

ligen Verfahren gegenüber. Stärken partizipativer TA seien, dass sie eine normative Bewertung von Technik möglich machten, gemeinwohl- und nachhaltigkeitsorientiert seien. Schwächen lägen in den verhältnismäßig hohen Verfahrenskosten. Die „partizipative Technikgestaltung“ hingegen sei ergebnisorientierter und damit ggf. das leistungsfähigere Verfahren, allerdings sei der Nutzen für die Verfahrensteilnehmer häufig wenig zufriedenstellend. Open Innovation schließlich böte den Kunden direkt die Möglichkeit, von (neuen) Entwicklungen zu profitieren, die Teilnehmerzahl sei nahezu unbegrenzt und die Verfahrenskosten gering. Als Schwäche könnte die Konsumorientierung angesehen werden. Dieser Überblick über mögliche Stärken und Schwächen der unterschiedlichen Verfahren bot einen sehr guten Einstieg in die sich anschließende Diskussion.

4 Podium und Diskussion

Die Podiumsdiskussion am zweiten Konferenztage, an der mit *Axel Zweck* (ZTC, Düsseldorf), *Philine Warnke* (ISI Fraunhofer, Karlsruhe), *Daniel Bieber* (iso, Saarbrücken), *Armin Grunwald* (ITAS, Karlsruhe), *Manfred Rink* (Bayer, Leverkusen) und *Klaus Burmeister* (Z_punkt, Köln) prominente Vertreter aus Industrie und Wissenschaft mit unterschiedlichen Blickwinkeln auf partizipative Verfahren und Innovationsprozesse zusammengekommen waren, offenbarte den hohen Austauschbedarf über wissenschaftliche Strategien, politische Herangehensweise und lebensweltliche Erfahrungen. Diese Erkenntnis tat der Veranstaltung keinen Abbruch, sondern spitzte vielmehr die Heterogenität des Themas und die damit verbundenen Herausforderungen für eine zukünftige ITA zu. Im Vortrag, der der Diskussion vorausging, hatte *Klaus Burmeister* mit Inputs zu Corporate Foresight-Prozessen und deren Bedeutung für mittelständische Unternehmen bereits einen weiteren Aspekt der ITA thematisiert. Durch Corporate Foresight könne der Mittelstand in Innovationsprozessen unterstützt werden, der Blick „vom Umfeld zum Unternehmen“ werde für die Lösung strategischer Zukunftsfragen immer wichtiger. Die Abschlussdiskussion hatte also – neben den ohnehin schwierigen definito-

rischen Abgrenzungen von ITA – konkrete wirtschaftliche und bildungspolitische Entwicklungen zu berücksichtigen und die voranschreitenden unternehmerischen Anforderungen mit den theoretischen Reflexionen zu verbinden.

Otto Bode, verantwortlich für den Foresight-Prozess im BMBF, formulierte zum Schluss, wie die Innovations- und Technikanalyse (u. a. über das nun reaktivierte ITAFORUM) im BMBF zukünftig angesiedelt und weitergedacht werden könnte. Da ITA die mittelfristige Zukunft betrachte, sollten sowohl das Abstraktionsniveau der Wissenschaft als auch die Bedürfnisse aus Bildung und Wirtschaft berücksichtigt werden. Für die politische Entscheidungsfindung sei jedoch vorrangig die Frage zu lösen, welche Technik wie zu fördern sei. Anders als die Wirtschaft frage die Politik dabei nicht nach Märkten, sondern nach Inhalten für Forschungsprogramme und Lehrpläne. Dieses erste ITAFORUM hat es den Besuchern der Kalkscheune ermöglicht, sich über ITA-Werkzeuge zu verständigen und voneinander zu lernen. Diese Lernprozesse sollten in Zukunft idealerweise allen Seiten – Politik, Wirtschaft und Wissenschaft – von Nutzen sein.

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The 3rd International Seville Conference of FTA Impacts and implications for policy and decision making

Seville, Spain, October 16 - 17, 2008

by Knud Böhle, ITAS

1 Framing the conference

The 3rd International Seville Conference on Future-oriented Technology Analysis (FTA) was organised by the “European Foresight Action”, which is part of the “Knowledge for Growth” unit of the Institute for Prospective Technological Studies (IPTs), an institute of the European Commission’s Joint Research Centre (JRC) based in Seville. This conference was the third one in a series of bi-annual

events. It was attended by about 180 participants, the maximum number of attendees admitted. The group “European Foresight Action” is led by Paul Desruelle.

As in earlier years, there were five “anchor papers” prepared by renowned scientists on topics which were further tackled in the parallel sessions:

- Methods and Tools Contributing to FTA by *Annele Eerola* (VTT Technical Research Centre of Finland) and *Ian Miles* (University of Manchester);
- The Use and Impact of FTA for Policy and Decision Making by *Attila Havas* (Institute of Economics, Hungarian Academy of Sciences) and *Ron Johnston* (Australian Centre for Innovation);
- FTA in Research and Innovation by *Jennifer Cassingena Harper* (Malta Council for Science and Technology, MCST) and *Luke Georghiou* (University of Manchester);
- FTA and Equity: New Approaches to Governance by *Cristiano Cagnin* (IPTS), *Denis Loveridge* (University of Manchester), and *Özcan Saritas* (University of Manchester);
- FTA in Security and Sustainability by *Totti Könnölä* (IPTS), *Fabiana Scapolo* (JRC, Brussels), *Rongping Mu* (Chinese Academy of Sciences), and Paul Desruelle (IPTS).

It is worth noting that the Scientific Committee of this conference had received 166 submissions of which 56 papers were selected for the parallel sessions. In the “patio” of the conference venue 27 posters were exhibited in addition. Apart from the anchor papers presented in the plenary and the papers of the parallel sessions, the conference included a keynote speech by *Sandy Thomas* (Head of Foresight, UK Government Office for Science), two workshops, one on “Network building in the FTA community with focus on redefining existing networks” chaired by *Jack E. Smith* from Canada and a second chaired by *Attila Havas* from Hungary on “Capacity building with focus on evaluating FTA”. Further, three special features contributed to the liveliness of the conference. First, a pre-conference survey had been carried out on “Big Picture Trends, Drivers and Discontinuities Looking Forward to 2025” to which most of the participants had contributed and the preliminary results of which were presented by *Jack Smith*

and *Özcan Saritas*. In a way, this exercise was a demonstration of FTA “as a dynamic process of shared knowledge creation” (a definition proposed by Miles and Eerola) resulting in 194 drivers, 184 wild cards, 51 discontinuities, and 156 weak signals. The second element was the final panel in which *Luke Georghiou* asked the members of the scientific committee, who were also rapporteurs of the parallel sessions, about the main achievements of the conference and future directions. This procedure is indeed preferable to five monologues by session rapporteurs – especially when the formal summaries of the rapporteurs are also made available on the conference website as announced. Thirdly, *Ron Johnston* conducted interviews with ten of the conference attendees, which will also be posted on the web (http://forera.jrc.ec.europa.eu/fta_2008/intro.html).

Along with the registration, the conference papers were made comfortably available on a pen drive; the abstracts as well as selected papers from the previous 2006 FTA conference were each published in a book (Cagnin et al. 2008). Meanwhile, the IPTS has also posted the proceedings of this year’s conference on the web. Again it is intended to publish the best papers in special issues of high level academic journals. Papers of the 2006 conference for instance were published in “Technological Forecasting and Social Change 75/4 (2008)” and “Technological Analysis and Strategic Management 20/3 (2008)”. Given that (almost) all papers are available online, the delay of more than a year for the print publications appears more tolerable. As the conference is well documented on the web, I will restrict this conference note to a short reference to the keynote presentation and to a few general observations mainly drawn from the final panel discussion. Finally, I will add a short paragraph containing my wish list for the next conference in 2010.

2 Keynote speech

Sandy Thomas, UK Government Office of Science, presented the UK Foresight Programme, which has been highly embedded into government since 2002, when the new foresight programme was launched. Its ambition is to bring long-term thinking into government and to

provide more robust and resilient policy solutions to the big challenges like water, food, energy, diseases, terrorism, and climate change. Sustainability serves as a cross-cutting perspective. In the last six years, ten foresight projects were carried out on “flood and coastal defence”, “cognitive systems”, “exploiting the electromagnetic spectrum”, “cyber trust and crime prevention”, “brain science, addiction and drugs”, “intelligent infrastructure systems”, “the detection and identification of infectious diseases”, “tackling obesity: future choices”, and most recently a project was finished on “sustainable energy management and the built environment” and another one on “mental capital and well-being”. Each project was sponsored by a particular ministry. The embeddedness of the UK foresight makes it more likely that the results will get heard by policy-makers. What also may contribute to the success of the UK Foresight Programme is its clear procedural structure. First, horizon scanning activities and in-depth foresight studies are distinguished. Horizon scanning activities are performed by a “Horizon Scanning Centre” set up in 2005.

These in-depth foresight projects follow clearly defined steps. First, an “evidence base”, i.e. the collection of what is known on the issue, is established; then scenarios are built helping to think through different options, including different policy options and their effects on the scenario outcome. In a further stage, technology roadmaps are constructed, often involving industry stakeholders. Finally, scientific reports are published and an action plan is developed for wide circulation of the outcomes to all stakeholders and the public. The primary ambition is that these foresight projects will influence both policy and funding decisions made by government. As *Sandy Thomas* said, there is nevertheless room for improvement: Interdepartmental communication and co-operation is still an issue, inclusion of more social science expertise in UK foresight another. Finally, she encouraged further exchange of best practice. Given the strength and success of foresight in the UK, it came to my mind that comparing and analysing the configuration of foresight and TA in European countries might be worthwhile (e.g. UK Foresight Programme and the Parliamentary Office of Science and Technology, POST; Ger-

man Foresight and the Office of Technology Assessment at the German Parliament, TAB).

3 General observations

The FTA conference is usually presented as an event where three communities meet: foresight, forecast and TA. The conference is without doubt a place where different communities meet, but my impression is that the foresight community is by far the most present there. However, the TA community is also largely involved, as at the organisational level most institutes able to perform TA are able to perform foresight exercises and vice versa. The forecast community, if such thing exists, was hardly visible. In the session about networking, *Jack Smith* from Canada observed that public research institutions from Europe – not seldom involved in EU-sponsored projects – build the core of the network, while researchers and practitioners from other countries, as important as they are, are rather loosely coupled to the core. The FTA conferences are nevertheless an important platform for international networking and for Europeans to broaden their perspective on North- and South-American as well as on Asian and Australian foresight endeavours. It is also worth highlighting that the conference is a place where institutionalised foresight and TA, typically combining research & policy advice, exchange with academia engaged in STI (science, technology, and innovation) research. Another claim of the organisers is that FTA experts, practitioners and decision-makers come together at the conference. In fact, however, decision-makers rarely show up. There was a consensus that the acronym FTA does not serve to delineate a community but is a very useful header for the series of conferences in Seville. The FTA conference does not serve a single community, but in bringing together experts from different communities throughout the world it enables exchange and networking across communities – and benefits European foresight, TA and STI research.

In terms of projects and activities presented, the anchor papers written intentionally by pairs of authors from different countries, fulfil the role of state of the art reports on selected issues and serve as baseline. The confer-

ence is also a showroom for current international, national, regional, and local foresight projects (United Nations' activities, foresight projects from Finland, Slovenia, Russia, Brasil, Germany, Japan, Luxembourg, Poland, Extremadura, Vienna, etc.). But the conference is also a fair exhibiting a broad range of approaches to future-oriented analyses of socio-technical change.

In the final panel at the end of the conference, *Luke Georgiou* put questions to the members of the scientific committee. Was there progress in terms of methods and methodology? The answer was that obviously there is a wide set of methods in use, but it depends on the individual case which methods are selected, and there are still no standardised methods in a strict sense. Scanning the conference papers, scenarios and roadmaps appear to be most popular methods. Also the conceptual frameworks in use are rather diverse, covering transition management, innovation theory, strategic decision support, social construction of technology, risk assessment, and others.

Are the FTA studies presented too incremental in their approach? The panel had the impression that there was often a lack of attention to disruptions. *Attila Havas* pointed out the dilemma that policy makers don't like disruptions, but at the same time, when there is no disruption identified, they are disappointed because they miss exciting news. The situation of course differs between countries and depends to some extent on the embeddedness of foresight. In some countries like Japan and the UK, foresight is embedded and institutionalised, while in other countries it is outsourced, which may allow for greater autonomy and a greater likeliness to come up with disruptions.

This led to the question of "impact". There was some agreement by the panel that there is a trend that FTA gets more adapted to the client's needs as visible in approaches of "adaptive" or "tailored" foresight. To be successful, FTA has to take into account planning practices to a greater extent. There was also some scepticism that the direct impact of FTA on policy should be the one and only criterion of impact. There are many types of impact which need to be discerned, e.g. mobilisation of a community, which can lead to an impact in the long run. Also the time horizon of an issue in

relation to the time horizon of a decision is a variable that has to be considered when discussing the possible impact of FTA.

In terms of impact, I found the paper presented by *Jonathan Calof* and *Jack E. Smith* most interesting. They had empirically examined "critical success factors for government-led foresight", performing two surveys of 30 selected international foresight practitioners and nine leading foresight organisations. The overall conclusion drawn by the authors was that appropriate methodology and appropriate budget and techniques are indispensable but not sufficient to result in foresight programme success. What ultimately is regarded as "success" by *Calof* and *Smith* is the programme's impact on government policy and the survival of the organisation: "Success according to most interviewees creates impact, and impact creates survival." The requirements identified to achieve success are a clearly identified client, a clear link between the foresight exercise and the government's policy agenda, a direct link to a spectrum of senior policy makers, novel methodologies and skills not readily available in the political departments; an element of public-private collaboration and/or direct government-industry co-operation. Finally, successful foresight includes a clear communication strategy and integration of stakeholders into the programme as early as possible and as long as necessary, i.e. until the impact has been realised. The second survey confirmed these requirements and added an additional element: the existence of academic receptor capacity for foresight. The authors applied their model to explain the failure of the Canadian foresight programme. One question that comes to my mind is if this model could be successfully applied, or how it would have to be adapted when applied to defunct technology assessment organisations. Can it explain, for instance, the shut down of the Office of Technology Assessment (Washington) or the "Akademie für Technikfolgenabschätzung" (Stuttgart)?

There was a further observation towards the end of the final panel session worth highlighting. It was stated that the "systemic view" and the "social view" are becoming increasingly important in FTA. In other words, FTA is required to open its perspective to systemic functions of innovation systems, modes of govern-

ance, societal evolution and emerging properties in complex adaptive systems. The study of technology and technological developments would thus be coupled to the study of societal change.

With regard to this perspective, the contribution of *Riel Miller* (XperidoX: Futures Consulting, Paris) and *Philine Warnke* (Fraunhofer ISI, Karlsruhe), outlining “disruptive emergent foresight” (DEF), was particularly interesting. They contrast common foresight practice, which in their terminology comprises “adaptive / tailored foresight” and “embedded/distributed foresight”, with DEF. The important insight underlying DEF is that for “hyper-complex” processes there are no goals and outcomes that could be defined in advance. The focus of DEF is therefore to discover and create “multi-dimensional and entirely imaginary futures which, in turn, help invent and give meaning to present choices.” A further quote from the abstract of their paper underlines the close relation between foresight and new approaches in the social sciences: “[...] the developments taking place in Foresight at the moment are part of a more general effort throughout society to respond to the challenge of reconciling current theory and practice with a deeper understanding of complexity, evolutionary processes and the fundamental indeterminacy of ‘hyper-complex’ systems.” The new perspective applied here to foresight is obviously under discussion in related fields too, e.g. in STI research, LTS (large technical systems) research, and in the recent debate about TA (Grunwald 2007; Bechmann et al. 2007).

4 Concluding remarks

The conference was well organised and offered a welcome opportunity to get an overview of current foresight activities (projects, issues, approaches, and methods) and to contact experts from all over the world. Having said this, there is always some room for improvement: There was a proposition at the conference to also invite users (consumers) to the conference or to come up with issues that would eventually attract politicians (maybe organised as a satellite event, as suggested by *Ron Johnston*). Another idea put forward was to strengthen the issue orientation of the conference. On my personal wish list is an

extension or intensification of joint pre-conference activities, which might even start relatively early. The pre-conference survey this year was a very promising start of joint activity. Instead of a survey I can also imagine e.g. an online Delphi on a particular topic (such as the future of intellectual property rights, the measurement of impact, etc.). The organisers may also consider to post the “anchor papers” on their website in draft form relatively early in order to give the potential attendants of the conference an opportunity for feedback and contributions. In terms of issue orientation, I would suggest “the use of complexity theory for FTA”. The term “complexity” was used all around the conference, but nowhere – as far as I see – related to complexity theories. Another issue for the conference could be “the role of modelling and/or computer simulations” as a tool for FTA. Both issues were mentioned by *Harold Linstone*, the grand old man of foresight, who in a session he chaired pointed to promising work of RAND Corporation in this respect (Lempert et al. 2003). It would be great to have a keynote speech by *Harold Linstone* on the latest developments in the field.

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