV

WHO agency isolated in glyphosate fight

Value-Management Ideal

- Communicating about values and value judgments could also be *implicit*, providing information that allows others to identify key choices:
 - Publishing results
 - Open access to publications, data, materials, methods, models, computer codes
 - Registration of studies and results

Bayer: Transparency - Access to Crop Protection Safety Data

Science as an
open enterprise

June 2012

Ec042

THE
ROYAL
SOCIETY



+ AllTrials

Value-Management Ideal

- One of the most important tools for **making value judgments responsibly** is to promote engagement so as to identify value judgments and facilitate reflection on them:
 - Formal and informal peer review by other scientists
 - Interdisciplinary research collaborations (including ELSI)
 - Community-engaged research
 - Multi-stakeholder negotiations and institutions (e.g., OECD)
 - Adversarial systems like “science courts”

Informing 21st-Century Risk Assessments with 21st-Century Science

Linda S. Birnbaum,¹ Thomas A. Burke,² and James J. Jones³

Institutionalizing Dissent: A Proposal for an Adversarial System of Pharmaceutical Research¹

Justin Biddle

Kennedy Institute of Ethics Journal Vol. 23, No. 4, 325–353 © 2013 by The Johns Hopkins University Press

Challenges and Questions

- **Communicating about value judgments is difficult (Part 1):**
 - Scientists frequently don't recognize that they are making value judgments
 - When they do acknowledge roles for values in their work, it could generate unwarranted skepticism

Values in environmental research: Citizens' views of scientists who acknowledge values

Kevin C. Elliott^{1*}, Aaron M. McCright², Summer Allen³, Thomas Dietz⁴

PLOS ONE | <https://doi.org/10.1371/journal.pone.0186049> October 25, 2017

Challenges and Questions

- **Communicating about value judgments is difficult (Part 2):**
 - Providing access to data isn't very effective without the right infrastructure in place to make use of it
 - Calls for transparency must be implemented carefully in order to be fair and workable

The E.P.A. Says It Wants Research Transparency. Scientists See an Attack on Science.

By Lisa Friedman

March 26, 2018

The New York Times

Climate scientists face harassment, threats and fears of 'McCarthyist attacks'

Oliver Milman *in New York*

 @olliemilman

Wed 22 Feb 2017 11.56 EST

The Guardian US edition ▾

Challenges and Questions

- **Making value judgments responsibly** is also difficult:
 - The outcomes of engagement efforts depend a great deal on *who is involved* and *how the rules of engagement are structured*
 - Thus, engagement does not provide an easy escape from challenging ethical and political questions

Conclusion

- A value-management ideal is preferable to a value-free ideal in policy-relevant research and risk assessment
- This will help facilitate greater reflection about the role of values in numerous choices: standards of evidence, assumptions, models, interpretations, frames, terminology, and so on
- Developing an adequate value-management system will require some careful reflection about how to...
 - Promote openness about value judgments
 - Make value judgments responsibly