Karlsruhe Institute of Technology

Uncertainty and Non-Knowledge in the Context of Ambitious Sociotechnological Solutions

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Introduction

- Non-Knowledge: while DDT is starting its triumphal procession:

- Läuger, Martin, Müller (1944): „(…) all natural insecticides – in contrast to the shown stable synthetic insecticides – will be destroyed in the [environment] (...) in a short time. Nature has to do this. What catastrophe would happen, if the natural insecticides were stable. Nature is oriented towards life and not towards death!“ (German in Original; Engl. by SB)

Introduction

- Debate about non-knowledge (EEA 2001):
  - Case of CFC and other “early warnings“
  - Turning past experiences into future politics: precautionary principle
- EU risk politics as politics of precaution (cf. Böschen et al.2010):
  - oriented towards non-knowledge
  - Esablished institutions: post-release monitoring of GMO, REACH legislation

Outline

- **Non-Knowledge**
- **Regimes of knowledge**
- **Ambitious socio-technological solutions**
- **Not only arguments, but …**
- **Conclusion**

Non-knowledge

- Non-knowledge – defined by whom?
  - Non-knowledge: character of specified ignorance (reference: discipline; non-knowledge under self-definition)
  - New situation: increasing of non-knowledge (defined by others)
- Thesis: the debate about non-knowledge is mainly a debate fuelled by the heterogeneity of knowledge-resources and the resulting problems to construct problems and build up evidence to solve them

Non-knowledge

Argumentum ad ignorantiam

Form of the argument

If the technologies would have been dangerous, it would have been possible to show aligning risky effects in scientific studies.

But, no effects have been observed.

Ergo: the technology is not dangerous – safe

Questions

1) Are the studies conclusive?

2) Is it absolutely right that no effects were observed / observable?

3) Can we accept this state of affairs, although it offers not full safety?

No, the methods of the studies done were inadequate. There are concrete shortcomings.

No, there are general concerns against the studies made.

Scientific and technological objectives

Moral and political objectives

Graph: Jens Soentgen

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Regimes of knowledge

- Different Perspectives
- Political Analysis: Formal (mostly legal) contract; Focus: transnational cooperation (Kohler-Koch/Schaber 1994)
- Sociological Analysis: imbalances of discourses; Focus: power-relations (Pestre 2003; Wehling 2007)
- STS: „Civic epistemology“: „(...) refers to the institutionalized practices by which members of a given society test and deploy knowledge claims used as a basis for making collectice choices.“ (Jasanoff 2005: 255)

Regimes of knowledge

- Linked series of problems
- Infrastructures „as posing linked series of sociotechnical problems“ (Edwards 2004: 209)
- Discoursive dynamic about posing problems and the debate about solution mechanisms: cognitive as well as institutional

Regimes of knowledge

- Regime of knowledge: Discoursivly constructed and institutionally stabilized space of practices for articulating, debating and solving socio-scientific problems.

- Aspects:
  - Non-knowledge: knowing, intention, temporal stability
  - Selection!
  - Occupation through problem-setting! (cf. Oreskes/Conway 2010)

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Ambitious socio-technological solutions

- Lots of examples: energy transition, mobility transition, ..., nuclear waste disposal
- Key characteristics:
  - Complex Infrastructures
  - Multifaceted history of problem-solving
  - Multiple futures and development pathways (Lösch/Schneider 2016)
  - Multiple knowledges and non-knowledges (Böschen et al. 2010)
  - Trust / confidence as „Socio-technical problems“ (Büscher/Sumpf 2015)

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Not only arguments, but …

- Ecomodernist manifesto (Asafu-Adjaye et al. 2015)

„Transitioning to a world powered by zero-carbon energy sources will require energy technologies that are power dense and capable of scaling to many tens of terawatts to power a growing human economy. Most forms of renewable energy are, unfortunately, incapable of doing so. The scale of land use and other environmental impacts necessary to power the world on biofuels or many other renewables are such that we doubt they provide a sound pathway to a zero-carbon low-footprint future. (...)

((and the consequence of setting the scene that way …))

Not only arguments, but …

- Ecomodernist manifesto:

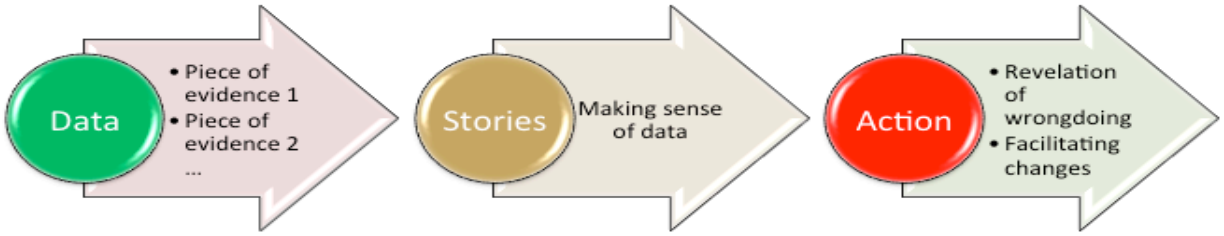
„Nuclear fission today represents the only present-day zero-carbon technology with the demonstrated ability to meet most, if not all, of the energy demands of a modern economy. However, a variety of social, economic, and institutional challenges make deployment of present-day nuclear technologies at scales necessary to achieve significant climate mitigation unlikely. A new generation of nuclear technologies that are safer and cheaper will likely be necessary for nuclear energy to meet its full potential as a critical climate mitigation technology.“ (p. 22f.)

Not only arguments, but …

- Heuristic for classifying knowledge (Böschen 2014: 40f.)
  - Criteria: Evaluate indicators against the background of main cultural values or interests (e.g. zero-carbon low-footprint future)
  - Indicators: Representing an effect-related aspect of a problem, which should be considered or solved (e.g. Energy density)
  - Observables: Applying indicators by providing specified methods for empirical observations or test strategy

Not only arguments, but ...

- Stories ... analytically spoken: narratives allow sense-making of the perception of world, symbolizing social order and addressing the appropriate action



Graph: Marc Mölders

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Conclusions

- Amibtious socio-technological solutions are challenging with regard to the construction processes of the problem behind.
- These challenges are also related to contested knowledge resources and sources.
- The process of constructing and solving problems is not only discursive, but related to institutions and practices as well („Knowledge regimes“).

Thank you for your attention !

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