How smart grid meets in vitro meat: on socio-epistemic practices of visioneering

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ITAS-Project
"Visions as socio-epistemic practices—Theoretical foundation and practical application of Vision Assessment in Technology Assessment"
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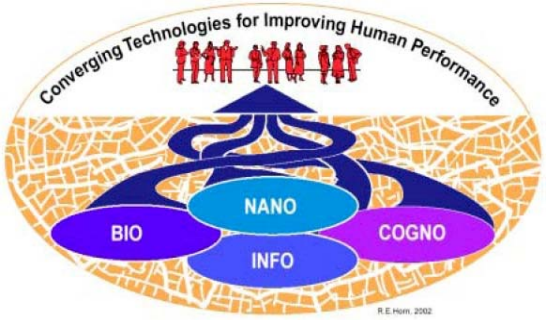
Outline

1. Vision Assessment in Technology Assessment
2. Visions as socio-epistemic practices
3. Example: visioneering smart grid experiments
4. Example: visioneering in vitro meat
5. Insights and conclusions

1. Vision Assessment in Technology Assessment

Visions in innovation and transformation **processes**:

- ‚Leitbild' research (e.g. Dierkes et al; Knie; von Gleich)
- Sociology of Expectations (e.g. Brown et al.; van Lente; Konrad)
- Vision Assessment in Technology Assessment (TA) as a reaction to futuristic visions in NEST (e.g. ITAS-TAB project on nano for the German Bundestag)



Changing the societal "fabric" towards a new structure
(upper figure by R.E. Horn)

- Vision Assessment as „analysis", „assessment" and „management" of visions (Grunwald 2004) | „**Hermeneutics** of techno-futures " (Grunwald 2014)
- New attention due to discourse on „visioneering" in technoscience (z.B. McCray; Rip/Voss; Nordmann)

2. Why visions as socio-epistemic practices?

- A hermeneutics of visionary ideas (in documents and as media content) does not suffice if one wants to analyse and assess the effectiveness of visions, i.e. **visions in the making**.
- Therefore, there is a need for an **empirical approach** to vision assessment.

Unresolved question:

- How do visions become **practically effective** in innovation and transformation processes, and what are their effects?

Our approach:

➢ Analyse visions as **socio-epistemic practices** that simultaneously enable and create social arrangements and orders of knowledge …

2. Visions as socio-epistemic practices – meanings and functions

Visions **produce meaning** through

- imaginatively **re-arranging** existing knowledge, technologies, actors, forms of organisation and communication etc.
- producing and designating **spaces of possibility**
- normatively making the use of these spaces of possibility an **urgent need** and have an **activating force** to motivate and to orient actions

Visions have **different functions** in practices and processes, e.g.:

- to produce **interfaces** (present – future)
- to enable **communication and action** as media, as knowledge objects (e.g., epistemic and/or boundary objects)
- to serve as guiding visions for **orientation and coordination**

2. Visions as socio-epistemic practices – visioneering

Practices and processes of **future-making** through visions can be conceived of as **visioneering.** Visioneering

- is a new concept for strategic generation and distribution of visions to **influence processes** in technoscience (e.g., McCray),
- implies a „discourse-technical“ notion of the **malleability** of the future (e.g., Nordmann),
- but is always a **collective** and **open process**, which opens practical options for re-configuring sociotechnical arrangements—which need not meet the contents of the visions or the intentions of their creators.

➢ **Two rather different cases of visioneering**:

smart grid ……???…… in vitro meat

3. Example: visioneering smart grid experiments

The fear: The German Energy Transition as a destabilisation of the established and centrally controlled ‘energy system‘ due to the volatility of renewables and much more regionally distributed generators …

The promise: The smart grid as the solution to destabilisation and a loss of control through integrating and regulating all the dispersed elements and processes …

“The smart grid represents **a vision of a future electricity grid**, radically different to those currently deployed, where the bidirectional flow of both electricity and information allows demand to be **actively managed in real time**, such that electricity can be generated at scale from **intermittent renewable sources**. Delivering this **decentralised, autonomous, and intelligent system** represents a Grand Challenge for computer science and artificial intelligence research […]. Unlike existing grids where electricity generally flows one-way **from generators to consumers**, [the smart grid] will result in **flows of electricity that vary in magnitude and direction continuously**”(Ramchurn et al. 2012, 86-89)

The envisioned smart grid **not only a technical solution** …

- a comprehensive **sociotechnical re-arrangement** tested and created by practices of visioneering smart grid in “real-life experiments” (e.g., Krohn, Gross)

3. Example: visioneering smart grid experiments

Visions in a net of heterogeneous elements

The old: „Big Four“ suppliers, large power plants, routines of consumption, grids, government agencies …

The new: renewable energies, decision for „Energiewende“, field experiments …

The not-yet: visions of ICT networking and control of energy production, consumption and storage, automatically control volatility of renewable energies, many „smarties“ (smart homes, smart meter, smart markets, smart prosumer…)

Practice of visions: re-arrangements of technologies, actors, organisations, regulations, governance, communication etc.in **real-life experiments** with different sociotechnical smart grid designs

➢ **visions in the making**

3. Example: visioneering smart grid experiments

Smart grid visions in the making as a **permanent co-construction of futures and arrangements**

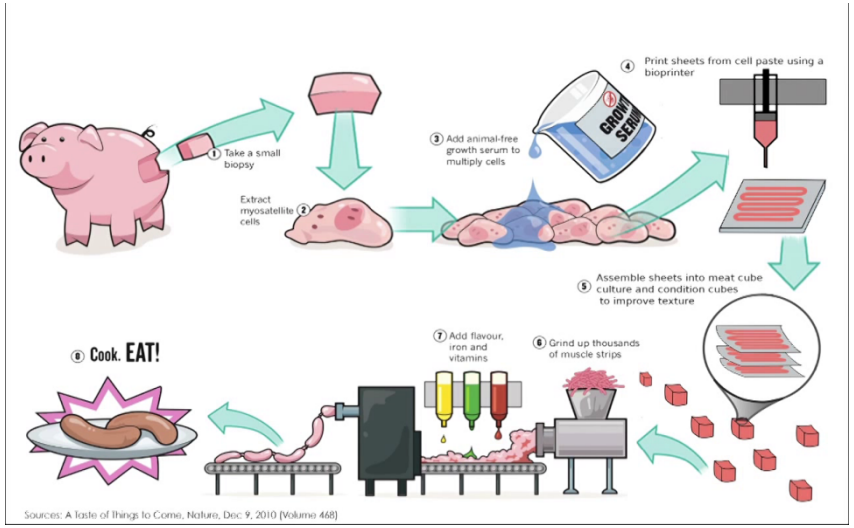
- Normative imperatives and technological promises of the smart grid vision are like a **hypothesis** for the experimental practices**.**

- Experiments show the **need for further experimentation** and **specify and broaden the visions**:
  e.g. market, prosumer, grid operator, regulation experiments … necessary

- Effect of visioneering: Request for **permanent and collective experiments** that include all elements and actors in the „energy-system“

Visions functioning as socio-epistemic practices through sociotechnical **re-arrangements of the present**

4. Example: visioneering in vitro meat



- Meat production and consumption as no longer sustainable: negative environmental and health impacts, problems of a fair distribution of resources, animal suffering
- In vitro meat, grown from muscle stem cells obtained by muscle biopsy, has been recently proposed as a solution.
- The breakthrough happened in August 2013, when Mark Post and his research team at the University of Maastricht at a press conference presented the first in vitro beef burger grown from bovine stem cells (Post 2014).

4. Example: visioneering in vitro meat

- One of the conditions for public food innovation agenda is that **concerns are commonly recognized and shared by virtually all citizens**.
- In the food domain there are concurrent and different interpretations of the values which should inform the public agenda. The most known issue is **sustainability**: there are different models, which depends on different normative interpretations. Example: chicken farming
- Until now there is no substantial ethical or political agreement among different stakeholders (citizens and politics) of the urgency of changing food habits, in particular meat consumption: f.e. despite the recommendation of a top nutrition US advisory panel to use federal agencies to set new dietary guidelines involving less meat, the Obama administration refused to do this.
- → **concerns** around meat sustainability as an agreed issue **are constructed**

4. Example: visioneering in vitro meat

- Normative and technological promises of in vitro meat are like a **hypothesis**
- The function of in vitro meat visions are not only to anticipate a future society, but also to anticipate changes of current situations.
- This construction of the present is **based on the exclusion of other ways of changing the present**, such as stimulate policy actions to reduce meat consumption and/or to opt for vegetarianism /veganism- these last options are described as not vialable (Post 2013) or as extremely difficult (Forgacs, Tedtalk2013)
- **Future visions re-arrange the present**, often in controversial ways.

5. Insights and conclusions

What becomes visible through the concept „visions as socio-epistemic practices“?

- **Constitutive effectiveness of visions** in innovation and transformation processes through producing meaning and enacting particular functions
- **Co-constructions of futures** and **novel sociotechnical arrangements** through opening imaginative and practical possibilities
- **These co-constructions** happen through **re-arrangements of the present**:
  - e.g., the roles and responsibilities of suppliers and consumers in the energy system (smart grid)
  - e.g., the practices and values of sustainable food production and consumption (in vitro meat)

➢ Visioneering produces novel combinations between old, new and not-yet established structures and normative orders, which have to get disentangled to show how technological paths reflect values of present society and to assess the possibilities of sociotechnical innovations.

Many thanks for your attention!

We are looking forward to your questions

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