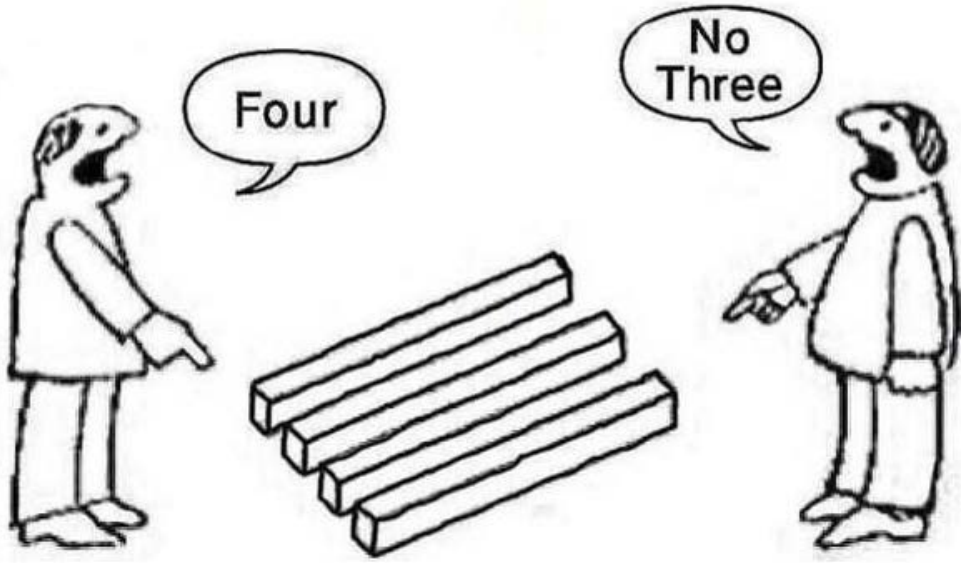
#Anticipation2017 London, Nov 7–10, 2017

Anticipating patterns of contested evidence in emerging risks



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Understanding scientific controversy

- **Find generic patterns** of interwovenness of **scientific**, **societal** & **institutional** dimensions
- Understand why experts disagree and on what
- Clarify what is deeply uncertain and why

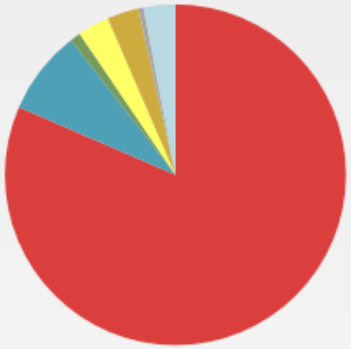
To enable & promote:

- Anticipating uncertainty & dissent in risk controversies
- More responsible treatment of uncertainty and scientific dissent
- Knowledge utilisation in full awareness of its limitations

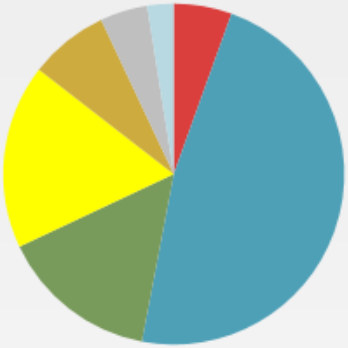

LISTEN TO
THE SCIENCE
BAN
NEONIC

Whose science counts?

Beekeepers

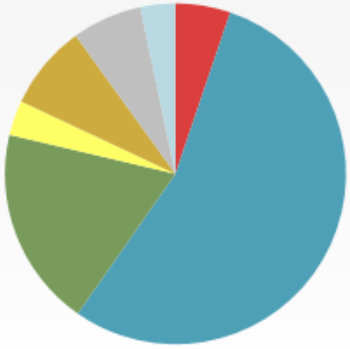


Authorisation board

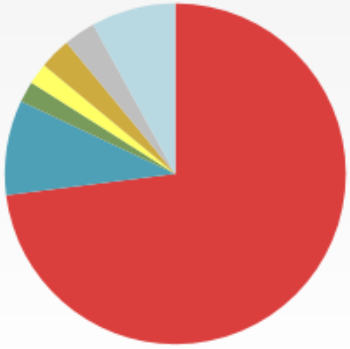


Ministry of Agriculture

Bayer



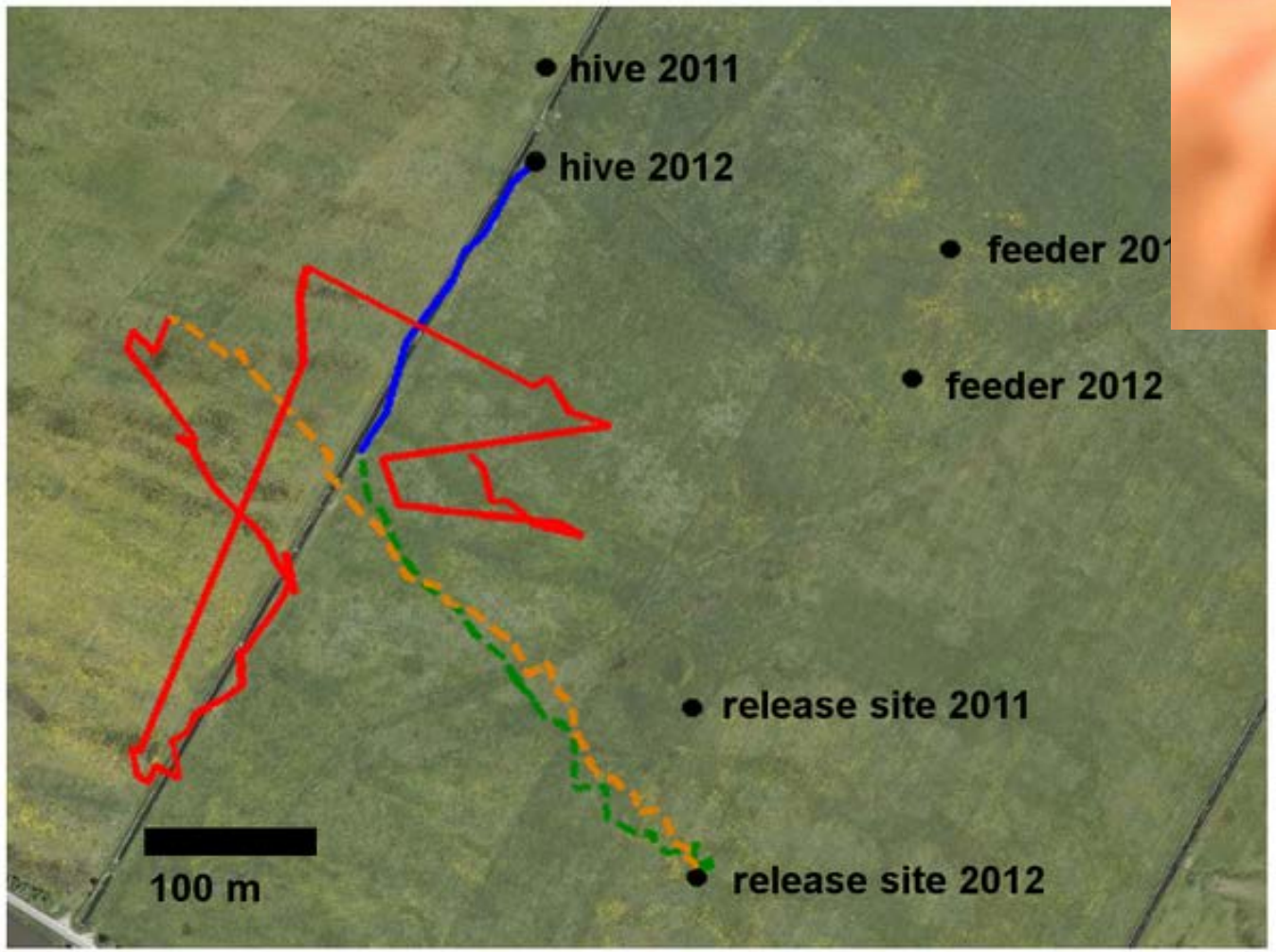
Academic researchers



- Neonic pesticdes
- Diseases
- Pollen
- Sunflower strains
- Climate
- Genetics

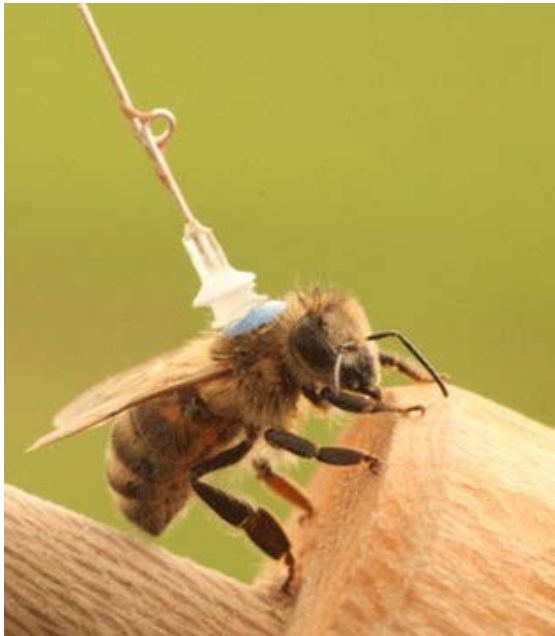
(Maxim & Van der Sluijs, 2010)

Radar-tracking experiment Randolf Menzel:
Bees exposed to neonicotinoids loose orientation



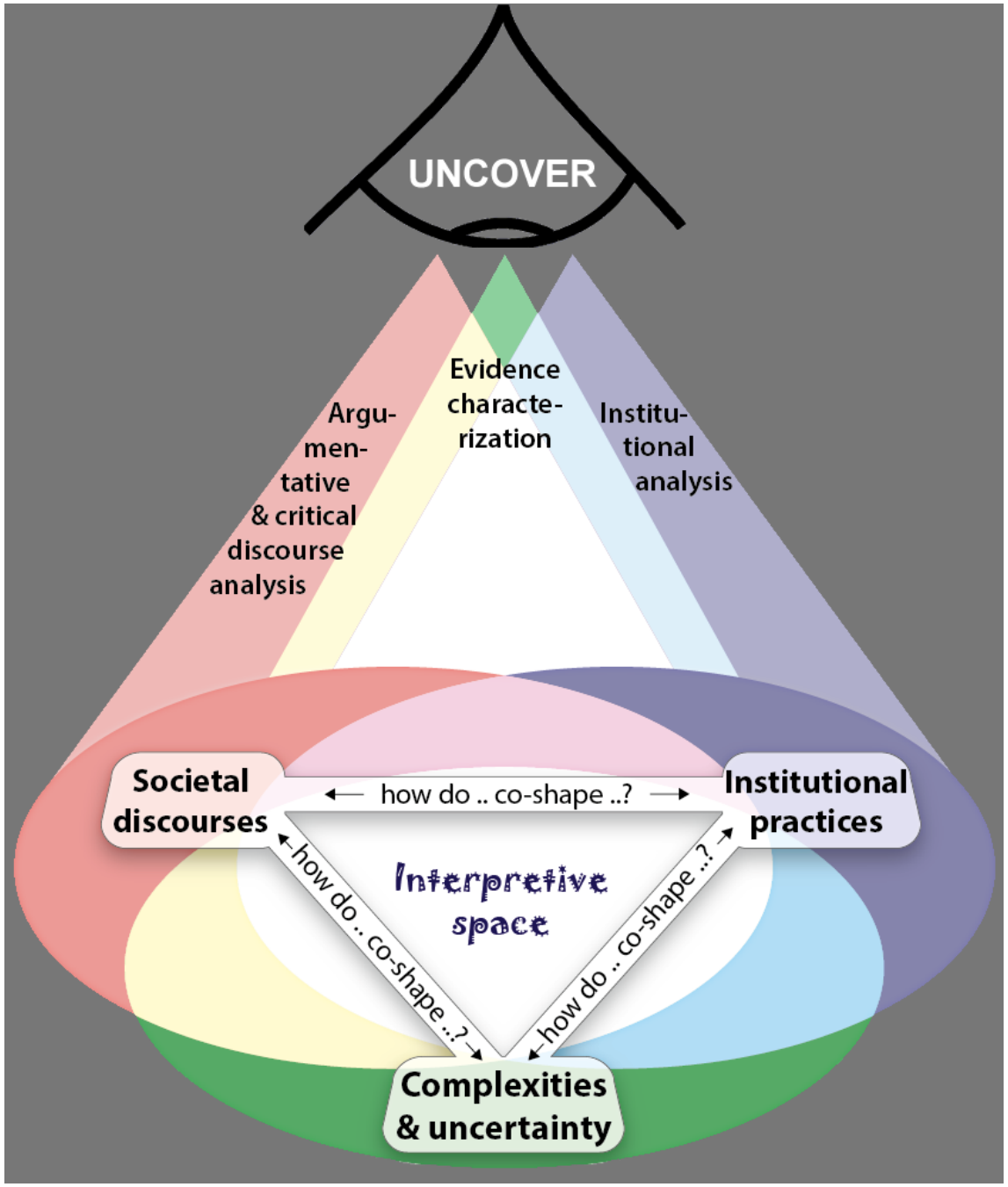
Yellow-Red
Thiacloprid-bees

Green-Blue
Control bees



Fischer J, Müller T, Spatz A-K, Greggers U, et al. (2014) Neonicotinoids Interfere with Specific Components of Navigation in Honeybees. PLoS ONE 9(3): e91364. doi:10.1371/journal.pone.0091364
http://www.plosone.org/article/info:doi/10.1371/journal.pone.0091364

PLOS | ONE



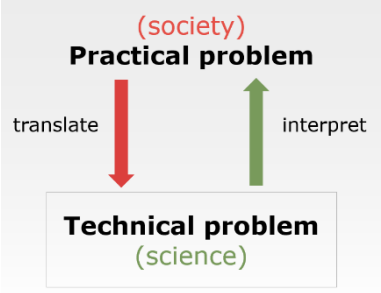
New way of looking at scientific controversies

"By shining light on its dynamics from 3 different perspectives (discourse analysis, evidence characterization, institutional analysis) it seeks to reveal how 3 key factors (deep uncertainties; societal discourses; institutional practices) co-shape one another to produce the typical patterns that can be observed in scientific controversies."

Van der Sluijs, 2014

Interpretive space **in scientific assessment results from 3 key sources:**

- **Translational diversity:** The multitude of ways in which risk issues can be translated into technical problems that science can address



- **Argumentative flexibility:** The multitude of tenable styles of scientific reasoning in expert interpretations of evidence
- The existence of **deep uncertainty** (manufactured and actual) in the science.

Categories of
Deceitful Tactics and Abuse of the Scientific Process

source: P.H. Gleick, Pacific Institute, 2007

http://www.pacinst.org/publications/testimony/Gleick_Senate_Commerce_2-7-07.pdf

- Appeal to Emotion (appeal to ridicule, fear etc)
- Personal ("Ad Hominem") Attacks
- Mischaracterizations of an Argument
- Inappropriate Generalization
- Misuse of Facts (inadequate sample)
- Misuse of Uncertainty
- False Authority
- Hidden Value Judgments (ideologies)
- Scientific Misconduct (fabrication etc.)
- Science Policy Misconduct (Packing Advisory Boards, selective funding)

Conflicts of interest in regulatory science

Example: ICPBR Bee Brood Working Group (2008)

- Composition: 2 representatives of the industry, 3 of governmental agencies and 1 of a consulting company working for industry; academic scientists and beekeepers absent
- Proposed thresholds for considering a pesticide as being of low risk for the bee brood:
  - 30% loss of bee brood
  - 50% of eggs or other larval stages
- For beekeepers: unacceptable (these values = hives weakened on the long term)

Correspondence

Biodiversity reports need author rules

Two representatives from the agrochemical industry are among 40 authors of a fast-track assessment of pollinators by the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES; see go.nature.com/q8lll2). In our view, to support the credibility of assessment results, the IPBES needs a policy requiring authors to declare all funding sources, positions held and other potential conflicts of interest.

It is unclear how the IPBES deals with conflicts of interest. Their second plenary meeting last December postponed a decision on the matter. Authors are nominated by IPBES member states and other stakeholders to "reflect the range of scientific, technical and socio-economic views and expertise; geographical representation …; the diversity of knowledge systems …; and gender balance". But the IPBES has no explicit rules for nomination or selection.

IPBES assessments could lead to far-reaching policy interventions, with financial implications for industry sectors (for example, in mining after assessment of land degradation and restoration, or for transport after invasive-species assessment). Given the role of agrochemicals in pollinator decline (J. van der Sluijs *et al. Environ. Sci. Pollut. Res.* http://doi.org/xcx; 2014), it is our view that scientists funded by such corporations should not be lead authors or coordinating lead authors on such assessments.

We also suggest that the IPBES publishes the names of all nominated authors, along with their nominators and justification for their appointment.

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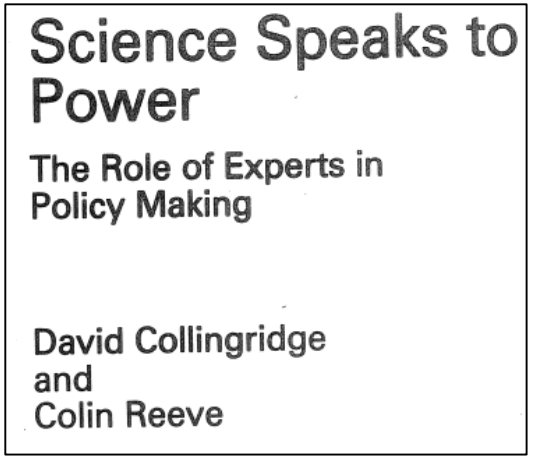
doi:10.1038/516170c

www.tfsp.info

Myths of science



- Science Yields the Truth
- Experts can be Expected to Agree
- Science is One
- The Principle of Irrelevance (of the way of use)
- Policy can be Based on Science

(Collingridge and Reeve, 1986)

http://www.andreasaltelli.eu/file/repository/Science_Speaks_to_Power.pdf

Realities of Science

- Science does not Yield the Truth
- Experts can be Expected to Disagree
- Science is Many
- The Principle of Relevance (of the way of use)
- Policy cannot be Based on Science

(Collingridge and Reeve, 1986)

http://www.andreasaltelli.eu/file/repository/Science_Speaks_to_Power.pdf

The old is dying

- Regulatory science in crisis (EFSA etc.)

Morbid symptoms

- Sustaining the myths of evidence based
- Captured by corporate interest

The new?

- Uncertainty aware, precautionary
- Reflexive and modest
- Plurality of perspectives
- Explicit about values
- Extended peer communities