

Scanning for Emerging Science and Technology Issues

Final Conference
Brussels
28 June 2011

The Project

The SESTI project (Scanning for Emerging Science and Technology Issues) is one of six foresight projects funded through a 2006 FP7 call under the Socio-economic Sciences and Humanities theme. During the project a number of techniques were developed to identify weak signals and emerging issues in a systematic, efficient and effective way. The project also included the organisation of a number of workshops designed to link the developed techniques in a meaningful way to existing policy processes.

The project was launched in October 2008 and comes to a close in June 2011.

The Conference

The techniques developed in the SESTI project were the subject of an earlier workshop. In this Conference we focus on the three thematic areas which were investigated during the course of the project, and will present the key results from each exercise. The target audience includes EU and national policymakers, foresight experts and other stakeholders.

The three themes addressed by the project are as follows:

- **Cognitive Enhancement**
- **Energy**
- **Health**



EUROPEAN
COMMISSION



Project funded under the Socio-
economic Sciences and Humanities



Conference Programme

Fondation Universitaire, Rue d'Egmont
Tuesday 28 June 2011

- 1000-1020 Registration and welcome coffee
1020-1030 Welcome and Introduction – Maurits Butter (TNO), Project Coordinator
1030-1040 EU Forward looking activities, Domenico Rossetti di Valdalbero, DG Research and Innovation Unit B5, Socio-economic Sciences and Humanities

Session 1: Cognitive Enhancement

- Chair: Elie Faroult, Consultant and Foresight Expert
1040-1110 SESTI policy results – Miriam Leis
1010-1130 Stakeholder response – Professor Anders Sandberg, Oxford University
Followed by open discussion
1130-1150 Coffee Break

Session 2: Health

- Chair: Anette Braun, VDI
1150-1210 SESTI policy results – Maurits Butter, TNO
1210-1230 Stakeholder response – Isabel de la Mata Barranco, DG Sanco
followed by open discussion
1230-1400 Lunch break

Session 3: Energy

- Chair: tbc
1400-1420 SESTI policy results – Victor van Rij, Ministry of Education NL
1420-1440 Stakeholder response - tbc
followed by open discussion

Session 4: Future Themes in Forward Looking Activities

- Chair: Jean Claude Burgelman, DG Research and Innovation
Panel: Perla Srour-Gandon (EC), Fabiana Scapolo (JRC) , Karel Haegeman (JRC-IPTS)
1440-1520 Panel discussion

Concluding Remarks

- 1520-1530 Closing Remarks by Maurits Butter

Weak Signals and Emerging Issues in Cognitive Enhancement

Human Enhancement is a field of growing interest in different communities. It is an umbrella term used to describe the expansion of physical or cognitive abilities of individuals. It can be temporary (e.g. through the use of pharmaceuticals) or permanent (e.g. surgery, implants), and can be applied as a therapeutic measure (to correct a deficiency or impairment) or as an enhancement. The term is also sometimes used to refer to measures aimed at increasing the life-span of an individual.

The project unearthed the following emerging issues:



1. recent discoveries in invasive and non-invasive reading of brain activity raising many ethical and legal issues;
2. the use of neural implants as a possible means of unconsciously influencing thinking and emotions (also evoking many ethical and legal questions);
3. further deployment of cognitive performance-enhancing drugs leading to unfair advantage during academic assessment, but also involving health risks;
4. genetic screening of an increasing number of 'cognitive' genes and In Vitro Fertilization (eugenics, new problem in use of animals, experiments with cognitive human-zoo hybrid);
5. possible development of developmental drugs influencing the neuro-cognitive embryological
6. knowledge gained from healing and preventing developmental cognitive impairment could also be used for (costly) developmental treatments of normal individuals to induce higher performance levels;
7. commercial and military interest (neuromarketing - use of neuro-imaging to research subliminal influence);
8. cognitive enhancement of individuals with lower cognitive performance levels (creating problems on the insurance front, and further widening of the social and economic divide);
9. ICT-enhanced learning seems to be almost ripe for very promising tools for learning complex cognitive and cognitive motor tasks (augmented reality, virtual reality and gaming).

Weak Signals and Emerging Issues in HEALTH

An ageing society, longer life expectancy, innovative medical techniques, technological advances and new medicines are leading to spiralling costs and putting unprecedented pressures on the provision of healthcare services throughout Europe.

1. Diversification in medicine

The growing popularity of complementary and alternative medicine could lead to a demand for a diverse mix of medical services in the future. The regulation of practitioners may need to be extended to include those practicing alternative medicine. This speciality may provide opportunities for reducing the public healthcare bill.



2. Mental health in an ageing society

The increasing incidence of mental health problems among the elderly is a looming problem which could have a significant impact both in terms of demand on medical services, as well as in a wider social context. There are very significant policy implications and the matter deserves serious consideration.

3. Obesity: the global epidemic marches on

Increasing incidence of obesity and the limited success of current attempts to address the problem demand a new impetus and a broader approach. Alternative measures could include additional regulation of the food industry and regulatory constraints on marketing by the fast food industry.

4. Is prevention better than cure? Re-prioritising health research

New pharmaceuticals and treatments have contributed to a spiralling healthcare bill, and in many countries future sustainability is a challenge. The time may be ripe for a radical rethink in health research strategy with an increased focus on preventive solutions.

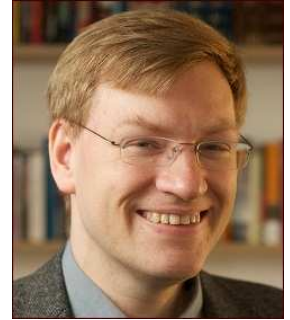
5. Personalised treatment

Widespread personalised medicine is believed to have a significant impact on the future treatment of individuals. Such a future is considered a plausible future as pharmacogenetic knowledge grows and costs continue to fall. Pharmacogenomics also provides a mechanism for improvements in the pharmaceutical regulatory regime leading to a broader range and lower cost of drugs.

Speakers

Anders Sandberg, Oxford University

Professor Sandberg is a researcher, debater, futurist, transhumanist and author. He obtained his Ph.D. in computational neuroscience from Stockholm University, Sweden, for work on neural network modeling of human memory. He was the scientific producer for the major neuroscience exhibition "Se Hjärnan!" ("Behold the Brain!"), organized by Swedish Travelling Exhibitions, the Swedish Research Council and the Knowledge Foundation. He is co-founder and writer for the think tank Eudoxa. He is currently a James Martin Research Fellow at the Future of Humanity Institute at the University of Oxford. His research centres on societal and ethical issues surrounding human enhancement and new technology, and on estimating the capabilities and underlying science of future technologies. Topics of particular interest include enhancement of cognition, cognitive biases, technology-enabled collective intelligence, neuroethics and public policy.



Anette Braun, VDI

Dr Anette Braun is a macro-economist and political scientist (PhD). Since 1997, she has been a senior policy and technology consultant at VDI Future Technology Center in Düsseldorf, where she coordinates various European Prospective Research Studies (2005-2008 Trend and Issue Analysis of the European Foresight Monitoring Network, 2007 the foresight programme of the Luxembourg Government). She is responsible for the performance of socio-economic analyses of global trends, drivers, emerging issues (roadmaps on health and healthcare systems, e-health, biotech, nano, converging technologies), and their exploitation, synthesis and translation into discrete S&T policy priorities. Anette Braun has participated as a Member of the High Level Expert Group for DG RTD in 2010 on "EU and the World in 2030-2050" and in 2005 on "Foresighting the New Technology Wave" and has published various articles and papers on RTD and foresight.



Domenice Rossetti di Valdalbero, European Commission

Domenico Rossetti di Valdalbero is Principal Administrator in DG RTD, where he is responsible for forward-looking activities. In the economic and social sciences research, he is also in charge of topics related to innovation, economy of services and post-carbon society. He was previously responsible for the EU research related to "Energy-Economy-Environment" models, to world energy and technology outlooks (2030-2050), and to the quantification of energy external costs. Domenico is author of more than 100 scientific and general articles (in English, French, Italian and Spanish) on EU studies, research, energy, environment and technological development. He has written two books entitled "The Power of Science" and "Mapping European integration through its Cities". Domenico got his Doctorate (PhD) in economics from Paris Dauphine University and studied European and international affairs at the Catholic University of Louvain (UCL) and "Science-Society-Technology" issues at the Maastricht University.



Effie Amanatidou, MIOIR

Effie Amanatidou is a freelance research and innovation policy analyst and a visiting research associate at the Manchester Institute of Innovation Research (MIOIR) where she is also completing her PhD research on 'Assessing the contribution of Foresight towards a more participatory knowledge society'. She participated in the EC Expert Group on 'Global Europe 2030/2050', the conference committee for the 4th International Seville Conference on Future-Oriented Technology Analysis (FTA), the 'Governance, Social Cohesion and Information Society' for the study 'EU and the World in 2025' carried out by JRC/IPTS, and in the European Foresight Monitoring Network (EFMN) funded by DG Research and Innovation. Her expertise extends in the fields of regional and national innovation systems, policies of science and technology, research evaluation and impact assessment.



Elie Faroult

Elie Faroult studied medicine and psychology and has 20 years experience of counselling industries and administrations on strategic management and innovation. He was professor in social sciences in ENA (Ecole Nationale d'Administration), HEC and ESCP (Paris) and an adviser in OECD (1979-1990). He joined the European Commission in 1992, initially working on a development programme in Africa. Since 1998, he has worked as Scientific Officer in DG Research, working on social sciences and humanities, scientific and technological foresight. He is now retired, but remains active in the field and is often called upon to share his expertise as a speaker or session chair in conferences and workshops.



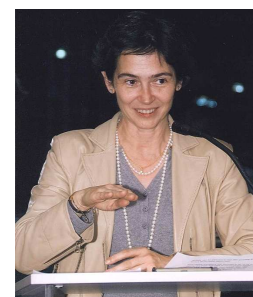
Fabiana Scapolo, European Commission

Fabiana Scapolo holds a PhD on foresight methodologies and practices from the University of Manchester (UK) and she has a degree on Political Sciences from the University of Milan (Italy). She works at the EC Directorate General Joint Research Centre Institute in the Unit Work Programme and Strategy, where she is involved in the setting up of a corporate intelligence function called Anticipation at the JRC. This function is studying technological and societal trends and events which may affect future European public policies by applying horizon scanning and foresight. Fabiana was recently involved in the development of the new JRC Strategy for the period 2010-2020. Previously she was working at JRC-IPTS in Seville where she was responsible of the foresight activities. She has been working on different projects aiming at reinforcing the position of the JRC-IPTS as a centre for foresight at European and international level. She is interested in the advancement of the application of Foresight as an instrument for policy-making formulation.



Isabel de la Mata, European Commission

Isabel de la Mata was born in Bilbao (Spain). She graduated in Medicine at the University of Basque Country in 1983 and holds post-graduate degrees from the University of Leuven and Paris VI. She is specialist in Preventive Medicine and Public Health. She worked at the Ministry of Health of Spain and at the Regional Departments of Health in the Basque Country and in Madrid. She has an experience working with International Organisations, such as the WHO, Pan American Health Organisation and Inter-American Development Bank. From 2004 until February 2008 she worked at the Permanent Representation of Spain to the EU. Since 1 March 2008 she works as Principal Adviser for Public Health at Directorate SANCO – Health & Consumers.



Jean Claude Burgelman, European Commission

Jean-Claude Burgelman joined the EC in 1999 as a Visiting Scientist in the Joint Research Centre (the Institute of Prospective Technological Studies), where he became Head of the ICT unit in 2005. In January 2008, he joined the Bureau of European Policy Advisers as adviser for innovation policy. In October 2008 he joined DG RTD as advisor and later Head of Unit in charge of Research of top level advisory boards like the European Research Area Board. Until 2000 he was full professor of communication technology policy at the Free University of Brussels, director of the Centre for Studies on Media, Information and Telecommunication. He has been visiting professor at the University of Antwerp, the European College of Bruges and the University of South Africa and sits on several academic journals. He chaired and is now a member of the World Economic Forum's Global Agenda Council on Innovation as well as a member of its Science Advisory Committee.



Karel Haegeman, European Commission

Karel Haegeman is a scientific officer at European Commission's Institute for Prospective Technological Studies (JRC-IPTS), working on foresight activities and policy analysis within the Knowledge for Growth Unit. Topics of interest include foresight methodology development and application, R&D priority-setting, joint programming and research and innovation in general. Thematic areas of interest are renewable energy, agriculture, food security and climate change.



Perla Srour Gandon, European Commission

Perla Srour-Gandon is a Scientific Officer at the European Commission, in the Directorate General for Research and Innovation. She is working on Forward Looking activities and is responsible of several projects in the Foresight domain. Previously for last nine years, Perla Srour-Gandon was an analyst in geopolitics, specialising in oil and gas issues. She was an advisor for public and private entities that invest in the MENA (Middle East and North Africa) region. From 2000 to 2002, she also worked at the Documentation Française, as a contributor to a research journal named Maghreb-Machrek. Perla Srour-Gandon holds a Magistère of International Relations from the University Panthéon-Sorbonne and a Diplôme d'Etudes Approfondies from the Institut National des Langues et Civilisations Orientales (Paris). She is also author of several papers on hydrocarbon issues and on energy efficiency on the MENA region in specialised reviews.



Victor van Rij, MinOCW

Victor van Rij is senior advisor on foresight in the unit of Foresight and Horizonscanning of the Ministry of Education, Culture and Science in the Netherlands. He started his career as policy advisor on research and educational matters at the University of Amsterdam where he also completed his studies as a biologist. He spent a number of years working in COS, the umbrella organisation of a number of governmental and non-governmental organisations involved in the national foresight programme of the Netherlands. Victor was the Netherlands coordinator of the ERANet Forsociety and is a member of the national network of future experts (NTV) in the Netherlands. He has been and still is involved in many national and international foresight projects and was a member of the EC Science in Society Advisory group. He has recently been involved in the national horizonscan and led a pilot project joining the horizonscans of the UK, Denmark and the Netherlands.

