Modelling Sustainable Systems and Semantic Web Technology

Technology

Lecture in the Module 10-202-2312
for Master Computer Science

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What is Technology?

Technology in the sense of the **VDI Guideline 3780** comprises:

- the set of use-oriented, artificial, representational structures
  (artefacts or material systems)
  [die Menge der nutzenorientierten, künstlichen, gegenständlichen
  Gebilde (Artefakte oder Sachsysteme)],

- the set of human actions and facilities in which material systems
  (Sachsysteme) are created
  [die Menge menschlicher Handlungen und Einrichtungen, in denen
  Sachsysteme entstehen]

  and

- the set of human actions in which material systems are used
  [die Menge menschlicher Handlungen, in denen Sachsysteme
  verwendet werden.]

Technology assessment thus refers not only to material
real-world systems, but also to the conditions and consequences of
their creation and use.

Definition of Technology – Purpose and Objective

The **target group** of the VDI Guideline 3780 is all those responsible and affected in science, society and politics, who are involved in decisions about technical developments and in shaping the corresponding socio-cultural framework conditions, in particular engineers, scientists, planners and managers who design and evaluate new technical developments.

The **purpose** of the guideline is to provide all those involved with a common understanding of terms, methods and value ranges. The guideline is intended to systematically analyse objectives, values and alternatives to make well-founded decisions. ...
[allen Beteiligten ein gemeinsames Verständnis für Begriffe, Methoden und Wertbereiche vermitteln, um durch systematisches Analysieren von Zielen, Werten und Handlungsalternativen begründete Entscheidungen zu ermöglichen].

Technology excites

Technology as a status symbol

But: You find there also detailed description of the technical parameters and the history.

Source: `http://de.wikipedia.org/wiki/Bugatti_Veyron_16.4`

Technology excites?

"Weapons from the 3D printer"
Source: Netzpolitik.org, 29.3.2013

... In the meantime, statistics show that most of military combats take place at distances of less than 400 m, even less than 200 m in urban areas. In the case of police operations, the distances are usually even shorter. At the same time, the shooter is no longer in the open field, but often fights from vehicles or inside buildings, where only compact weapons offer sufficient room for movement. ...

Source: `http://de.wikipedia.org/wiki/Maschinenpistole`

What else is Technology?

Technology is about techniques (in German oft the same word „Technik" is used for both notions)

- Painting techniques, writing techniques
- Flower arranging techniques
- Political techniques, power techniques

$$\Rightarrow \text{It is about Practice, Experience, Skill}$$

Different variants of a machine-centered and an action-centered understanding of technology compete with each other.

More on the Concept of Technology

1) The concept of technology for products of technically supported action, i.e. for individual machines or, more comprehensively, for the entire existing system of material means to transform nature for human purposes.

2) An action-oriented concept of technology ... ties in with the Greek concept of *techné* as procedural knowledge that guides people in the production of things ... and thus enables a technical knowledge that controls nature in both a reproductive and a manipulative sense. (Source: H. Petzold, Dictionary of Philosophy)

Technology and Language

Technique is something that obeys to the word.

Example: Sven-Åke Johansson - Concerto for 12 Tractors

Picture source: Höfgen 1996, Photo: Bahr,
`http://www.sven-akejohansson.com`

Technology and Forms of Description

- Technology as "condensed" description
- Essential form in which human agreements manifest theirself
- Technology as a social phenomenon of humanity
- Technology as an intersubjective phenomenon
- Essential intersubjective dimensions: Descriptions and execution of action

What is Technology?

Technology is an interrelation of

- Globally available *procedural knowledge* (global verfügbares Verfahrenswissen),
- *Institutionalised procedures* (Institutionalisierte Verfahrensweisen, "state of the art") and
- Private *procedural skills* (Privates Verfahrenskönnen).