Emerging Medical Technology in Politics and Society

LSA2018

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This Talk

Artificial Intelligence (AI) applications and other emerging technological developments in the health sector (with a focus on prosthetics)

Technology Assessment (TA):

1) KIT-ITAS work in TA
2) Policy advice
3) ELSI/ELSA research
   (Ethical, Legal, Societal Implications/Aspects)
4) Analysis of future visions and public dialogue

1.1 Some Key Tasks of KIT-ITAS

- ITAS: major player in Technology Assessment (TA), also in international comparison
- Explores the interfaces and interactions between science and technology on the one hand and society on the other
- Transforms the knowledge gained into decision-making support to policymakers, advice to stakeholder groups and the embedding of science and tevhnology in society (also by means of public dialogue and engagement activities)

1.2 Some Features of ITAS Research

- Generation of anticipation-oriented knowledge: knowledge for action
- High relevance for value-based deliberation and decision-making processes
- High degree of „strong“ interdisciplinarity (natural sciences, engineering, social sciences, humanities, philosophy and others)
- Transdisciplinary research: topics of high uncertainty and societal relevance; inclusion of non-academic stakeholders, citizens and decision makers

1.3 Selected Addressees of ITAS Work

- German Federal Parliament: *Office of Technology Assessment at the German Bundestag (TAB)*
- German Federal Ministry of Research (BMBF) and other branches or agencies of the Federal government
- European Parliament: *„Science and Technology Options Assessment" (STOA)* panel
- European Commission: mainly in the Framework Programmes
- Ministry of Science and Art and other branches of the government of of Baden-Württemberg
- Various stakeholder groups (companies, associations, civil society organisations, etc.)
- Students
- The general public
- Mass media

1.4 Selected Pertinent KIT-ITAS Activities
(with year of completion)

- **Brain research** (2007) – *Bundestag (TAB)*
- **State of the art in neural implants** (2008)
- **Converging technologies and sciences** (2008) – *TAB*
- **Projects on assistive technologies –** TAB (2009) – EP STOA (2017)
- **EPOCH: Ethics in Public Policy-Making – The Case of Human Enhancement** (2012) – *EU, FP7*
- **Non-medical applications of neuroscience** (2012) – within a BMBF project
- **Interdisciplinary TA on service robots** (2013)
- **Human-machine interaction: Between artificial intelligence and human enhancement** (2016) – *TAB*
- **INOPRO: Intelligent Orthotics and Prosthetics** (ongoing) – *BMBF*
- **FUTUREBODY: The Future of the Body in the Light of Neurotechnology** (recently started) – *NEURON ERA-NET / BMBF*

2. *Human-Machine Interaction*: Policy Advice for the German Bundestag

- At the initiative of the Bundestag Committee on the Digital Agenda
- Current developments in the field of robotics and neurotechnologies potentially blurring the boundaries between humans and machines, and between therapy and non-therapeutic enhancement

Key insights from the project:

- Given the strong influence of far-reaching future visions, the feasibility of these visions was assessed supported by external expertise.
- Many highly speculative visions: Neither a technological enhancement of humans (to a societally relevant degree) nor an “intelligence explosion” of machines are to be expected in the foreseeable future.
- The dissolution of boundaries currently is rather taking place on a more subtle level, e.g. with respect to such categories as accountability, self-determination, identity.

3. *INOPRO*: An ELSI Sub-Project in a BMBF Project

- INOPRO: one of two new BMBF innovation clusters involving partners from industry (SMEs), academia and the healthcare sector that aim to develop highly innovative intelligent prostheses, orthoses, interactive micro-implants and other medical products. INOPRO investigates ways to produce intelligent prostheses/orthoses that actively adapt to user needs, help improve quality of life and enable intuitive device-user communication.
- Within the INOPRO consortium, ITAS is responsible for its own cross-cutting ELSI project, primarily intended to identify, analyse and give practical consideration to ELSI of the RTD conducted in the overall project (applied ethics; user acceptance; cultural and socioeconomic aspects).

Key insights informing / from the project:

- ELSI in RTD projects can profit from advanced, inclusive Responsible Research and Innovation (RRI) approaches.
- Early stakeholder interaction is key to innovation success.

4. *FUTUREBODY*: A New NEURON ERA-NET ELSA Project

- EC-funded European Research Area Networks (ERA-NETs) shall create a European Research Area. The Network of European Funding for Neuroscience Research (NEURON) was initiated in 2003. Under the current EU FP 'Horizon 2020', NEURON Cofund (2016 – 2020) builds on and further develops the structures established by its predecessors.
- FUTUREBODY: Visions of the future of the human body against the backdrop of progress in neurotechnology, prosthetics and AI
- Analyses of future visions, current practices and public discourse; philosophical, social-scientific, humanities and artistic work

Key insights informing the project:

- Future visions influence innovation paths and success.
- The 'deficit model' is dubious. Widespread concerns about privacy.
- In the case of fears, hopes and value-based conflicts, art-science interfaces are of particular value.

Thank you very much for your attention!

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GEFÖRDERT VOM

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