

Modeling Parliamentary Technology Assessment in Relational Terms

Mediating Between the Spheres of Parliament, Government, Science and Technology, and Society

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This article describes parliamentary technology assessment (PTA) in relational terms.¹ We conceptualize PTA as fulfilling a mediating function between the spheres of parliament, government, science and technology, and society. This mediation is thought to take place through a set of interaction mechanisms on the institutional, organizational and/or project level that enable and constrain the involvement of actors from the above-mentioned four social spheres in shaping the practice of PTA. This enables us to model, map, and analyze how PTA in various European countries and regions is set up to interact with members of parliament, government, science and technology, and society. We found that the possible relationships between the PTA organization and each of the four social spheres have to be analyzed and carefully designed when thinking about setting up PTA. Countries with an interest in setting up PTA are not restricted to existing institutional models, but may create a model that is particularly suited to their own political and societal environment.

1 Introduction

Parliamentary technology assessment (PTA) is “technology assessment specially aimed at informing and contributing to opinion formation of the members of parliament as clients of the TA activity” (Enzing et al. 2011, p. i). Institutionalization, methodology and impact have been major themes in the debates around PTA ever since PTA was envisioned in the US during the 1960s (Vig/Paschen 1999; see Sadowski/Guston in this volume). Over the last few years, in particular the EU-funded PACITA project has re-energized

the debate on the institutionalization, re- and de-institutionalization PTA.²

PTA practitioners within the PACITA project felt the need to develop a more inclusive way of modeling PTA since the ways the literature characterizes PTA focus too strongly on the relationship between the PTA organization and the parliament (cf. Ganzevles et al. 2014). The inclusive modeling³ presented in this article does *not* take interaction with the parliament *a priori* as the main determinant of a PTA organization. PTA is modeled more broadly as a mediating function between the spheres of parliament, government, science and technology, and society.⁴ We suggest that this mediation takes place through a set of interaction mechanisms that include institutional, organizational and project dimensions. This inclusive modeling fits well with the existing pluralistic PTA landscape. It also helps to deconstruct in a more transparent way these diverse practices by laying bare the many political, strategic, and practical choices involved in institutionalizing, organizing, and performing PTA.

In the PACITA project, conceptualizing and studying PTA were organized in an iterative manner. First an initial conceptualization of PTA was made. Moreover, an initial set of interaction mechanisms, which forms the basis how we model PTA, was identified. Based on this, a checklist was set up to guide the in-depth description and analysis of several existing practices of PTA in Europe. In particular, PTA was investigated in Austria, Catalonia (Spain), Denmark⁵, Flanders⁶ (Belgium), Germany, the Netherlands, Norway, and Switzerland. These case studies were used to refine our conceptualization of PTA and complete the set of interaction mechanisms. Finally, TA practitioners working at a certain PTA institute and researchers from a European country without a PTA institute were asked to use this information to model the various PTA practices studied in the PACITA project. At our request, the PTA organizations in France, the UK, the European Parliament, and Finland have also characterized their institutes in order to extend the comparative analysis. Accordingly, we have included twelve PTA institutes in our comparative analysis, of which all, except for Flanders, are current members of the European Parliamentary Technology Assessment (EPTA)

network. Greece, Italy, and Sweden are the only members of the EPTA network not included. Our analysis therefore gave a rather complete picture of the institutional PTA landscape in Europe.

This paper describes how PTA was conceptualized within the PACITA project (section 2), how the inclusive modeling of PTA, based on the identification of nine interaction mechanisms, looks (section 3), and how this model can be applied to existing PTA organizations (section 4). At the end of this paper we draw some conclusions and discuss further interesting lines of research.

2 Conceptualizing Parliamentary TA in Relational Terms

“In explaining what an expert is, one can either refer to the particular knowledge people have, or to the position they occupy in a social network.” van Rijswoud 2012, p. 18

In clarifying what PTA is, one may describe its institutional position in both informational and relational terms. According to the informational perspective, the position of the PTA community depends on the particular knowledge it generates, i.e., knowledge about the societal aspects of science and technology. According to the relational approach, its position is due to the existence of a clientele. In practice, the informational and relational aspects go hand in glove since the exchange of information needs to be organized and seen as legitimate. Accordingly, PTA in the PACITA project is framed as a science-based practice of information production on science, technology, and social matters. Moreover, PTA is also regarded as a social activity where practitioners try to have an impact on their clients by building up relations of knowledge sharing and trust among actors from various societal spheres. Understanding PTA in relational terms implies taking into account the position PTA occupies in a social network and acknowledging that the various bonds enable and constrain the activities and impact of a PTA organization.

Connecting to Four Social Spheres

Most of the literature characterizing PTA (cf. Falkner et al. 1994; Hennen/Ladikas 2009;

Cruz-Castro/Sanz-Menéndez 2005; Enzing et al. 2011) has focused on the question of to what extent each PTA organization has been put within or outside parliament (Ganzevles et al. 2014). By definition, parliament is an important player within the social network of PTA organizations. PTA organizations are democratically entrusted to build connections with MPs or even directly access and inform them. We felt the need to abandon the view that one single logic – the relationship to parliament – is shaping PTA. Our modeling efforts build, in contrast, on the common knowledge that PTA institutes are shaped by more institutional linkages. For example, it is known that PTA plays an intermediary role between the parliament and the science and technology sphere. Moreover, a PTA organization can also have the institutional task to both inform the political and the societal debate, implying that developing bonds with societal actors may be relevant for PTA institutes. Finally, in the European political context, governments often also play an important role in the social network of PTA organizations, for example, as a client or a sponsor of a PTA organization. Thus, we modeled PTA to operate in a complex institutional landscape that consists of four social spheres: parliament, government, society, and science and technology.

Three Levels of Interaction

PTA practitioners like to frame their practice in both informational and relational terms (see above), as they broadly define TA as “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” (Bütschi et al. 2004, p. 14). This definition, however, basically refers to the practice of performing PTA. We would like to go beyond this definition and study the linkages between PTA and the four distinguished social spheres on three (interconnected) levels: the institutional, organizational, and project levels.

The macro, or institutional, level, concerns the political support for a TA organization for which parliament is (one of its) main (formal) clients; it is also about the way PTA is legitimized and framed as an institutional solution for the gov-

ernance of – often societally controversial – developments in science and technology. The meso, or organizational, level concerns the politics of shaping and controlling the TA organization that has the task to perform PTA. Finally, the micro, or project, level refers to doing PTA. Issues at this level are: how to frame a certain topic, what kinds of methods to choose, and how to communicate the results of your TA project to parliament and to other relevant clients. The ultimate aim is to contribute to the democratic quality of the (public and political) debate on science and technology. As indicated above, these levels are interrelated.

The way in which PTA is institutionalized enables the related TA organization to have an impact. Enabling may refer to being provided with the proper resources and the institutional task to participate in the political decision-making process and thus to influence the democratic process. Simultaneously, that same institutional context will constrain the way in which that TA organization may perform its activities. As Cruz-Castro and Sanz-Menéndez (2005, p. 446) provocatively conclude: “Some of the best adaptation strategies that Parliamentary Offices of Technology Assessment use to improve their chances of survival clash structurally with the desire to increase the direct impact of their TA activities on policy-making activities.” For example, while building coalitions and aligning with the political majority in Parliament may be a quick way to enhance impact, in the long term “a new majority can make one pay for institutional disloyalties”. The way in which a PTA organization is institutionalized thus both enables and constrains how a PTA institute can operate within the complex landscape that consists of the four social spheres identified above.

3 Modeling PTA by Means of Nine Interaction Mechanisms

Our modeling of PTA in relational terms is founded on the notion of interaction mechanisms, loosely defined as procedures or routines on the institutional, organizational, and project level for enabling and constraining the involvement of actors from the above-mentioned four social spheres in shaping the practice of PTA.

We discern nine interaction mechanisms: client, funding, evaluation committee, board, working program, project staff, project team, participatory methods, and project revising and/or reviewing. We use the various countries and regions studied in the PACITA project to illustrate how these nine mechanisms play out in different ways in the practice of PTA in Europe.

The *client* of an organization has a major impact on how PTA is set up and how its work processes are structured. PTA organizations in France (OPECST) and Germany (TAB) and on the European level (STOA) focus on parliament. The PTA organization in Catalonia works for parliament and society. Until it was abolished in 2012, the former PTA organization in Flanders, IST, also had both the parliament and society as clients.⁷ We see a combination of parliament, government, and society as clients in Denmark, the Netherlands, Norway, and Switzerland. In Austria the science community is an explicit client.

Funding may involve long-term basic funding schemes, but also short-term sponsorships on a project level. Exclusive parliamentary funding exists, for instance, for the European Parliament (STOA) and in France (OPECST), Germany (TAB), and the United Kingdom (POST). In Catalonia (CAPCIT) there is sponsorship from the science and technology community. In Austria (ITA), the Netherlands (Rathenau Institute) and Switzerland (TA-SWISS), the funding scheme is related to both the governmental and the scientific spheres. We encounter a more dispersed funding pattern in Denmark (from 2012) and Flanders (until 2012), where parliament, science, and society are involved.

The *evaluation committee* or *group* refers to the task of examining and reporting on the functioning of the organization as a whole. An evaluation committee may be installed by the government (as happens in the Netherlands every five years and happened in Norway in 2011), by the organization’s “own” steering committee or board (as happens in Switzerland), or by an evaluation board set up by the mother institution (like the Austrian Academy of Sciences does for ITA). The Danish Board of Technology has a board of representatives that takes an evaluative stance in annual report meetings. Representatives from differ-

ent societal spheres are involved in the evaluation procedures of the above organizations. In the evaluation of PTA organizations working close to parliament (like STOA, IST, and TAB), parliamentarians have a relatively strong say in formal evaluations by the organization. In the UK (POST), Catalonia (CAPCIT), and France (OPECST), no formal evaluation procedures exist.

Most of the organizations have a *board, committee, panel, or platform* that has regular interactions (typically every two or three months) with members of the management team that is in charge of performing daily TA activities. For STOA and TAB this entity consists of parliamentarians only. In France (OPECST), it is the parliamentarians themselves who perform TA, and their staff has an auxiliary function. In Austria (ITA), the board consists solely of representatives of science, and the Steering Committee in Switzerland (TA-SWISS) is also strongly linked to the scientific community. In Flanders (IST) and Catalonia (CAPCIT), the board or panel, respectively, is equally divided between parliamentarians and representatives from the science and technology community. More dispersed patterns of involvement of different spheres exist in other organizations.

Most of the organizations have an annual, bi- or tri-annual *working program*. Establishing such a program is a parliamentary task for the European Parliament, carried out by the STOA panel, which takes into account requests from both parliamentary committees and individual members. In Germany (TAB), this responsibility is shared between politicians and the scientists from the TA office. At other organizations, we see a stronger involvement from society and government. Draft programs are often discussed with people from outside the institute. Catalonia (CAPCIT) does not work on the basis of a working program, but priorities are set periodically at each platform meeting.

The four remaining interaction mechanisms all play out on the project level. We use the word *staff* to refer to the people who are in charge of the TA projects. In principle, these practitioners may have ties to any of the four societal spheres: parliament, government, science, and society. In practice, staff at most of the organizations is

mainly based in science. The inclusion of more communication and (project) management skills in the organizations accounts for the involvement of the societal sphere in Denmark, Flanders, the Netherlands, Switzerland, and Norway. Only in France do parliamentarians themselves carry out this task (although with staff support). Since the TA staff may outsource part of the work, the *project team* is another relevant mechanism for involving different social spheres within the project. The same counts for *project participation methods* and mechanisms for *project advising and/or reviewing*. The latter may consist of scientific peers or stakeholders reviewing draft texts. By contrast, in Norway (NBT) heavy involvement of experts and stakeholders throughout the complete project is the normal case.

4 Applying the Modeling to Existing PTA Organizations

As indicated in the introduction, the PACITA project investigated PTA in depth in Austria, Catalonia, Denmark, Flanders, Germany, the Netherlands, Norway, and Switzerland. For each country or region, the research was done by a mixed team, which consisted of TA practitioners that worked at the PTA institute under scrutiny and researchers from a European country without a PTA institute; these latter researchers worked at organizations that took part in the PACITA consortium.

Each team carried out several semistructured expert interviews with relevant stakeholders, such as MPs and the director of the TA unit. In addition, the teams used institutional archives, websites, and earlier descriptions in the literature of the respective institutions to compile up-to-date descriptions and analyses. The reports on all the countries follow the same set-up, clarifying the institutionalization and organization of PTA in these countries. Furthermore, an in-depth case study of one TA project was included per organization in order to illustrate the ‘nuts and bolts’ of daily practice.

In order to characterize the various PTA organizations from a relational perspective, the teams were asked to fill in a matrix spanned up by the nine interaction mechanisms and the four spheres: parliament, government, science and

technology, society. In this way the teams had to indicate to what extent the nine interaction mechanisms enabled and constrained the involvement of actors from the four social spheres. The teams had to express the involvement of the various spheres in shaping the practice of PTA in percentages. For each mechanism, the total involvement of the four spheres should add up to a hundred percent. To determine the overall involvement of each of the spheres, the PACITA task team decided to consider each of the nine interaction mechanisms as equally important. In this way, based on the results of the in-depth qualitative research of the various PTA organizations, a semiquantitative description of those PTA organizations was constructed. This strongly facilitated the comparative analysis of the PTA institutes studied. Moreover, this mixed qualitative and quantitative approach enables us to create a graphical representation of each PTA organization. See Figure 1, in which the width of each arrow represents the strength of the involvement of each sphere.

The graphical representations of the PTA organizations from France, the United Kingdom, the European Parliament and Finland can also be found in Figure 1. These PTA organizations were not part of the PACITA project and were not studied in detail. Nevertheless, these countries were included in the concluding chapter of the report, extending the comparative analysis made there to provide a more complete picture of the PTA landscape in Europe (Ganzevles/van Est 2012). Upon our request, the PTA organizations in France and the UK and at the European Parliament filled out the same table, also recording their scores (Ganzevles/van Est 2012). In order to increase the objectivity of the process, country/region reports, common tables, scores, and mappings were sent out to all the PACITA partners for feedback. Finland was added later as an extra case (Ganzevles et al. 2014) and was not part of these feedback loops.

In theory, eight different organizational models for PTA⁸ can be distinguished. The mapping process in the PACITA project identified four distinct PTA models that are currently operational in practice: mainly parliamentary involvement, shared parliamentary-science involvement, shared parliamentary-science-society involvement, and shared parliamentary-govern-

ment-science-society involvement (see Fig. 1).⁹ Besides these four PTA models, the TA model of shared science-government involvement was found in Austria.

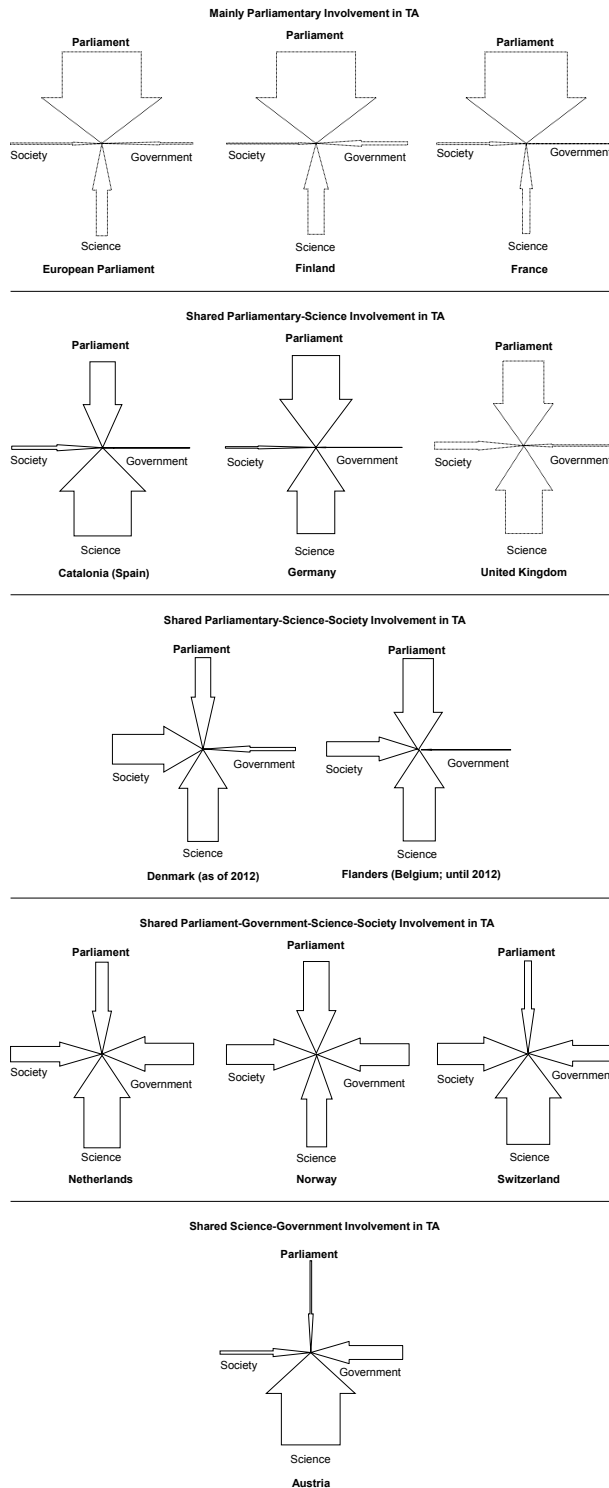
Mainly Parliamentary Involvement in TA

PTA in France and Finland and at the European Parliament is dominated by the involvement of parliament in the practice of TA. OPECST shows a near maximum level of involvement by MPs, even on the project level, where members of OPECST are responsible for writing the TA report (Enzing et al. 2011). In Finland, it is mainly scientific experts who contribute to PTA projects. Moreover, the Committee of the Future is in a constant dialogue with the government, although the government has no formal say regarding its working program. The STOA panel of the European Parliament works with procurement procedures that are embedded in a framework contract, for which scientific consortia, experienced in TA, can apply on a project-to-project basis (Delvenne et al. 2011).

Shared Parliamentary-Science Involvement in TA

Like in France, the German Parliament is strongly involved in the practice of TA. There is, however, one crucial difference between the German and French situation: the actual TA research is performed by researchers within TAB – an office that works closely with but is outside parliament – and, to a considerable extent, by outside contractors. The German model for organizing TA presents a form of “shared parliament-science involvement in TA”, in which, however, the parliament has a strong voice and the final say. The Advisory Board of the Parliament of Catalonia for Science and Technology (CAPCIT) is attached to the regional parliament, but as a mixed body: half of its eighteen members are MPs and the other half scientists. Moreover, the scientific community sponsors and performs the TA activities. In the case of POST (UK), a scientific unit is placed directly inside parliament, and works in close contact with MPs.

Fig. 1: Overview of (parliamentary) TA models found in the PACITA project



(P)TA is illustrated as a mediating function between the spheres of parliament, government, science and technology, and society. The width of each arrow represents the strength of the involvement of each of the four social spheres. For reasons of convenience, “Science” was used as shorthand for “Science and Technology”. The thin lines indicate that these cases have not been studied comprehensively in the PACITA report (Ganzevles/van Est 2012).

Source: Ganzevles et al. 2014

Shared Parliamentary-Science-Society Involvement in TA

Half of the board of IST (Flanders) consisted of MPs, and the other half of scientists. In addition to parliament, the wider public was a formal client of IST in Flanders. IST put a lot of effort into stimulating public debate, by means of participatory methods, technology festivals, and communication. Typifying PTA in Flanders (until 2012) as a form of “shared parliamentary-science-society in TA” does justice to the fact that IST had strong links with parliament, with science, and with society. Although the foundational structure of the Danish Board of Technology (DBT), as installed in 2012, differs significantly from that of the Flemish situation, the four spheres exert a similar amount of relative influence on it. It has strong ties with the social sphere, in particular via its participatory procedures.

Shared Parliament-Government-Science-Society Involvement in TA

Active MPs do not participate in the boards of PTA organizations in the Netherlands, Norway, and Switzerland. In its role as client, however, parliament exerts an indirect, but crucial, influence on the way the TA organizations in these countries function. In these countries, the government and wider society are also included as formal addressees. Moreover, government plays a role in funding the TA organizations. Accordingly, we refer to this model of organizing TA in the Netherlands, Norway, and Switzerland as “shared parliament-governmental-science-society control”.

Shared Government-Science Involvement in TA

In addition to these four PTA models, another TA model was identified in Austria, namely “shared government-science involvement in TA”. ITA in Austria has very strong ties with science. This involvement is mainly shared with the government (both in Austria and at the EU level), which is one of the clients and the most important sponsor. More recently, parliament has shown increased interest in TA. Via participatory methods, ITA has also strengthened the involvement of society

in its projects. A gradual shift towards model 4 can be detected.

5 Scrutinizing PTA in a New Way

In this article we model PTA in relational terms. The existing literature typically focuses on the formal institutional and organizational relationship to parliament as being the main determinant for classifying a specific PTA organization. In addition to its connections with parliament, the approach as developed within the PACITA project also takes into account interactions between the PTA organization and three other social spheres, namely government, science and technology, and society. Moreover, it makes it possible to study this relationship on three levels (institutional, organizational, project) in an empirically transparent fashion by distinguishing nine interaction mechanisms, which are procedures that enable and/or constrain the ways in which PTA organizations may shape their interactions with the four spheres.

Research within the PACITA project shows that PTA organizations indeed establish and maintain multiple relationships with the four discerned social spheres. PTA organizations differ from each other to the extent to which they interact (on both the institutional, organizational, and project level) with the four distinct social spheres. Out of the eight theoretically conceivable interaction models, four distinct interaction models for PTA are currently operational in Europe. Thus when policy makers and politicians discuss the creation of a new PTA institution or the future of an existing one, they are advised not only to discuss its preferred relationship to parliament, but also with government, science and technology, and society. To make things even more complex, thinking about the interaction between PTA and the four spheres should be done on the institutional, organizational, and project levels.

This may sound like common sense and mirroring the existing practice, but that is surely not the case. As already mentioned, the existing literature mainly focuses on the relationship of the PTA institution with parliament. There is even such a bias within EPTA (the European Parliamentary Technology Assessment network). More specifically, most attention is paid to the institutional and

organizational dimensions of this relationship. Except for the country reports of the PACITA project (Ganzevles/van Est 2012), the project level – the practical level that finally decides whether PTA has an impact on parliamentary debate and decision making or not – is rarely touched upon. In contrast, with respect to the relationship between PTA and society, most of the academic work and debates deal with participatory methods, that is, they focus on the project level (cf. Slocum 2003), leaving implicit how such participatory methods should be embedded in organizational and institutional structures. Finally, although there is a lot of literature that deals with the role that scientific advice plays in policy making, reflection on the interaction between PTA and the spheres of science and technology and even more so that of government is almost nonexistent.

In this way, defining PTA in relational terms opens up a new research agenda with respect to the practice of PTA and TA in general. The PACITA project partly addressed this new agenda by using case studies to describe, basically for the first time, how in practice PTA organizations try to connect to the various spheres to achieve an impact (Ganzevles/van Est 2012). Other relevant research questions are: By whom and how is interaction between PTA and the various social spheres debated and shaped on the various levels? How do the actions on a certain level influence activities on another level? If (participatory) TA methods developed at the national level are used on the European political level, to what extent do they require well-developed relationships between PTA and the political system on an institutional and organizational level?

When we return to the issue of institutionalizing PTA, our modeling of PTA in relational terms can be used to map the institutional development of PTA over time. Appreciating the dynamics of PTA on the institutional level is crucial for the future of PTA, with regards to creating new institutions and maintaining existing institutions or to adapting them to new political demands. The case studies show that a long-term perspective is needed to come to grips with that process. For example, the national political debate about setting up PTA was found to take a long time; often more than a decade. Moreover,

existing institutes may radically or gradually change their institutional position. We saw for example that, as the Austrian parliament is knitting closer ties with the TA and foresight communities and participatory procedures are gaining importance in ITA's work, Austria is drifting away from "shared science-government involvement in TA" towards model 4 (shared parliament-government-science-society involvement in TA).

When we take a long term perspective, we see that PTA organizations show institutional flexibility and adaptability. They drift, so to speak, through a so-called "institutional possibility space" that consists of fifteen models. There is even the possibility that they might drift out of that space, as in Flanders where PTA ceased to exist on January 1, 2013. Countries with an interest in PTA or which already have PTA capacity should try to find the model that is particularly suited to their (evolving) context. The "possibility space" that is chosen will provide ample opportunities for adapting to changing political demands (Hennen/Nierling 2014). Both abrupt and gradual changes are possible, and many development scenarios are imaginable. For example, a country may first set up a PTA organization that focuses on its relationship with parliament and later on develop its relationship with society. Or it may first establish a good relationship with government and science and technology, and only later gradually develop a stronger relationship with parliament.

We may conclude that the way we have modeled PTA in relational terms proved useful to describe, characterize, and acknowledge the diverse nature of the various PTA arrangements in Europe. It also clarifies the diverse challenges involved in setting up and maintaining PTA organizations. We hope that defining PTA in relational terms opens up a new manner of understanding and questioning PTA and its role and impact in the way modern society deals with science and technology.

Notes

- 1) This article is based on research done within the EU-FP7 project PACITA (Ganzevles/van Est 2012) and an article which compares our way of modeling parliamentary technology assessment (PTA) with the existing literature (Ganzevles et al. 2014). The

present article wants to stress the political relevance of this approach, as formulated in the PACITA policy brief “Multiple faces of (parliamentary) technology assessment institutions” (PACITA 2014).

- 2) This paper is based on the results of task 2.1. “TA practices in Europe” of the European Commission funded PACITA project (Ganzevles/van Est 2012; Ganzevles et al. 2014; PACITA 2014). PACITA stands for Parliaments and Civil Society in Technology Assessment. The project’s aim is to stimulate reflexivity on PTA in European regions and countries with and without established PTA organizations.
- 3) In the literature on PTA, the word “model,” e.g., the OTA model, is regularly used to characterize certain “practices of involvement among experts, policy makers and the public” (Bimber, Guston 1997, p. 130), which van Eijndhoven (1997) names TA paradigms. Our ambition is bigger. We want to make explicit how PTA practices on the institutional, organizational and project level are characterized by their bonds with four social spheres: parliament, government, science and technology, and society. As a result, eight PTA models can be distinguished (see note 8). The PTA model that characterizes a certain PTA institute can be determined using a set of nine specific interaction mechanisms (see section 3).
- 4) In this context, the sphere of “society” is used as an umbrella term for the spheres comprising citizens, nongovernmental organizations, and the media. Businesses may play a role in the spheres of science and technology and of society.
- 5) Note that the institutional arrangement of the Danish Board of Technology changed when it was newly installed in 2012. In the PACITA project this new foundational structure is taken into account.
- 6) Note that at present there is no TA institution in Flanders. The former PTA organization in Flanders, named IST, was abolished January 1, 2013. The institutional arrangement before that date was described in the PACITA project.
- 7) Currently there is no TA institution in Flanders. In the French part of Belgium, Wallonia, a law is under consideration that would install a TA organization by 2015 (see Delvenne et al. in this volume).
- 8) Since PTA, by definition, is TA specially aimed at the Parliament, eight models of PTA can be distinguished: mainly parliament involvement, shared parliament-government involvement, shared parliament-science involvement, shared parliament-society involvement, shared parliament-government-science involvement, shared parliament-government-society involvement, shared parliament-science-society involvement, and shared parliament-government-science-society involvement.

If one would look for models of TA in general one would find an additional seven models, including for example mainly government involvement, mainly science involvement, mainly society involvement or shared government-science involvement. In total fifteen models of (P)TA theoretically exist.

- 9) Given the fact that there are eight potential models of PTA, the following four PTA models were not identified in the PACITA project: shared parliament-government involvement, shared parliament-society involvement, shared parliament-government-science involvement, and shared parliament-government-society involvement.

References

- Bimber, B.; Guston, D.H.*, 1997: Introduction: The End of OTA and the Future of Technology Assessment. In: *Technological Forecasting and Social Change* 54 (1997), pp. 125–130
- Bütschi, D.; Carius, R.; Decker, M. et al.*, 2004: The Practice of TA; Science, Interaction and Communication. In: *Decker, M.; Ladikas, M. (eds.): Bridges Between Science, Society and Policy: Technology Assessment – Methods and Impact*. Berlin
- Cruz-Castro, L.; Sanz-Menéndez, L.*, 2005: Politics and Institutions: European Parliamentary Technology Assessment. In: *Technological Forecasting & Social Change* 72 (2005), pp. 429–448
- Delvenne, P.; Fallon, C.; Brunet, S.*, 2011: Parliamentary Technology Assessment Institutions as Indications of Reflexive Modernization. In: *Technology in Society* 33 (2011), pp. 36–43
- Enzing, C.; Deuten, J.; Rijnders-Nagle, M. et al.*, 2011: Technology Across Borders: Exploring Perspective for Pan-European Parliamentary Technology Assessment. Brussels
- Falkner, G.; Peissl, W.; Torgersen, H.*, 1994: PTA in Europa: Der Vergleich. In: *Falkner, G.; Peissl, W.; Torgersen, H. (eds.): Technikfolgen-Abschätzung in Europa. Forschungsstelle für Technikbewertung*, Vienna, pp. 166–193; <http://epub.oeaw.ac.at/ita/ita-projektberichte/d2-2e03.pdf> (download 18.12.14)
- Ganzevles, J.; van Est, R. (eds.)*, 2012: TA Practices in Europe. PACITA, Deliverable 2.2; <http://www.pacitaproject.eu/wp-content/uploads/2013/01/TA-Practices-in-Europe-final.pdf> (download 11.12.14)
- Ganzevles, J.; van Est, R.; Nentwich, M.*, 2014: Embracing Variety: Introducing the Inclusive Modelling of (Parliamentary) Technology Assessment. In: *Journal of Responsible Innovation* 1/3 (2014), pp. 292–313

Hennen, L.; Ladikas, M., 2009: Embedding Society in European Science and Technology Policy Advice. In: Ladikas, M. (ed.): *Embedding Society in Science and Technology Policy – European and Chinese Perspectives*. Brussels, pp. 39–64

Hennen, L.; Nierling, L., 2014: A Next Wave of Technology Assessment? Barriers and Opportunities for Establishing TA in Seven European Countries. In: *Science and Public Policy* 41/3 (2014), pp. 1–15

PACITA – *Parliaments and Civil Society in Technology Assessment*, 2014: Multiple Faces of (Parliamentary) Technology Assessment Institutions. Policy Brief drafted for the Second PACITA Parliamentary Debate, “Strengthening Technology Assessment for Policy-Making”, April 7–8, 2014 in Lisbon in the Portuguese Parliament; http://www.pacitaproject.eu/wp-content/uploads/2014/08/20140311_Information-material-for-participants.pdf (download 18.12.14)

Slocum, N., 2003: *Participatory Methods Toolkit: A practitioner’s Manual*. Brussels

van Eijndhoven, J.C.M., 1997: Technology Assessment: Product or Process? In: *Technological Forecasting and Social Change* 54/2 (1997), pp. 269–286

van Rijswoud, E., 2012: *Public Faces of Science. Experts and Identity Work in the Boundary Zone of Science, Policy and Public Debate*. Enschede

Vig, N.J.; Paschen H., 1999: *Parliaments and Technology. The Development of Technology Assessment in Europe*. New York

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De- and Re-Institutionalizing Technology Assessment in Contemporary Knowledge-Based Economies

A Side-by-Side Review of Flemish and Walloon Technology Assessment

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This article illuminates the potential role of technology assessment (TA) in knowledge-driven science, technology and innovation (STI) regimes by providing a comparative review of Flemish and Walloon TA. It draws critical attention to the ways in which TA actors and institutes in Flanders and Wallonia position themselves, or are positioned, in relation to dominant innovation policies and large-scale political transformations, notably the convergence of STI around the knowledge-based economy (KBE) and the regionalization of STI policy in Belgium. The article’s findings shed light on the Flemish government’s recent decision to close its parliamentary TA institute and the institutional expansion of TA in Wallonia and elsewhere in Europe. It argues that TA has politics, as TA in Flanders and Wallonia aligns with the advent of strategic science and is also affiliated to specific political parties. As these considerations run counter to the dominant representation of TA as a neutral governance tool that serves the needs of all STI decision makers, they draw into question the viability and utility of TA within contemporary KBEs.

1 Introduction

Today, industrialized nations and regions invest increasing amounts of public resources in science and technology. Flanders and Wallonia are no exception to this general trend. Originally unified with the regions of Brussels under a common Belgian government and administration, Flanders and Wallonia have developed their own science, technology, and innovation policies. While these policies serve Flemish and Walloon policymakers