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Biomedicine

Questioning views of the brain

With modern imaging techniques, it is now possible to investigate the functioning of the brain with increasing accuracy. The employment of these methods for the diagnosis and therapy of brain diseases is undisputed. But there are conflicting views on the application of neuroscientific research results in areas such as criminal law, pedagogics or market research. Is it really possible to draw conclusions on a person's character, talents or inclinations from the results of such investigations? What future developments in brain research should we expect? Is there already a need for crash barriers? A new study by TA-SWISS, the Centre for Technology Assessment is dedicated to resolving these questions. The Swiss Academy of Medical Sciences (SAMS) is supporting this project.

Brain research is producing some important medical discoveries. But it also has some significance in cultural, social and economic areas. There is little doubt that new, powerful imaging techniques represent a breakthrough in the exploration of the brain. Methods such as magnetic resonance imaging (MRI) and positron emission tomography (PET) enable us to look in ever greater detail at the processes that go on in the brain when we think, feel and act. The aim of the interdisciplinary TA-SWISS study is to evaluate the opportunities (e.g. in diagnostics) and the risks (e.g. from strong magnetic fields or the potential for misuse in assessing personality) that are associated with the application of imaging techniques.

Controversial: Non-medical applications

Improved diagnosis and therapy of brain diseases is an undisputed goal for neuroscientists. The TA-SWISS study will be demonstrating the current possibilities in this area. It will also examine the contribution that a better understanding of the functions of the brain can make to the development of new drugs, and the economic potential that could be associated with it. Controversy often surrounds the findings of brain research that are not directly related to diseases. How far should researchers be allowed to go in investigating the functions of the brain that determine our character, talents and inclinations? How should we deal with the findings of this research? The TA-SWISS study will refer to the legal situation in Switzerland, taking into account the current legislation (research on human beings). By clarifying the ethical and social issues, it will examine the extent to which the results of applying imaging techniques allow propositions to be made that could affect psychiatry and, outside medicine, areas such as criminal law, pedagogics or market research. It is these aspects in particular, as well as questions on human self-understanding (freedom versus determinism), that have already been taken up in the public debate.

Interdisciplinary, international project team

The TA-SWISS study, which has the working title of “Consequences of the application of imaging techniques in brain research”, will be conducted by an interdisciplinary working group. Alongside the project leader *Bärbel Hüsing*, a biologist at the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe, the team includes the following experts from Switzerland: *Peter Bösiger*, Professor of Physics at the Swiss Federal Institute of Technology ETH and the University of Zurich, the neuropsychologist *Lutz Jäncke* and the legal expert *Brigitte Tag*, both of whom hold a Chair at the University of Zurich. The project team will first of all evaluate the current specialist literature and then conduct detailed interviews with 20 or so selected experts. It will finally evaluate the situation in an overall assessment and formulate recommendations directed at decision makers, especially politicians. As is normal for TA-SWISS projects, a supervisory group has been recruited for quality assurance purposes. The study is scheduled for completion in autumn 2005.

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Links:

TA-SWISS Project:

http://www.ta-swiss.ch/www-remain/projects_archive/life_sciences/Hirnforschung_d.htm

The Decade of the Brain 1990-2000 (USA): <http://www.loc.gov/loc/brain/home.html>

Dekade des menschlichen Gehirns 2000-2010 (D): <http://www.menschliches-gehirn.de>

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