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The influence of future-oriented technology analysis: Addressing the Cassandra challenge☆

Ron Johnston [a,*], Cristiano Cagnin [b]

[a] Australian Centre for Innovation, Australia
[b] European Commission, DG Joint Research Centre, Institute for Prospective Technological Studies, Spain

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ABSTRACT

This paper is based on a series of interviews with nine leading researchers conducted during the Future-Oriented Technology Analysis International Conference held in Seville on 16–17 October 2008. Analysis of these interviews paints a picture of FTA as an increasingly important approach being adopted in many countries to address the many challenges which are emerging at this time in human history. From this are drawn implications for the community of FTA practitioners. The biggest challenge is to achieve and demonstrate a greater impact of FTA studies. Otherwise the views of the possible futures that await us may continue to go largely unheard and unheeded, as with Cassandra's prophecies.

> "Cassandra was a daughter of Hecuba and King Priam, the rulers of Troy during the Trojan War according to Homer's Illiad. Cassandra was a beautiful young woman, blessed with the gift of prophecy by Apollo, who was infatuated with her. Unfortunately, she shunned Apollo at the last minute and he added a twist to her gift: Cassandra was doomed to tell the truth, but never to be believed."[1][1]

1. Evaluating FTA in the light of recent events

This paper is based on a series of interviews with nine leading researchers. The setting for the interviews was the Future-Oriented Technology Analysis International Conference organised by the EU Joint Research Centre – Institute for Prospective Technology Studies (IPTS) in Seville in October 2008. The question was posed to the interviewees: "in the light of recent events, do you believe this indicates FTA has failed (for example to foresee the possibility of the global financial crisis), or that we need more FTA".

The responses reflected both the power and limitations of FTA, and the context in which it operates. For some, the events have been so complex, moved so fast, and been so far beyond the control of existing institutions that no amount of rational FTA processes and studies could have made a difference. Another pointed to the historical limitations of any attempt to

☆ This paper is based on interviews with nine leading FTA researchers conducted during the Future-Oriented Technology Analysis International Conference held in Seville on October 16–17, 2008. The interviewees were selected on the basis of their long experience with FTA, and the variety of their experience and perspectives. A full list of the interviewees is provided in Annex 1. A video of the interviews can be accessed at http://forera.jrc.ec.europa.eu/fta_2008/videos.html.

* Corresponding author at: Faculty of Engineering, University of Sydney, NSW 2006, Australia. Tel.: +61 02 9351 3934; fax: +61 02 9351 3974.
E-mail addresses: rj@aciic.eng.usyd.edu.au (R. Johnston), cristiano.cagnin@ec.europa.eu (C. Cagnin).
URL: http://www.aciic.org.au

[1] Of course foresight does not claim to 'tell the truth'; indeed it explicitly rejects the possibility of predicting or prophesying the future in favour of developing insight into possible futures and preparing for them. The allusion being applied here is more to the lack of acceptance of Cassandra's insights.

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influence the future: ''Uncertainty about the future is always there. If you take a likely scenario with twenty components, each with a 90% probability, then the overall probability is only 12%. Hence unexpected events will always happen''.

It was argued that many foresight studies had pointed to the possibility of a collapse in the global economic system [2]. ''But we don't know if the right people were paying attention to these reports, or had the power to act upon them''. Alternatively, it was claimed that the very speed and coherence of the response of national governments to the emerging economic difficulties was evidence that appropriate anticipatory intelligence was in place and available.

''A significant feature of this era is the strange combination of more than ever long term challenges like climate change with the need for leaders to react in the very short-term conditions of a crisis''. ''More than ever, we need to anticipate the big challenges we are going to face. Decision-makers need a global vision of the future that addresses financial structures, climate change, poverty, etc''. ''Despite the short-term pressures, we need to continue with our focus on the long-term.''

In this context, there is wide agreement that the two years since the 2006 International Seville FTA Conference had seen significant development in FTA capacity across many countries and regions: ''We have moved from the spectacular mountains of individual foresight studies to the range of foothills of distributed and embedded foresight projects, less visible but probably far greater in volume''.

2. Impact of FTA

Establishing and evaluating the impact of FTA has emerged as a major preoccupation for the field in recent years, with the recognition that demonstrating impact is probably the greatest hurdle to the wider acceptance and use of FTA.

A paper by Calof and Smith at the 2008 International Seville FTA Conference [3] concludes ''methodology, appropriate budget and techniques alone are insufficient to result in foresight program success. To be regarded as successful, government led foresight programs need to focus on a clearly identified client, there needs to be a clear link between the foresight (topic and process) and the government's policy agenda''.

These themes were reflected in the expert interviews. Based on experience of formal evaluation of foresight programs, it was claimed that ''lack of success had very little to do with the quality of the work that has been done and much more to do with initial and subsequent political positioning''. If the program has built-in channels such that decision-makers feel ownership and are ready to take notice it seems to have a greater impact. If it is sponsored by an organisation that is out of favour then regardless of the quality of the foresight work there may be little impact.

As in so many other areas, the impact of a particular finding may occur long after the project is completed, and not uncommonly in unexpected applications. Hence, some FTA outputs may enter the reservoir of knowledge where it may be drawn on at some time in the future. One of the biggest difficulties is that ''while you can always tell when a foresight program starts, it is more difficult to tell where it ends''.

This raises the issue of when those responsible for the foresight project should hand it over to the relevant stakeholders. Experience from the UK foresight program points towards the value of a significant period of 'aftercare',[2] but there is also value in selecting topics that are likely to arouse strong interest.[3] The challenge for high impact FTA is to select issues that have both a long time horizon, but also some relatively short-term and practicable policy actions.

It must be recognised that significant limitations on the impact of FTA lie with the receptors. In many countries, government officials have been largely resistant to the concept and value of FTA. It does not fit easily with established public administration procedures and protocols. It can present a particular challenge to those with responsibilities to identify, manage and minimise risk within a framework that seeks to eliminate uncertainty, as opposed to recognising its inevitability.

Changes to these deeply embedded standards and practices will require both time and continuing commitment. Appropriate education and training may be the most important vehicle. Hence a major challenge for the next generation of FTA is to shift the emphasis of training from capacity building in performing FTA and more towards developing a general non-expert awareness of the value of FTA, through courses embedded in school and university curricula, and in the training of government officials.

With regard to diffusion ''there is a critical need for a well informed media and public information centres to enable to disseminate the value and benefits of FTA and to help build an FTA culture across society through awareness raising''. This diffusion process will be aided by the further development of an 'FTA industry'.

An important lesson for strengthening the impact of FTA was drawn from the evaluation literature. In this field a distinction has been developed between summative evaluation, focussed on measuring impact, and normative evaluation, which is more concerned with how to improve impact. While better metrics are obviously useful, and should be pursued, there is a case that at this stage of the evolution of FTA, the greater emphasis should be on improving the processes that influence impact.

3. The contribution of the FTA Conference

A particular feature of the FTA Conference series is that it ''acts as a magnet to bring people interested in FTA together and a glue to hold them together after the Conference''.

[2] As in the Mental Health and Wellbeing project.
[3] As in the Obesity report.

The first FTA Conference in 2004 gathered predominantly the EU-US community together to take stock of the developments and explore future needs for FTA. The focus of the Conference was on foresight, technology forecasting and technology assessment methods and tools. The conclusions of this event are documented in the conference proceedings [4] and a special issue of Technological Forecasting and Social Change [5].

The second Conference in 2006 enlarged the geographical base of participants, and had a special emphasis on the delivery of policy outcomes and impacts from FTA activities on policy and decision-making processes. This led to a book published by Springer [6] and special issues in Technological Forecasting and Social Change [7], and Technology Analysis & Strategic Management [8].

The large number of papers submitted in 2008 is an indication both of the central role the FTA Conference has come to play, principally for European researchers but also increasingly for researchers from around the world, and of the demand for opportunities to report FTA work. A substantial number of new researchers have emerged, apparently recognising that FTA provides an umbrella for the activities they are interested in. Hence it is not just a matter of new researchers entering FTA, as much as researchers in various other fields identifying with and migrating to the FTA field. In this scenario, several new applications of FTA have been identified [9].

It is important to highlight that an effective Conference can provide a 'showcase' of the field, providing an opportunity to display and talk up the latest FTA wares to those who may have a need to apply them. To this end, it is crucial in the future to design and organise the next Conference and its publicity so there is maximum opportunity for those who might apply FTA to their policy- and decision-making to attend and learn about the latest advances in and applications of FTA.

This would suggest the need for continuing evolution of the format of the conference so as to engage policy-makers directly with issues in which they are deeply interested. The focus of two sessions of the 2008 FTA Conference on security and sustainability may be a useful first move in this direction.

The greatest challenges may be in developing mechanisms to reach out to the other communities professionally engaged with the future and to draw them into a larger and more effective network which would provide access to greater resources, ideas and experience, and a stronger platform on which to promote the vital need of addressing the future to individuals at all levels and in all components of public and private decision-making.

4. Conclusions

The interviews conducted as a component of the Future-Oriented Technology Analysis International Conference held in Seville on 16–17 October 2008 provide a clear insight into the current state of the FTA field and the major challenges it faces.

The context is favourable. Recent crises and the threat of major longer-term changes are fostering a view that business as usual approaches are not capable of addressing these challenges. There is a widespread recognition of the need to introduce into the processes of government and corporate decision-making a much stronger orientation, and capability, to address the future in a more systematic way.

These conditions, however, do not imply an automatic rise in the use of foresight or FTA tools. Many decision-makers remain ignorant of or unpractised with these tools, and may well resort to other guides to the future, or apply them (as we have seen with scenario planning) with little comprehension of their essential components. There is therefore an urgent need for even greater efforts to inform decision-makers of the potential value of FTA approaches.

A clear demonstration of high-impact FTA studies, such as the UK coastal flooding [10] and obesity reports [11], together with the identification of emerging pressures through horizon scanning, are likely to be the best means of informing and persuading decision-makers of the value of FTA approaches.

This signals a need for the major focus of FTA to be moved from the twin goals of methodology refinement and capacity building towards a much greater emphasis on achieving highly visible and well documented impact.

Only in this way may we, the FTA community, be able to escape from the curse of Cassandra – to speak the truth, or at least to be able to present a picture of plausible possible futures, but never to have these messages heard, accepted and acted upon.

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Annex 1. Interviewees[4]

Elie Faroult—European Commission.
Luke Georghiou—University of Manchester, UK.
Ken Guy—Wise Guys Ltd., UK.
Harold Linstone—Portland State University, USA.

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Ricardo Seidl da Fonseca—UNIDO, Austria.
Fabiana Scapolo, JRC, European Commission.
Jack Smith—Government of Canada.
Greg Teggart—Victoria University, Australia.
Sandy Thomas—Foresight, UK Government Office for Science.

References

[1] L. Fitton, Cassandra: Cursed Propheteess, 1998, accessed at http://www.arthistory.sbc.edu/imageswomen/papers/fittoncassandra/intro.html.
[2] For example V. van Rij, Joint horizon scanning: identifying common strategic choices and questions for knowledge, in: FTA Conference, Seville, 2008.
[3] J. Calof, J. Smith, Critical success factors for government led foresight, in: Future-Oriented Technology Analysis International Conference, Seville, October, 2008, accessible at: http://forera.jrc.ec.europa.eu/fta_2008/prog_day1.html.
[4] F. Scapolo, E. Cahill, New horizons and challenges for future-oriented technology analysis, in: Proceedings of the EU-US Scientific Seminar: New Technology Foresight, Forecasting & Assessment Methods, 2004, European Communities Technical Report EUR 21473 EN.
[5] F. Scapolo, New horizons and challenges for future-oriented technology analysis: The 2004 EU-US Seminar, Technological Forecasting and Social Change 72 (9) (2005).
[6] Cagnin, et al. (Eds.), Future-Oriented Technology Analysis: Strategic Intelligence for an Innovative Economy, Springer, Berlin, 2008.
[7] F. Scapolo, A.L. Porter, M. Rader, Future-Oriented Technology Analysis (FTA): impact on policy and decision making – The 2006 FTA International Seville Seminar, Technological Forecasting and Social Change 75 (4) (2008).
[8] J.C. Harper, K. Cuhls, L. Georghiou, R. Johnston, Future-oriented technology analysis as a driver of strategy and policy, Technology Analysis & Strategic Management 20 (3) (2008).
[9] 2008 FTA Conclusions written by the Conference's Scientific Committee available at: http://forera.jrc.ec.europa.eu/fta_2008/conclusions.html.
[10] UK Foresight Programme, Flood and Coastal Defence, 2004, http://www.foresight.gov.uk/OurWork/CompletedProjects/Flood/index.asp.
[11] UK Foresight Programme, Tackling Obesities: Future Choices, 2007, http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/Obesity.asp.