

J. Hahn, C. Merz, C. Scherz

Identity Shaping: Challenges of Advising Parliaments and Society. A Brief History of Parliamentary Technology Assessment

Julia Hahn

MA, Research Fellow, Institute of Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology, Postfach 3640, 76021 Karlsruhe, Germany; e-mail: julia.hahn@kit.edu

Christina Merz

MA, Research Fellow, Institute of Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology, Postfach 3640, 76021 Karlsruhe, Germany; e-mail: christina.merz@kit.edu

Constanze Scherz

Research Fellow, Institute of Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology, Postfach 3640, 76021 Karlsruhe, Germany; e-mail: scherz@kit.edu

Technology Assessment (TA) is a concept of problem-oriented research, policy consulting, and societal dialogue which aims at supporting society and policy making in understanding and managing societal problems resulting from scientific and technological developments. We sketch a brief history of TA which is closely linked to its ‘invention’ as a policy consulting method. On the basis of two examples (Office for Technology Assessment in the USA and Office for Technology Assessment at the German Bundestag in Germany), we will give insights into the heterogeneous political and societal conditions under which TA institutions have been established in the past. After this, we reflect on formats, methods and practices that can help further develop TA as we follow the underlying hypothesis of TA as an approach that has to continuously change and adapt. Thereby, the concept of conferences can be fruitful for the TA community to stay vivid in a continuously changing environment.

Keywords: technology assessment, policy consulting, parliament, problem-oriented research, interdisciplinarity

Introduction – Technology Assessment in Changing Times

Scientific and technological developments are getting more and more global: topics of highest societal relevance arise in the fields of climate change, energy supply in the aftermath of the Fukushima disaster, health care in an ageing society, or changes regarding societal relationships through Information and Communication Technologies. Technology Assessment (TA) as a concept of problem-oriented research, policy consulting, and societal dialogue aims at supporting society and policy making in

understanding and managing these problems. It has always been an approach aimed at offering advice and presenting ways to deal with pressing questions in the interrelation of technology, science, and society. The European project “Technology Assessment in Europe; Between Method and Impact” (TAMI; 2002–2003) aimed to create a common basis for TA experts and therefore used the following definition: “Technology assessment (TA) is a scientific, interactive and communicative process which aims to contribute to the formation of public and political opinion on societal aspects of science and technology”¹. Grunwald focuses on the manifold character of TA: “TA provides knowledge, orientation, or procedures on how to cope with certain problems at the interface between technology and society but it is neither able nor legitimized to solve these problems”².

As the discourse on TA has developed, different forms of TA have emerged over time, including participatory TA³, real-time TA⁴, constructive TA⁵ or Parliamentary TA all with the aim to incorporate various forms of information and knowledge for the evaluation of technologies. Current questions of TA range from robots in the health care sector, energy questions of the future, sustainable societies or inclusion of the public in innovation processes. Even though these issues are immensely heterogeneous, they do require a common problem-oriented approach. The focus on the problems or questions of a specific issue is a main characteristic of TA. As such, TA centers around the problems (e.g. for society as a whole, for stakeholders, for technical systems, etc.) that arise out of a certain question. What implications for patients or relatives can it have if robots are used in nursing homes? How do energy systems of the future need to be designed to incorporate social and cultural aspects of a region? What effects do new forms of open innovation have on a market? What will cities of the future look like?

Of course these issues also entail inter- and transdisciplinary approaches in order to grasp the implications and effects they might have. Therefore TA is, on its conceptual and methodological level, open towards the inclusion or various methods, disciplinary concepts, but also real-life experiments. Thus, these aspects make up the common identity of TA: its focus on the actual problems or implications of a given issue, its inter- and transdisciplinary approach as well as the use of different methods.

In this paper, we will give a short overview of the evolution of TA. For this we will sketch a brief history of TA which is closely linked to its ‘invention’ as a policy consulting method⁶. On the basis of two examples, OTA (the Office for Technology Assessment) in the USA and TAB (the Office for Technology Assessment at the German Bundestag) in Germany, we will give insights into the political and societal conditions under which TA institutions have been established in the past. We also show the

¹ TAMI – Technology Assessment in Europe; Between Method and Impact. Final Report, 2004. P. 18. [https://www.ta-swiss.ch/?redirect=getfile.php&cmd\[getfile\]\[uid\]=944](https://www.ta-swiss.ch/?redirect=getfile.php&cmd[getfile][uid]=944)

² Grunwald A. Technology Assessment: Concepts and Methods // Handbook of the Philosophy of Science: Philosophy of Technology and Engineering Sciences / Ed. by A. Meijers. Amsterdam, 2009. P. 1113.

³ E.g. Hennen L. Why do we still need participatory technology assessment? // Poesis & Praxis. 2012. 9. P. 27–41.

⁴ E.g. Guston D., Sarewitz D. Real-time technology assessment // Technology in Society. 2002. 24. P. 93–109.

⁵ E.g. Rip A., Thomas J.M., Schot J. (eds.). Managing Technology in Society. The Approach of Constructive Technology Assessment. L.; N. Y., 1995.

⁶ See e.g. Grunwald A. Technikfolgenabschätzung – Eine Einführung. 2nd ed. B., 2010. P. 65.

heterogeneity of already established TA institutions in Europe: they follow different models of organization and connection to the parliaments. Successful institutionalized as well as failed initiatives can give important insights to the future development of TA as a consultant. After this, we reflect on formats, methods and practices that can help further develop TA as we follow the underlying hypothesis of TA as an approach that has to continuously change and adapt. Linked to this hypothesis is the fact that the questions regarding technology, science and society are wide ranging and ever changing and therefore require assessments that live up on this. Furthermore, apart from TA-relevant topics, their changing character and the demand for TA to respond on this, there is also another important aspect concerning the future development of TA: Learning in the context of TA does also mean to foster the exchange with others and to support the evolution of TA in less TA-experienced countries.

One of these formats to support both – the development of TA in countries that have already established TA and its evolution process in less experienced countries – is that of the international conference. Here we look closer at the international conference “The Next Horizon of TA” that took place in February of 2015 in Berlin, Germany. Next to the contents, the conference offered the possibility for the TA community and other disciplines to come together and reflect on methods, concepts as well as approaches. This is the key to shaping the identity of TA and in turn has implications for forms such as Parliamentary TA. As a platform for mutual learning, conferences such as in Berlin offer the prospect of enabling the TA community to deliberate and reflect on but also incorporate new methods, approaches or formats.

Parliamentary TA: Institutions and Requirements of the Established Ones

Cradle of TA: The Office of Technology Assessment

Concepts of TA were already discussed in the United States in the late 1960s “when tensions flared between executive and the congressional branches of the federal government about access to technical and scientific advice”⁷. After years of debate about the conceivable methods and styles of advice, Congress created the “Office of Technology Assessment” (OTA) in 1972 in order to assist and support the legislatives “in the identification and consideration of existing and probable impacts of technological application [to ensure that] the consequences of technological applications be anticipated, understood, and considered in determination of public policy on existing and emerging national problems”⁸. OTA was the first and largest Parliamentary TA office, and its history has therefore often been studied⁹. OTA’s original

⁷ *Sadowski J., Guston D.* Technology Assessment in the USA: Distributed Institutional Governance // Technikfolgenabschätzung – Theorie und Praxis (TATuP). 2015. 1. P. 53. http://www.tatup-journal.de/downloads/2015/tatup151_sagu15a.pdf

⁸ *Blair P.D.* Congress’s Own Think Tank. Learning from the Legacy of the Office of Technology Assessment (1972–1995). N. Y., 2013. Appendix.

⁹ E.g. *Bimber B.* The Politics of Expertise in Congress: The Rise and Fall of the Office of Technology Assessment. N.Y. (Albany), 1996; *Guston D.* Insights from the Office of Technology Assessment and Other Assessment Experiences // Science and Technology Advice for Congress / Ed. by *M.G. Morgan, J.M. Peha.* Washington (DC), 2003. P. 77–89; *Keiper A.* Science and Congress // The New Atlantis. 2004. 7. P. 19–50.

design was to provide a kind of “early warning” for the Congress on the potential impacts of new and emerging kinds of technology. The first report addressed the viability of generic drugs¹⁰. This report also included explicit policy recommendations which were discontinued in the following reports due to “[...] the OTA legislation that required that assessment reports [...] be approved by an affirming majority vote [...]”¹¹ of OTA’s Board, which was composed of Republican as well as Democratic members of the Congress. And this was not the only challenge OTA had to face. Among the studies, papers, and reports that OTA provided were a large number of comprehensive technology assessments “[...] which it produced and delivered to congressional committees upon formal request”¹². For this purpose, it established a detailed and extensive process to be able to include a variety of stakeholder perspectives on the specific topic of interest¹³.

However, this attempt to include different opinions and thus provide neutral results to the Congress was not only a challenge in regard to the particular studies and assessments but also for OTA’s self-perception and inner organization. The somehow ambivalent position in being an institution close to the legislative and having the Congress as main client on the one hand while on the other trying to establish itself as a neutral, independent institution led to processes of self-reflection. These processes were also accompanied by changes in OTAs leadership, and the different directors – the one more, the other less – stimulated self-studying of OTA’s work and the methods used when carrying out a TA study¹⁴. In this sense, at least the inner-organizational structure of OTA was never fully established before OTA had to close its doors in 1995 after more than 20 years of operation. And when thinking about these attempts to handle the ambivalent situation of being neutral and having the Congress as its main client, it is a kind of irony of fate that OTA fell victim to political leadership. Although – on the other hand – one must admit that the neutral position and self-perception of OTA was judged ambivalently¹⁵ and Sadowski¹⁶ regards OTA as probably being “a challenger” to Republican goals and its closure as a response to it. In the end, the reasons for OTA’s closing are not fully clear, and Blair¹⁷ for example, points to OTA’s processes of self-perception when he mentions, among other reasons, “[...] the lack of a mission fully integrated with a well-established congressional process [...]”. Whatever the reasons that were attributed, there seems to be a consensus that OTA was an easy victim in times when the ‘Contract with America’ was not only a big promise in regard to its content but also one that was directly linked to the pledge of implementing the promised reforms within 100 days. In this sense, the consolidation of the federal budget as one important campaign

¹⁰ OTA – Office of Technology Assessment. Drug Bioequivalence, NTIS order #PB-244862, July 1974. Washington (DC). <https://www.princeton.edu/~ota/disk3/1974/7401/7401.PDF>

¹¹ Blair P.D. Op. cit. P. 451.

¹² Sadowski J. Office of Technology Assessment: History, implementation, and participatory critique // *Technology in Society*. 2015. 42. P. 15.

¹³ Blair P.D. Op. cit. P. 452 et seq.

¹⁴ See e.g.: *Guston D.* Science and Technology Advice for Congress: Insights from the OTA Experience. Paper prepared for the workshop “Creating Institutional Arrangements to Provide Science and Technology Advice to Congress”, held in Washington (DC) on 14 June 2001. http://ota.fas.org/legislation/st_advice_6-01.pdf

¹⁵ See e.g.: *Bimber B.* Op. cit.

¹⁶ Sadowski J. Op. cit. P. 17.

¹⁷ Blair P.D. Op. cit. P. 453.

pledge of the Republicans and the ‘Contract with America’ had cost OTA its right to exist. Interestingly, Guston¹⁸ comments on the closure of OTA as follows: “It is unclear whether it is necessary to agree on why OTA passed in order to agree on what, if anything, should replace it”.

TA in Europe: The Established as Heterogeneous Role Models

Whatever the lessons learned from the closure of OTA, the OTA served and still serves as a role model for others. The same approach to institutionalize TA pursued in the United States was taken up by European parliamentary TA institutions founded in the 1980s and 1990s. But what does this really mean for the institutionalization of TA in Europe or beyond?

Indeed, several terms are often used when TA is described from the perspective of countries in which TA’s role as a consultant and advisor on policy is regarded as settled. Even in the introduction of this article, we have used different adjectives, such as established, institutionalized, and organized, in an indistinct manner. However, when trying to talk explicitly about the institutionalization of TA in this section, we must first of all clarify what we are talking about or at least indicate what we are not talking about. In the following, we will write about institutionalized TA in the sense of parliamentary TA. Though this term often leads to the conclusion that TA is directly included or connected to a parliament, it is important to notice that there are indeed several forms as to how parliamentary TA is performed within European countries and that these forms also differ from the OTA model in many respects, e.g., organizationally as well as with regard to their methodologies and mission¹⁹. In 2012 Ganzevles and van Est published a paper in the course of the EU-funded project Parliaments and Civil Society in Technology Assessment (PACITA)²⁰ about TA practices in Europe. The authors point out in detail that “[...] one should be careful when equating or identifying performing Parliamentary TA with a Parliamentary TA organisation. We therefore prefer to talk about a TA organisation that has the task to perform Parliamentary TA, possibly amongst performing other tasks”²¹. And not only this, Ganzevles and van Est distinguish five organizational types of parliamentary TA practice that are currently operational²²:

– Model 1 reflects *mainly parliamentary* involvement (Finland²³, France²⁴, Greece²⁵, Italy²⁶),

¹⁸ Guston D. Op. cit. P. 11.

¹⁹ E.g.: Vig N.J., Paschen H. (eds.). Parliaments and Technology. The Development of Technology Assessment in Europe. N. Y., 2000.

²⁰ <http://www.pacitaproject.eu/>

²¹ Ganzevles J., van Est R. TA Practices in Europe. Deliverable 2.2 in the collaborative project on mobilization and mutual learning actions in European Parliamentary Technology Assessment, 2012. P. 21. <http://www.pacitaproject.eu/wp-content/uploads/2013/01/TA-Practices-in-Europe-final.pdf%20>

²² Ganzevles J., van Est R. Op. cit. P. 13–14.

²³ The Committee for the Future, Finland; see <http://web.eduskunta.fi/Resource.phx/parliament/committees/future.htx?lng=en>

²⁴ L’Office parlementaire d’évaluation des choix scientifiques et technologiques (OPECST), France; see <http://www.assemblee-nationale.fr/commissions/opecest-index.asp>

²⁵ Greek Permanent Committee of Technology Assessment (GPCTA), Greek; see <http://www.oeaw.ac.at/ita/fileadmin/epta/countryreport/greece.html>

²⁶ Comitato per la Valutazione delle Scelte Scientifiche e Tecnologiche (VAST), Italy, see <http://vast.camera.it/>

- Model 2 reflects a *shared parliament-science involvement* (Catalonia (Spain)²⁷, European Union²⁸, Germany²⁹, the UK³⁰ and the USA³¹ (until 1995),
- Model 3 entails a *shared parliament-science-society involvement* (Flanders (Belgium until 2012³²), Denmark (as of 2012)³³),
- Model 4 reflects a *shared science-government involvement* (Austria³⁴),
- Model 5 reflects a shared involvement of all four spheres: *parliament-government-science-society* (the Netherlands³⁵, Norway³⁶, Switzerland³⁷, USA (for the GOA)³⁸).

This differentiation demonstrates that Parliamentary TA “[...] is modelled as an activity at the interplay between parliament, government, science and society”³⁹. It is therefore important to consider that Parliamentary TA has interlinkages to other societal institutions, or to express it in other words, parliamentary TA is always embedded in an “institutional environment”⁴⁰. And of course, this also influences the forms by which Parliamentary TA is carried out and organised. As the “institutional environment” is on the one hand context specific (e.g. based on country-specific, cultural, political and societal differences) and on the other hand changes over time, actors wanting to establish TA within their countries should become clear about the multidimensional nature of Parliamentary TA. Furthermore, when looking at the countries that already have institutionalized forms of Parliamentary TA, the establishment of TA can be regarded as a process. In the beginning, every institution in Europe had its own preconditions with regard to the drivers, the sponsors, the proposed decision-making processes (with regard to, e.g., the theme selection), the proposed addressees, the proposed main function, and the planned time perspective. And as the history shows, especially the latter, the lifespan of the institutions that advise on politics, depends on the political system on the one hand and the political will on the other.

In dealing with these preconditions and by being captured in the existing “institutional environment”, every institution has had to undergo a process of learning or, even better, “institutional learning”⁴¹ where the organization had to learn to play

²⁷ El Consell Assessor del Parlament sobre Ciència i Tecnologia (CAPCIT), Catalonia (Spain); see <http://www.parlament.cat/web/composicio/capcit>

²⁸ Science and Technology Options Assessment (STOA), European Union; see <http://www.europarl.europa.eu/stoa/>

²⁹ Office of Technology Assessment at the German Bundestag (TAB), Germany; see <http://www.tab-beim-bundestag.de/en/index.html>

³⁰ Parliamentary Office of Science and Technology (POST), UK; see <http://www.parliament.uk/mps-lords-and-offices/offices/bicameral/post/>

³¹ Office of Technology Assessment (OTA), USA; see <http://ota.fas.org/> (Archive)

³² Instituut Samenleving en Technologie (IST), Flanders (Belgium) <http://www.oeaw.ac.at/ita/fileadmin/epta/countryreport/flanders.html>

³³ Danish Board of Technology (DBT), Denmark; see <http://www.oeaw.ac.at/ita/fileadmin/epta/countryreport/denmark.html>

³⁴ Institute of Technology Assessment (ITA), Austria; see <http://www.oeaw.ac.at/ita/en/home>

³⁵ Rathenau Instituut, Netherlands, see <http://www.rathenau.nl/en.html>

³⁶ Norwegian Board of Technology (NBT), Norway; see <http://teknologiradet.no/english/>

³⁷ Centre for Technology Assessment TA-Swiss, Switzerland; see <https://www.ta-swiss.ch/en/>

³⁸ U.S. Government Accountability Office (GAO), USA; see http://www.gao.gov/technology_assessment/key_reports

³⁹ Ganzevles J., *van Est R.* Op. cit. P. 15.

⁴⁰ Ibid. P. 18.

⁴¹ *Petermann Th., Scherz C.* Parlamentarische TA Einrichtungen in Europa als reflexive Institutionen // Technikfolgen-Abschätzung für den Deutschen Bundestag. Das TAB – Erfahrungen und Perspektiven wissenschaftlicher Politikberatung / Hrsg. Th. Petermann, A. Grunwald. B., 2005. P. 283.

its role, to develop its own structures, processes and rules. The organization figures out and at some point occupies “[...] the ‘manoeuvring space’ that [the particular] organisations [had] within their institutional context [...]”⁴². Therefore, the manner in which parliamentary TA was institutionalized and the national-specific processes that had to be undergone enable the respective “[...] TA organization to have an impact on the political debate”.

The Office of Technology Assessment at the German Bundestag – An Example for Establishing TA in a National Context

As a basis for reflection and in order to illustrate how the above mentioned preconditions or processes looked in a specific case, in this section we will present the German example the “Office of Technology Assessment at the German Bundestag” (TAB) which is operated by the Institute of Technology Assessment and Systems Analysis (ITAS/KIT Karlsruhe). What were the reasons for institutionalizing TAB and, at the same time, for establishing TA in the political context in Germany?

TA at the German Bundestag is stable connected with TAB. Like in other European states, the idea of providing continuous technology assessment in support of parliament dates back to the 1970s. In that decade the debate on the opportunities and risks of scientific and technological developments increased – not only in Germany but in some Western European countries. Numerous problematic consequences for society and the environment raised the awareness in the German Bundestag of the need for early assessment and evaluation of the development and use of technology. The parliamentarians debated the opportunities, risks and potentials of designing new forms of technology. And the discussion soon focused on the question of whether and how TA might be used in support of decision-making processes. Concerning the question of institutionalization, the debate gained momentum in 1973 with a motion by the (then opposition) Christian Democratic Union parliamentary group to establish an “Office for Evaluation of Technological Development at the German Bundestag”⁴³. Numerous proposals from other parliamentary groups followed. In 1985 there was a joint decision by the parliamentary groups set up the “Study Commission on Assessment and Evaluation of Technological Impacts”⁴⁴. This Commission submitted a proposal on the “Institutionalization of an advisory body for technology assessment and evaluation at the German Bundestag” in 1986 and completed its work by the end of the electoral period with an interim report containing recommendations regarding the organization of technology assessment at the German Bundestag⁴⁵.

Following the next federal elections, the next Bundestag again set up a Study Commission on TA. Its task was to adopt the criticism of the institutionalization model. In its final report, the Commission presented three different models for

⁴² *Ganzevles J., van Est R.* Op. cit. P. 16.

⁴³ See Bundestagsdrucksache 7/468, April 16, 1973; <http://dipbt.bundestag.de/doc/btd/07/004/0700468.pdf>

⁴⁴ See Bundestagsdrucksache 10/2937, February 27, 1985; <http://dip21.bundestag.de/dip21/btd/10/029/1002937.pdf>

⁴⁵ See Bundestagsdrucksache 10/5844, July 14, 1986; <http://dip21.bundestag.de/dip21/btd/10/058/1005844.pdf>

discussion and decision⁴⁶. On November 16, 1989, the German Bundestag voted by majority of the Christian Democratic Union and the Free Democratic Party to rename the “Committee on Research and Technology” to “Committee on Research, Technology and Technology Assessment” and to authorize a scientific institution to conduct TA for the German Bundestag⁴⁷. The German case shows that – despite their differences – all the parliamentary groups agreed on the need for a permanent TA institution “independent of elections and parliamentary cycles and supportive of the Bundestag in its tasks as a legislative body, particularly when it came to shaping the conditions of scientific and technological change”⁴⁸. Finally, on August 29, 1990, after long and intense debate on TA and its institutionalization the German Bundestag signed the first contract with the Karlsruhe Nuclear Research Center for a three-year pilot phase. TAB was founded. Since then, it has been operated by the Institute of Technology Assessment and Systems Analysis (ITAS). After the conclusion of the pilot phase, the Bundestag decided on March 4, 1993, to establish a permanent advisory institution “Technology Assessment at the German Bundestag”^{49, 50}.

The German TAB follows the organization model of “shared parliament-science involvement”. Its work focuses solely on the German Bundestag. During the 25 years of its existence, the number of committees initiating and debating TAB studies has grown (see e.g. Ganzevles/van Est 2011:105). Although the federal and state ministries as well as research institutions, government agencies, companies, and interested members of the public follow the work of TAB with interest, the main addressee and only client is still the parliament. However, the demands of

⁴⁶ (1) The Christian Democratic Union and the Free Democratic Party suggested renaming the Committee on Research and Technology to “Committee on Research, Technology and Technology Assessment”, which would be responsible for the initiation and political control of TA. An institution outside Parliament would be commissioned to conduct TA studies and carry out “this task with a high degree of independence and responsibility” (Deutscher Bundestag 1989:14 et seq.). (2) The Social Democratic Party proposed to establish a committee for parliamentary technology advice as well as a scientific unit (about 15 members) within the German Bundestag. The committee and the scientific unit should be supported by a “Board of Trustees” appointed by the German Bundestag (Deutscher Bundestag 1989:15 et seq.). (3) The Green Party voted for the establishment of a TA foundation which would be headed by members of the German Bundestag and non-parliamentary experts to be elected by the General Assembly of parliament. Furthermore, an institute would be assigned to the foundation whose task would be to accompany TA studies and prepare them for the Parliament. Additionally, a permanent scientific unit would be attached to the Presidium of the German Bundestag, which would award TA studies to the foundation (Deutscher Bundestag 1989:17 et seq.).

⁴⁷ See Bundestagsdrucksache 11/5489, October 26, 1989; <http://dip21.bundestag.de/dip21/btd/11/054/1105489.pdf>

⁴⁸ See also “A brief history of the Office of Technology Assessment at the German Bundestag (TAB)” available on the TAB webpage <http://www.tab-beim-bundestag.de/en/about-tab/history.html>.

⁴⁹ See Bundestagsdrucksache 12/4193, January 22, 1993; <http://dip21.bundestag.de/dip21/btd/12/041/1204193.pdf>

⁵⁰ For the two following five-years-periods (until August 2003), the (then) Karlsruhe Research Centre was commissioned to operate TAB on its own, from September 2003 till August 2013 it cooperated in accordance to a decision of the Committee for Research, Technology and Technology Assessment with the Fraunhofer Institute for Systems and Innovation Research (ISI), Karlsruhe. On February 27th 2013 the Committee decided after a call for applications to commission the Karlsruhe Institute of Technology (KIT) again for another five-years period (running until August 31, 2018) to run TAB whereupon it cooperates in specific areas with the Helmholtz Centre for Environmental Research (UFZ), the Institute for Future Studies and Technology Assessment (IZT) as well as with the VDI/VDE Innovation + Technik GmbH.

parliament or specifically of the members of the committee on Education, Research, and Technology Assessment have also changed. Every five years ITAS applies for confirmation to operate TAB. This recurring application process allows for the reconsideration of formats and methods. E.g., over the years TAB has started to open to the public. From 2002 on, TAB and the committee have chosen several projects for organization of a public presentation of and debate on TAB reports to parliament with invited representatives from the media, research, industry, and civil society⁵¹. The necessity to involve the public in political decision-making processes is reflected from most existing TA institutions, not merely in Germany.

Ways Forward: The Challenge of Interdisciplinarity and Internationality

Identity Building through Conferences

As we described in the previous chapters, TA in Europe is organized in different ways. However, the TA community strives to form a common ‘TA identity’. Thereby, international conferences can be a useful way of strengthening such a common identity of technology assessment. In this chapter we will examine the example of the largest TA conference in history, which took place in 2015 in Berlin. In the context of the already mentioned European project PACITA this conference with the title “The Next Horizon of Technology Assessment” also reflected the broad aims of the PACITA project⁵² itself: to contribute to the expansion of TA by documenting, training, and debating of TA methods and experimenting with cross-European methods. During three days more than 350 international participants discussed contemporary technological, social, scientific and methodological developments in relation to TA – either in a self-reflecting manner concerning its own conceptual framework or as an approach to examine particular technological, social and other developments from a TA perspective. In the following we will give a brief and exemplarily overview of sessions. ‘Responsible Research and Innovation (RRI)’ sessions enriched the debate about the concept of RRI itself but also what it means for TA. What are concrete experiences with RRI principles like mutual learning and engagement in specific fields of technology development? What are the challenges for RRI itself but also in relation to TA or the other way round what are the challenges for TA regarding the concept of RRI? What are the understandings of RRI and what kind of barriers, requirements, driving forces etc. have already been observed and assessed until today? These were some of the questions discussed during the various sessions. Also, numerous sessions were organized around technologies and TA related activities in specific technological fields or concerning societal developments. Among these were for example discussions about the hopes, fears and recent developments regarding Big Data algorithms and applications. Others focused on demographic change and

⁵¹ *Ganzevles J., van Est R.* Op. cit. P. 106.

⁵² “Parliaments and Civil Society in Technology Assessment” (PACITA) was a EU financed project under FP7 (2011-2015) aimed at increasing the capacity and enhancing the institutional foundation for knowledge-based policy-making on issues involving science, technology and innovation, mainly based upon the diversity of practices in Parliamentary TA. 15 partners from countries all over Europe and equally including countries with and without parliamentary TA institutions collaborate in order to expanding the TA landscape.

ageing as well as on technological assistance systems and tools in elderly care. Further, apart from the important discussions about technologies, concepts and societal changes influencing TA ‘from the outside’, the Berlin conference was also dedicated to debating on the concept of TA itself, its practices and future perspectives. Interdisciplinary, problem-orientation, questions about the integration of different information and knowledge dimensions but also teaching and training of TA experts were among the issues here. All these highly diverse issues ranging from progress in Parliamentary TA over theoretical foundations of TA to insights from ongoing TA projects in different EU countries and on an international level are exemplary of the inconsistent understanding of what TA could be. However, besides the variety of topics and interdisciplinary challenges of TA that were discussed conceptually, the attractiveness of the format conferences has to be seen in its international approach. The international level is essential to shape and strengthen a TA community and through this enable an identity building processes. “Especially, in the light of today’s pressing challenges, it seems essential to provide spaces for ‘discourse’ of TA. Being a problem-oriented approach, TA needs areas of exchange and ‘identity-shaping’ particularly where its institutionalization is still unclear”⁵³.

As a possibility to foster exchange over a certain period of time, ‘prototype activities’ such as joint projects with partners from several countries could also be a productive starting point on the way to internationalization. “Joint work on TA-projects seems to be especially promising in this respect as it allows not only for the development of a shared problem orientation and an exchange and reflection on methodological approaches, but also for a cross-national analysis of specific questions in the field of science and technology”⁵⁴. And international conferences can be a starting point or reflection possibility for such joint projects. There, not only the TA community – which is in itself heterogeneous – meets but conferences can offer a specific type of interaction and exchange also with stakeholders that are interested and affected by technological and societal changes. But the question is, how can the format of conferences encourage mobilizing stakeholders for establishing TA capacities and create awareness regarding the benefits of cross-European TA throughout Europe? At the Berlin conference for example, not only scientists, but also stakeholders, policy-makers and politicians were invited to speak including an extended range of European, national and regional stakeholders. “Such ‘interactive’ methodology has proven to be a specific trademark for Technology Assessment and is of special interest today when the focus of research and innovation is turned towards the Grand Challenges of our societies”⁵⁵. And the community realizes more and more that such formats are necessary for dealing with complex challenges. Conferences provide a platform for scientists with their practical experiences from doing TA and for politicians that are the scientists’ clients. In this sense, TA can act as a “knowledge broker” between scientists and policy makers.

⁵³ Scherz C., Hahn J. TA conferences. Platforms for the Future // VolTA Magazine, Science, Technology and Society in Europe. 2015. № 8, April. P. 19. URL: http://volta.pacitaproject.eu/wp-content/uploads/2015/03/VOLTA-num8_def_web.pdf

⁵⁴ Hennen L., Nierling L. Expanding the TA Landscape. Deliverable 4.3 in the collaborative project on mobilization and mutual learning actions in European Parliamentary Technology Assessment, 2013. P. 21. http://www.pacitaproject.eu/wp-content/uploads/2014/02/4.3_Expanding-the-TA-landscape.pdf

⁵⁵ Klüver L. Foreword // Technology assessment and policy areas of great transitions. Proceedings from the PACITA 2013 Conference in Prague / Ed. by T. Michalik et al. Prague, 2014. P. 12.

However, these events as seen during the PACITA conference are not initiated and planned in an empty space. Events like this point to a tradition of European TA conferences. In October of 1982 the Ministry of the Interior of the Federal Republic of Germany hosted a conference in Bonn that attracted some sixty experts from eleven countries, among them representatives of the US-Office of Technology Assessment. Later congresses held in Amsterdam (“1st European Congress on Technology Assessment”, 2–4 February 1987), Milan (“2nd Congress on Technology Assessment”, 14–16 November 1990), and Copenhagen (“The 3rd European Congress on Technology Assessment”, 4–7 November 1992) contributed significantly to conceptualization, philosophy as well as institutionalization of TA. These conferences made clear that the European debate on TA took place at several levels, e.g. between international groups of scholars, experts, and officials who held a series of meetings during which methods of TA, the utility of its results, and the possibilities and problems of institutionalizing TA agencies were discussed. At that time these three European Congresses on Technology Assessment were supported by the FAST program (Forecasting and Assessment in Science and Technology) set up by the European Commission in 1979. This program played an important role for the diffusion of TA as an idea and provided a platform for the formation of several networks throughout Europe. The first European Congress on Technology Assessment devoted several sessions to the issue of international cooperation, which culminated in proposals for the establishment of a TA-association, a TA data system, networks of TA researches in communications technologies and life sciences and a network for TA at the regional level.

The institutionalization of the German “Network Technology Assessment” (NTA), which also supported the conference in Berlin with organizing sessions, can be seen as a further reaction to these developments. Founded in November 2004 in Berlin, NTA aims to identify joint research and advisory responsibilities, to initiate methodological developments, to support the exchange of information and strengthen the role of TA in science and society. Today, ten years after this first meeting, there have been six scientific conferences, ten annual member meetings and several meetings of the Networks’ working groups (IKT, Governance and others). One of the main activities of NTA remains a platform for information and a communication those scientists, experts and practitioners working in the wide range of TA relevant topics.

With decades of experience, the three organizations of the NTA, the Institute of Technology Assessment and Systems Analysis (ITAS) in Karlsruhe, Germany, the Institute of Technology Assessment (ITA) in Vienna, Austria, and the Center for Technology Assessment (TA Swiss) in Berne, Switzerland, also brought their expertise to the PACITA project. Also other PACITA partners, such as the Danish Board of Technology, the Norwegian Board of Technology, the Advisory Board of the Parliament of Catalonia for Science and Technology or the Rathenau Institute from the Netherlands have worked to realize TA in and for parliaments for a long time. Together with institutions from Finland, France, Greece, Italy, Sweden and the United Kingdom they are organized in the European Parliamentarian Technology Assessment Network (EPTA), which was established in 1990 by the President of the European Parliament⁵⁶. The presidency of the network circulates and each year a directors’ meeting as well as a scientific conference is organized.

⁵⁶ Information about the history of EPTA: <http://eptanetwork.org/about.php>

The Berlin conference benefited greatly from this tradition. The first conferences in the 1980ies and 1990ies gave first insights into which topics were relevant in research and for policy advice. They also showed how important it is to invite both, the scientific community as well as practitioners, to one and the same event. With participants from more than 30 countries the Berlin conference showed that the core idea of TA is not only relevant in Europe but also in Russia, Australia, Asia, and the US. Participants of these countries brought in topics like soil management in Siberia, insights into energy supply management strategies, developments and projects in developing countries or the organization of TA in Korea. With this, it was possible bring together different understandings of TA and get insights into the pressing societal and technological problems, challenges, processes and national strategies that exist in different countries around the globe. Although the term technology assessment is not established everywhere, the scientific exchange on conferences allows a direct communication on societal challenges which influence research topics in the field of science and technology.

Outlook: Other Steps for the Future

International meetings, such as the described conference, show that the established as well as the emerging TA community is characterized by its variety of national traditions and parliamentary systems. Beside this heterogeneity which can be also seen in the variety of Parliamentary TA institutions, it is still worth to focus on the changes within this apparently established structure. “The concept as well as the organization of TA took remarkably different forms in different countries”⁵⁷, and therefore the associated changes differ too. But regardless to the model of institutionalization, the societal challenges to which they have to respond are similar: citizens want to be part of the processes of political decision-making regarding (new) technologies, stakeholders with their specific knowledge in technology fields and contexts are becoming increasingly important for the responsible use of technology, and politicians seek to decide based on sound advice. And “[...] this involves the outputs of TA being expressed not as single, ostensibly definitive, results, but as plural and conditional reflections of whatever constitutes the most salient axes of sensitivity that emerge in the analysis”⁵⁸.

One way to opening up TA is currently practiced in the German TAB. Experiences made in regions affected by planned electricity lines show that that measures to enable a constructive dialogue between local elected political representatives and citizens are needed. Against the background that infrastructure projects designed on the German federal level have to be implemented at the local level, and against the background that this kind of ‘implementation’ is conflictual if it is just arranged top down, a TAB project should create a “solid basis in order that public discussion and participation procedures can be performed

⁵⁷ *Vig N.J.* Conclusions. The European Parliamentary Technology Assessment experience // *Parliaments and Technology. The Development of Technology Assessment in Europe* / Ed. by N.J. Vig, H. Paschen. N. Y., 2000. P. 367.

⁵⁸ *Ely A., van Zwanenberg P., Stirling A.* Experiments in Technology Assessment for International Development: What Are the Lessons for Institutionalisation? // *Technikfolgenabschätzung – Theorie und Praxis (TATuP)*. 2015. 1. P. 61. URL: https://www.tatup-journal.de/downloads/2015/tatup151_elua15a.pdf

on an equal footing and – hopefully – with results that can be supported by all relevant stakeholders”⁵⁹. Involving the public is a challenge, especially if it becomes part of the parliamentary advising process: most of the European national parliaments have been striving for a long time to involve the public better and increase transparency of their work. And if it is true that the parliament as a whole and the parliamentary opposition in particular have the ability to contact citizens, groups and institutions other state institutions, in particular the government and the ministerial bureaucracy ahead, then it is worth to focus explicitly on the use of this communicative value⁶⁰.

Another challenge results to one of the outcomes of the PACITA project and relates to the political and societal conditions in countries who already established Parliamentary TA with those countries which did not. One of the findings was that TA almost always had a chance in countries with strong R&D infrastructures forming the basis of quite well developed economies and public welfare. But also in these countries the economic pressure increases, and the globalization strengthened the necessities to find appropriate responses to the challenges of our time. Therefore, also in the countries with established TA-infrastructure TA is asked to provide support for identifying “[...] socially sound and robust country specific innovation pathways (‘constructive TA’) and contribute to lower costs of trial and error learning”⁶¹. Apart from fostering the exchange between countries with established TA infrastructure and those without, a joint European (or even international) TA network could function as an umbrella for both, the established and the emerging TA institutions and national activities. Ideally, such a network stabilizes emerging TA activities by giving the national efforts an international frame, and the established TA institutions would be challenged to react to new demands by learning also from the new ones.

Список литературы / References

Bimber, B. *The Politics of Expertise in Congress: The Rise and Fall of the Office of Technology Assessment*. Albany: State University of New York Press, 1996. 128 pp.

Blair, P.D. *Congress’s Own Think Tank. Learning from the Legacy of the Office of Technology Assessment (1972–1995)*. New York, 2013. 142 pp.

Deutscher Bundestag: Zur Notwendigkeit und Ausgestaltung einer ständigen Beratungskapazität für Technikfolgen-Abschätzung und – Bewertung beim Deutschen Bundestag, 1989. Drucksache 11/4606, 30.5.89 [<http://dip21.bundestag.de/dip21/btd/11/046/1104606.pdf>, accessed on 17.06.2015].

Ely, A., van Zwanenberg, P., Stirling, A. “Experiments in Technology Assessment for International Development: What Are the Lessons for Institutionalisation?”, *Technikfolgen-abschätzung – Theorie und Praxis (TATuP)*, 2015, 1, pp. 59–67 [https://www.tatup-journal.de/downloads/2015/tatup151_elua15a.pdf, accessed on 17.06.2015].

⁵⁹ Further information about the project „Balance of interests in infrastructure projects: Options for action with regard to local communication and organization“ can be found on the webpage <http://www.tab-beim-bundestag.de/en/research/u10500.html>

⁶⁰ See also: *Herzog D. Der Funktionswandel des Parlaments in der sozialstaatlichen Demokratie // Parlament und Gesellschaft. Eine Funktionsanalyse der repräsentativen Demokratie / Hrsg. D. Herzog, H. Rebenstorf, B. Weßels. Opladen, 1993. P. 28.*

⁶¹ *Hennen L., Nierling L. Op. cit. P. 20.*

Ganzevles, J., van Est, R. *TA Practices in Europe. Deliverable 2.2 in the collaborative project on mobilization and mutual learning actions in European Parliamentary Technology Assessment*, 2012 [<http://www.pacitaproject.eu/wp-content/uploads/2013/01/TA-Practices-in-Europe-final.pdf%20>, accessed on 17.06.2015].

Grunwald, A. "Technology Assessment: Concepts and Methods", *Handbook of the Philosophy of Science: Philosophy of Technology and Engineering Sciences*, ed. by A. Meijers. Amsterdam: Elsevier, 2009, pp. 1103–1146.

Guston, D. *Science and Technology Advice for Congress: Insights from the OTA Experience. Paper prepared for the workshop "Creating Institutional Arrangements to Provide Science and Technology Advice to Congress", held in Washington, DC on 14 June 2001* [http://ota.fas.org/legislation/st_advice_6-01.pdf, accessed on 17.06.2015].

Guston, D. "Insights from the Office of Technology Assessment and Other Assessment Experiences", *Science and Technology Advice for Congress*, ed. by M.G. Morgan and J.M. Peha. Washington, DC, 2003, pp. 77–89.

Guston, D., Sarewitz, D. "Real-time technology assessment", *Technology in Society*, 2002, no 24, pp. 93–109.

Grunwald, A. *Technikfolgenabschätzung – Eine Einführung*. Berlin: edition Sigma, 2010. 346 pp.

Hennen, L. "Why do we still need participatory technology assessment?", *Poesis & Praxis*, 2012, no 9, pp. 27–41.

Hennen, L., Nierling, L. *Expanding the TA Landscape. Deliverable 4.3 in the collaborative project on mobilization and mutual learning actions in European Parliamentary Technology Assessment*, 2013 [http://www.pacitaproject.eu/wp-content/uploads/2014/02/4.3_Expanding-the-TA-landscape.pdf, accessed on 17.06.2015].

Herzog, D. "Der Funktionswandel des Parlaments in der sozialstaatlichen Demokratie", *Parlament und Gesellschaft. Eine Funktionsanalyse der repräsentativen Demokratie*, hrsg. von D. Herzog, H. Rebenstorf, B. Weßels. Opladen, 1993, pp. 13–52.

Keiper, A. "Science and Congress", *The New Atlantis*, 2004, no 7, pp. 19–50.

Klüver, L. "Foreword", *Technology assessment and policy areas of great transitions. Proceedings from the PACITA 2013 Conference in Prague*, ed. by T. Michalek et al. Prague, 2014, pp. 11–13.

Petermann, Th., Scherz, C. "Parlamentarische TA Einrichtungen in Europa als reflexive Institutionen", *Technikfolgen-Abschätzung für den Deutschen Bundestag. Das TAB – Erfahrungen und Perspektiven wissenschaftlicher Politikberatung*, hrsg. von Th. Petermann and A. Grunwald. Berlin, 2005, pp. 271–294.

Rip, A., Thomas J.M., Schot, J. (eds.) *Managing Technology in Society. The Approach of Constructive Technology Assessment*. London, New York, 1995. 300 pp.

Sadowski, J. "Office of Technology Assessment: History, implementation, and participatory critique", *Technology in Society*, 2015, no 42, pp. 9–20.

Sadowski, J., Guston, D. Technology Assessment in the USA: Distributed Institutional Governance, *Technikfolgenabschätzung – Theorie und Praxis (TATuP)*, 2015, no 1, pp. 53–59 [http://www.tatup-journal.de/downloads/2015/tatup151_sagu15a.pdf, accessed on 17.06.2015].

Scherz, C., Hahn, J. "TA conferences. Platforms for the Future", *VOLTA Magazine, Science, Technology and Society in Europe*, 2015, no. 8, p. 19 [http://volta.pacitaproject.eu/wp-content/uploads/2015/03/VOLTA-num8_def_web.pdf, accessed on 17.06.2015].

Technology Assessment in Europe; Between Method and Impact: Final Report, 2004 [[https://www.ta-swiss.ch/?redirect=getfile.php&cmd\[getfile\]\[uid\]=944](https://www.ta-swiss.ch/?redirect=getfile.php&cmd[getfile][uid]=944), accessed on 17.06.2015].

Vig, N.J. Conclusions. "The European Parliamentary Technology Assessment experience", *Parliaments and Technology. The Development of Technology Assessment in Europe*, ed. by N.J. Vig, H. Paschen. New York: State University of New York Press, 2000, pp. 365–384.

Vig, N.J., Paschen, H. (eds.) *Parliaments and Technology. The Development of Technology Assessment in Europe*. New York: State University of New York Press, 2000. 288 pp.

Формирование идентичности: вызовы в сфере консультирования парламентов и общества. Краткая история парламентской оценки техники

Кристина Мерц – магистр искусств, научный сотрудник. Институт оценки техники и системного анализа, Институт технологии г.Карлсруэ, Германия. Postfach 3640, 76021 Karlsruhe, Germany; e-mail: christina.merz@kit.edu

Юлия Хан – научный сотрудник. Институт оценки техники и системного анализа, Институт технологии г. Карлсруэ, Германия. Postfach 3640, 76021 Karlsruhe, Germany; e-mail: julia.hahn@kit.edu

Констанц Шерц – научный сотрудник. Институт оценки техники и системного анализа, Институт технологии г. Карлсруэ, Германия. Postfach 3640, 76021 Karlsruhe, Germany; e-mail: scherz@kit.edu

Оценка техники (ОТ) – это понятие из сферы проблемно-ориентированных исследований, политического консультирования и общественного диалога, которое направлено на поддержку общества и разработку политических мер в сфере понимания и управления социальными проблемами, возникающими в результате научного и технического развития. Мы показываем краткую историю ОТ, которая тесно связана с ее «изобретением» как методом политического консультирования. На основе двух примеров (Бюро по оценке техники в США и Бюро по оценке техники в Бундестаге Германии) мы демонстрируем гетерогенные политические и общественные условия, в рамках которых институты ОТ возникли в прошлом. Затем мы рассматриваем форматы, методы и практики, которые могут помочь ОТ развиваться далее, поскольку мы следуем основополагающей гипотезе о том, что ОТ как подход должна постоянно изменяться и адаптироваться. Таким образом, идея конференций может быть полезной для того, чтобы сообщество ОТ продолжало существовать в постоянно изменяющихся условиях.

Ключевые слова: оценка техники, политическое консультирование, парламент, проблемно-ориентированное исследование, междисциплинарность