



Who decides the treatment of knowledge-based uncertainty – decision makers, assessors or the epistemic situation?



In every decision problem it is necessary to question if knowledge is strong enough to support rational decisions or even satisficing. The epistemic situation depend on characteristics of background knowledge and on what type of question the decision makers want an answer on . A treatment of uncertainty must be adapted to a decision problems specific epistemic situation.

Assessors

Perspective on risk

- Risk is consequences and uncertainty in these (C,U)
- Risk is described by (C',Q, K)
- Principles result in risk measures: Bayesian ($Q=P|K$), Classical statistical ($Q=Pf$), General (any measure Q)
- Risk includes a judgment of strength of knowledge K

How shall we manage uncertainty?

I would like to have uncertainty in impact as a confidence interval?

Ok - do you want a classical statistical confidence interval or a Bayesian credible interval?

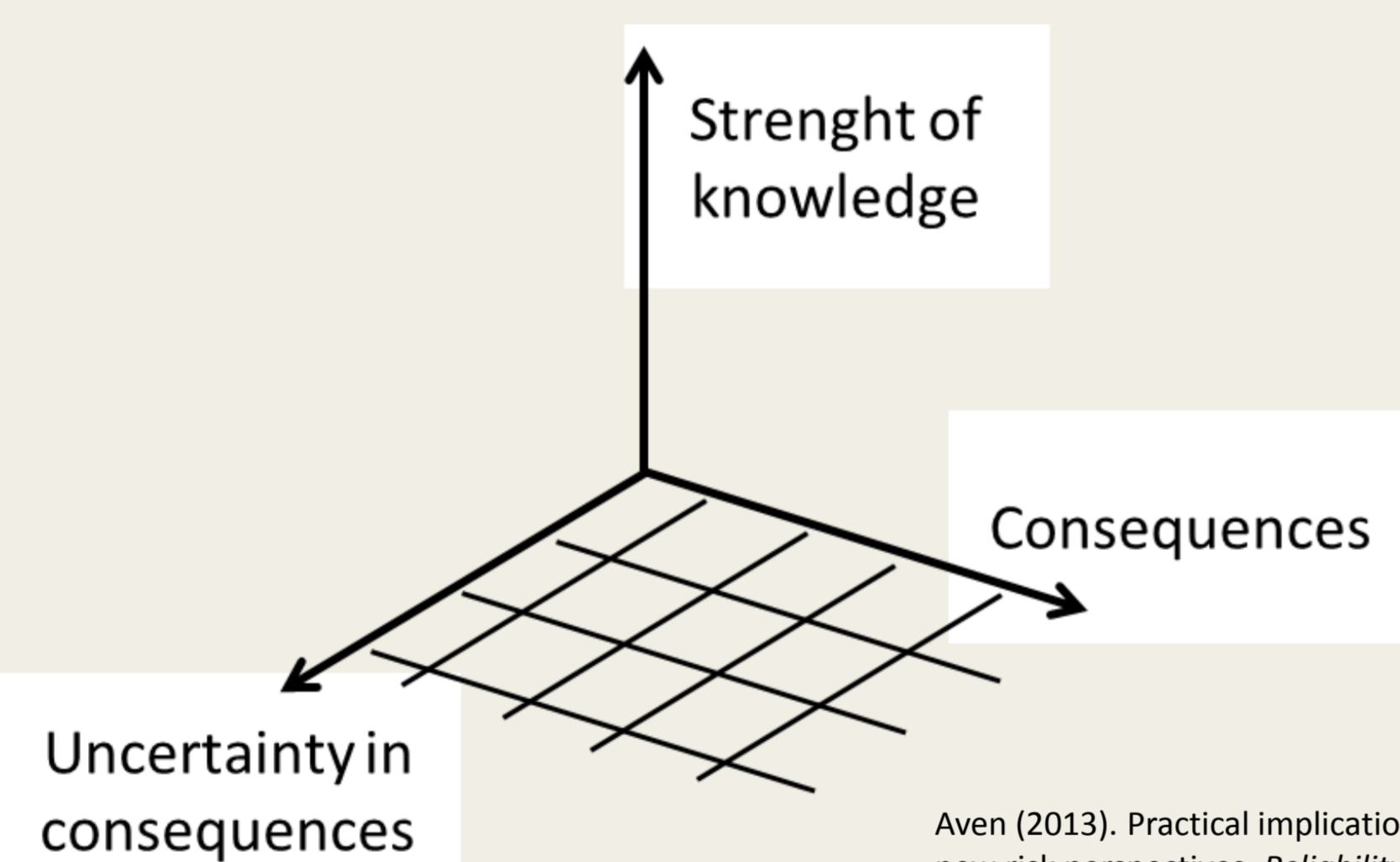
Hey – I am too weak to support uncertainty quantified by a confidence interval

I see – well then we need to find the uncertainty management that fits this decision problem

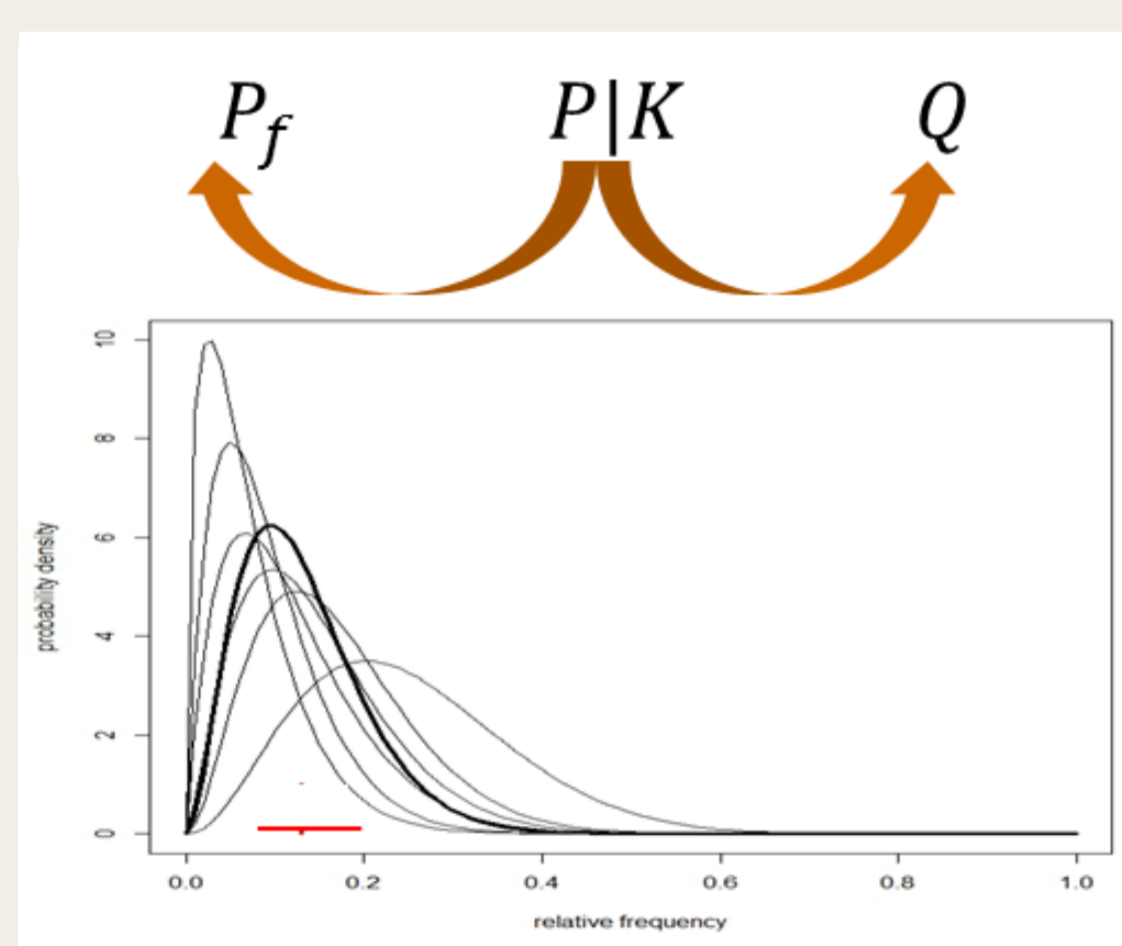
Decision makers



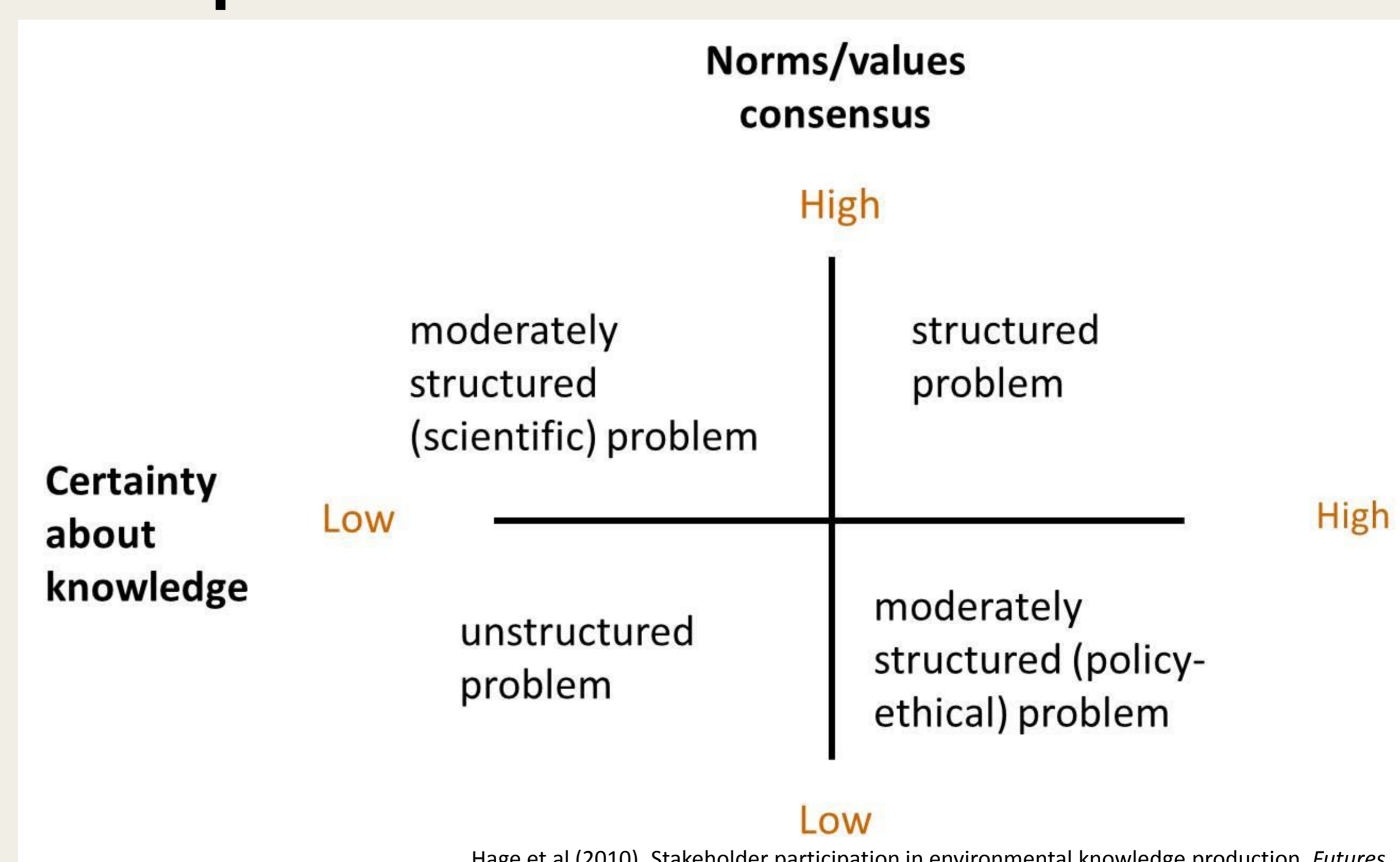
Cox (2012). Confronting Deep Uncertainties in Risk Analysis. Risk Analysis
Spiegelhalter and Riesch (2011). Don't know, can't know: embracing deeper uncertainties when analysing risks. Phil. Trans. R. Soc. A



Aven (2013). Practical implications of the new risk perspectives. *Reliability Engineering & System Safety*.



The epistemic situation



Hage et al (2010). Stakeholder participation in environmental knowledge production. *Futures*

An assessor need to be able to

- Understand what risk is
- Argue for choices made when treating uncertainty
- Adapt treatment of uncertainty to strength in the epistemic situation
- Have access to and skills to use appropriate guidance for risk assessment and analytical quality assurance.

A decision maker need to be able to

- Understand what risk is
- Be aware of the limits of - and solutions for - decision making under (no, mild and severe) uncertainty
- Adapt the demand on treatment of uncertainty to strength in the epistemic situation
- Have access to and skills to use appropriate guidance on quality assurance.