



ENVIRONMENTAL SCENARIO ANALYSIS

Henning Hugh Jensen
Director of Research Department



Defuzz
the
future





We are running out of environment

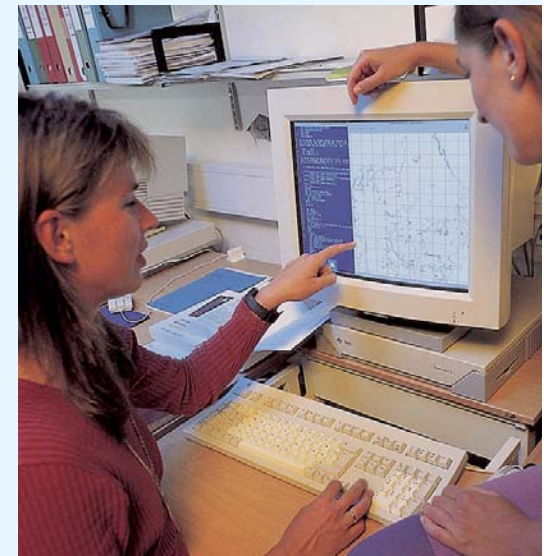
**and we need to improve
our
explorations of the future**

FORESIGHT ???



Recent developments and pressing challenges – in less than 10 min ?

- **Foresight – as a pre-cognitive experience of paraphysiological character (e.g. innovation theory Otto Scharmer, MIT) (<1 yr)**
- **Quantitative trend-analysis – assuming that we can extend our current by projections (1-5 yr's)**
- **Delphi analysis – qualitative consensus-based sequential group processes (<5 yr's)**





Risks and unknowingness

- There are things we know we know
- There are things we know that we don't know
- **There are things we don't know that we don't know**
- **There are things we don't know that we know**
- **There are things that we do not want to know**



*Carl von
Clausewitz
1780-1831*



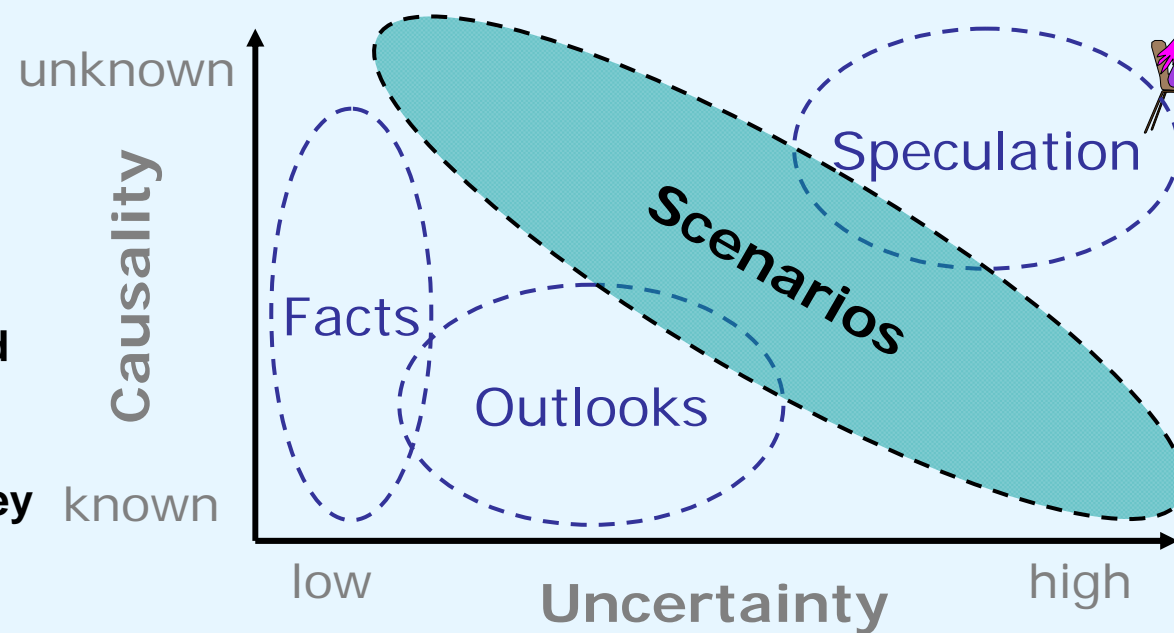
*Donald
Rumsfeld
(12. Feb 2003,
DOD Press
Conference)*



Uncertainty can be addressed by scenario analysis

- what do we know about *causalities* in a system ?
- what is the *level of (un)certainty* about future driving forces ?

Scenarios are plausible simplified descriptions of how the future may develop, based on a coherent and internally consistent set of assumptions about key driving forces and relationships.

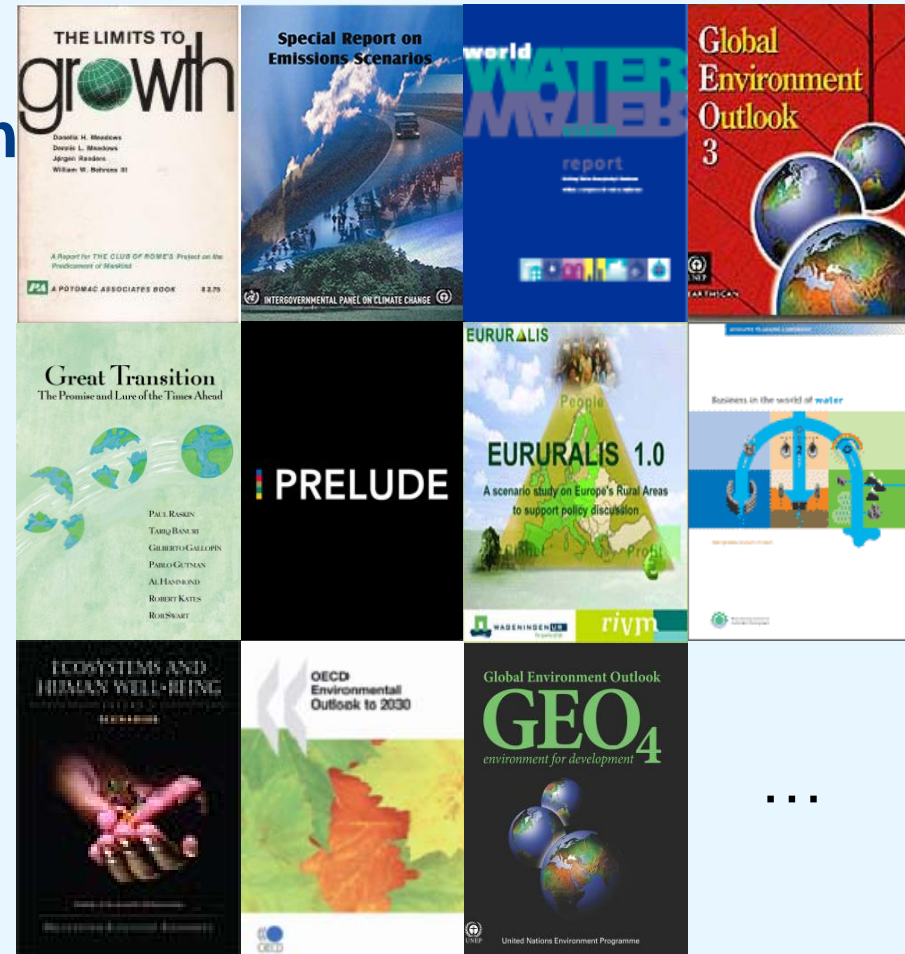


Major environmental scenario exercise

First environmental scenarios and projections in the 1970s.

Increasing prominence within environmental assessments.

Recent scenario exercises cover a range of complex issues, such as climate, water, ecosystems, land



Scenario analysis – moving from complex problems to wicked problems

4. November 2009

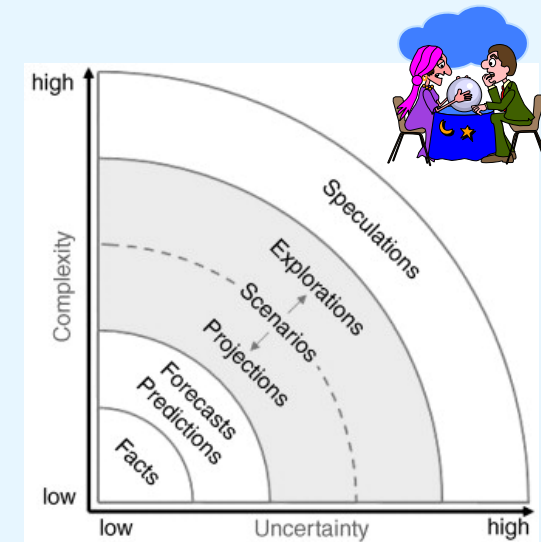
- A **complex problem** can be fish population in waterways affected by dam construction and climate change (change of precipitation patterns, fish reproduction, fish migration patterns, etc.).
- A **wicked problem** is difficult to solve because of incomplete, contradictory, and changing un-recognizable requirements.

Often the scientific side is debatable and there is no political consensus about problem nor solution.



Scenario analysis on a wicked problem/challenge

- 77% of our GHG emissions in DK are from transport. Half of this is small vehicles (2.3 mio vehicles in DK – one pr house/flat)
- How can we develop scenarios to indicate what/when/how a certain yet undeveloped transport technology and energy supply system can ensure our transport (mobility, comfort, economic systems, rural areas)



Source: Zurek and Henrichs, 2008