

Forms and functions of participatory technology assessment – Or: Why should we be more sceptical about public participation?

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Abstract

The participation of a variety of new actors in social spaces of science and technology policy-making has become an important issue in STS as well as in politics. The field of technology assessment offers an excellent example. The literature refers to procedures creating such multi-actor spaces as “participatory technology assessment” (PTA). They are considered to be one promising way to promote direct interaction among members of the general public, interest groups, professional experts and policy makers in multi-actor spaces with the general aim of democratising S&T governance. Over the last ten years PTA has been employed in many European countries, but also elsewhere in the world, especially in the field of biotechnology/genetically modified organisms. Recently, the European level has displayed some support for more participatory science and technology policy-making.

The political as well as the academic debate over PTA has been influenced by romanticised notions about the social functions of participation. PTA is believed to increase the motivation of those involved, enhance the knowledge and values basis of policy-making, initiate social learning processes, open up opportunities for conflict resolution and pursuit of the common good, and enhance acceptance and legitimacy of political decisions. I argue that our overall knowledge is limited and that there are both empirical and theoretical reasons to be more sceptical about PTA. I propose a typology of PTA that outlines the linkages between its actual forms and assumed functions and discuss the underlying model of democracy.

Introduction

Since the 1960s political sociologists observe a “participatory revolution” inspired by increasing demands for “more”, “better” or “enhanced” citizen participation, leading to new forms of political participation. The evolution of so-called participatory technology assessment (pTA) procedures, which we can observe since the 1990s, has been part of this democratisation trend. Up to now, a number of models and procedures have been developed and experimented with at national as well as recently also at European level. The procedural core of pTA entails a plurality of different social actors: the general public, interest groups, professional experts and policy makers deliberate on socio-technological issues. This practical development goes hand in hand with an increasing scholarly interest in the conceptual development of pTA. So far, the democratic impetus has been the driving force behind both pTA practice and concepts. Two assumptions dominate in the literature: pTA is considered to be a) a means of *participatory governance* and b) a mechanism for *democratisation of expertise*.

Even though participation lies at the very heart of TA debates and even though there has been an astounding boom in participatory activities (particularly in the contested field of biotechnology and human genetics), pTA is neither sufficiently theorized nor well established at present; it is certainly not the ubiquitous form of TA (Joss and Bellucci 2002: 5f.). The development of pTA is, by and large, still in an experimental stage; most TA conducted rests on the traditional expert-oriented model.

Against this background, it is amazing that the very strong function of democratisation (of governance and expertise) is ascribed to pTA. By and large, a normative claim that does not, as I will argue, rest on a solid basis of empirical research. Furthermore, such claims about these functions have to take into account the different models that have been developed over time. Participation is not participation is not participation ... My

contribution focuses on different models of pTA and their expected performance, in other words: on the relation between forms and functions of pTA. Based on a review of the literature, I propose a pTA typology, which has repercussions for the critical issue of democratisation.

Normative functions of pTA

PTA is supposed to serve a number of normative functions. In the literature we can find the following emphases.¹ Participatory TA is believed to

- (1) enhance the knowledge and values base of policy-making;
- (2) open up opportunities for conflict resolution and achieving the public good;
- (3) foster the motivation of those involved and initiate a process of social learning;
- (4) provide economic actors with a better understanding of consumer and stakeholder concerns; and, in so doing,
- (5) improve the accountability and legitimacy of socio-technological decisions.

These specific purposes are part of the key function of pTA, namely the democratisation of science governance and expertise; hence, we can speak of 'democratic TA' (Abels and Bora 2004).²

Critics such as Weingart (2001), for example, argue that the pTA idea is based on a very 'romanticising view' of participation and builds on the assumption of a 'higher wisdom' of lay knowledge. Advocates of pTA admit that the reality differs from the normative claims. Practical examples often fail to realize their potential functions; all too often pTA remains in a political and social vacuum, and the results fizzle out. Recent studies such as the comparative EuropTA project or the TAMI project, for example, demonstrate that the impact of different methods differs enormously, depending on the social and political context of individual procedures (see Hennen 2002; Bütschi and Nentwich 2002; Decker and Ladikas 2004). What is missing thus far is a systematic study of the links between forms and functions of procedures.

Linking forms to functions – a typology of pTA

I propose an inductive typology of pTA models, which is based on a critical review of the literature. It has one great advantage in that it focuses on structural dimensions instead of on single participatory events and their specific contexts (like case studies). It is still a heuristic device, but a first step towards theory-building (for a detailed description and analysis see Abels and Bora 2004). The underlying assumption is that there are systematic links to be found between *who* participates, *how* and *why*, in other words: between the formal and the functional dimensions of participation.

Our typology identifies seven different models with regard to form: (1) the dialogue model, (2) the pTA model in a narrow sense, (3) the legal public hearing, (4) the Danish-style consensus conference model, (5) the extended consensus conference, (6) the voting conference, and (7) the scenario workshop. I will not describe the models in detail (see appendix), but focus instead on similarities and differences between the models regarding the formal and functional dimension.

All studies of participation have to begin with the question: Who participates? In pTA we can identify four principal groups of participants: lay people, interest groups, scientific experts and policy-makers. The simplest procedure is the one in which participants belonging to one and the same social group deliberate (interest groups in the dialogue procedure). At the other end of the spectrum, we find procedures that involve participants from all four principal groups, such as the voting conference and the scenario workshop. Yet, most models include only two social groups: experts and lay-persons, experts and interest groups.

¹ See, for example, Andersen and Jæger 1999; Bechmann 1993; Durant 1995; Foltz 1999; Hennen 1999; Renn et al. 1995; Webler and Tuler 2002.

² A final and frequently named function is the refinement and development of the participatory method itself.

The *form dimension* focuses on the division of roles between the participants and the main procedural rules. Under most procedures, one group holds a key position: in the consensus conference, it is the lay persons; in the public hearing, the administrator; in the narrow pTA model, the scientific experts. However, in two models (voting conference and scenario workshop) all participating groups enjoy equal rights. Therefore, these models are deemed 'balanced' (Abels and Bora 2004). The main procedural rule in all models is arguing or deliberation. However, the dialogue model also entails elements of bargaining over interests; moreover, in some models the main task of participants is to evaluate statements proposed by interest groups.

The *functional dimension* concentrates on the *why* question: it involves the issue at stake, the intended target group, the objective of the procedure as well as performance or effectiveness. First of all, the literature is often vague and unspecific regarding functions. Model 3, the legal public hearing, is an exception due to the long tradition and strong legal framing of the procedure (for Germany see, in detail, Bora 1999). All procedures address the legislative and/or executive branch of government. Nevertheless, the actual link to political institutions and the real impact on policy-making, not to mention on policy-decisions, is very weak as a rule. The procedural outcome is presumed to be a form of policy-advice; there is never the intention to substitute for representative politics.

Procedures in which lay people occupy a key position aspire to come up with an informed lay perspective. This is linked to the function of enlightening the public debate; whether this is actually achieved, however, remains an empirically open question. This also depends on the notion of *public*. Interestingly, the general public is often excluded, at least from most parts of the procedure itself; it can, at best, participate via the media. However, pTA evaluations confirm that there is often a serious lack of media reporting; this limits its impact on public debate. Thus, one radical conclusion could be to question whether the term 'public' participation is really appropriate.

There is some evidence that procedures ensuring a strong role for interest groups have some function as a blockade runner, sometimes helping out of a political deadlock (see Bütschi and Nentwich 2002). Agenda-setting and filtering out policy-alternatives are further functions of some models (e.g. the voting conference or dialogue model). Methodologically this is hard to prove. Even if, for example, a policy-maker is inspired by the result of a pTA, s/he may never refer to it explicitly.

The fact that democratisation is supposed to be a key function of pTA raises questions about the underlying *model of democracy*. All models are first and foremost deliberative; at least implicitly, they rest on theories of deliberative democracy which is itself often linked to Habermas' discourse theory. However, several models (1, 5, 6 and 7) incorporate elements of pluralism. In these models, interest groups have to defend their special preferences by arguing (rather than by bargaining), and to take matters of public concern into account. Some models have a participatory element in the way that directly affected people can get involved (model 3, to some extent also model 7).

Theoretical discussion

If this typology proves to be of some value, then this has repercussions for the two-fold democratisation function of pTA. Let me now develop some theoretical implications that feed into my scepticism about pTA performance.

Participatory science governance

Democratic TA is considered to be a practical expression of participatory governance. It is, moreover, seen as an alternative to constitutionally established procedures of policy-making in representative and pluralist mass democracies that build on systems of interest-mediation and preference bargaining, majority rule and the protection of minority rights. These institutions are believed to have lost legitimacy and thus fail to deliver effective policies.

The theoretical justification is the old, essentially liberal identity argument according to which those affected by policies should be involved in the political process. Yet, in mass democracies there are clear real-world limitations. This problem is exacerbated against

the background of a 'third transformation of democracy', that is the extension and decay of the spatial dimension of politics; de-nationalisation, Europeanization and globalization are the keywords.

According to the logic of participatory governance this tension can be resolved by strengthening citizens' participation, moreover: increased participation is judged essential for increasing system effectiveness, in other words, the system's problem-solving capacity or output legitimacy. This claim is based on Habermas' discourse theory and its acknowledgement in theories of deliberative democracy. According to this reading, the best arguments prevail in an open discourse enabling deliberation among equals unconstrained by power structures.

This line of argumentation leads to a number of theoretical questions, only a few of which I can discuss. Firstly, participation and democracy are considered to be one and the same: participatory democracy means intensified participation of citizens in policy- and decision-making. While different schools of democratic theorists agree that some citizen participation is required, there is strong disagreement about how much and what kind. Critics argue that participatory democracy builds on an idealistic vision of the 'zoon politicon'. This vision is, at least implicitly, incorporated into pTA concepts. In science governance, participatory governance is often confused with deliberative governance. However, as the STAGE project illustrates, other possible modes include discretionary, corporatist, market, and agonistic governance (Healey 2005). This is not to say that participatory democracy is a bad option, but it is certainly a normative theory and has to prove its value empirically over possible alternatives. If pTA is considered a manifestation of deliberative governance, other strands in democratic theory that can contribute to a theoretical foundation of pTA are excluded a priori – while they have some influence on pTA practice. I argue that the deliberative bias in pTA concepts brings along problems for theorising the experience of pTA, especially with regard to 'balanced' models.

Secondly, in democratic theory participation was long thought to be in sharp conflict with representation. Brown (2006) argues that participation is indeed a part of democratic representation, not opposed to it. In this sense most proponents of participatory democracy do not argue for replacing representative institutions with participatory procedures. Thus, pTA offers an additional procedure in the 'toolbox' of democracies. This leaves open the question as to how instruments of participation and representation can be reconciled, i.e., the combination and design of procedures and processes. So far, all pTA models evince only weak links to the political arena. Its function is advisory and models are not linked to political decision-making.³ One strand in governance theory builds on the concept of policy networks in which different state and private actors are interdependent and interact. Can we actually speak of governance when there is such weak link to the political arena (and often to the general public arena)?

For pTA to move beyond practical and theoretical manoeuvrings, one needs to address the question of 'institutional design' and of procedural differentiation, based on theories of institution-building and of democracy. This requires us to discuss possible, systemic links to representative institutions beyond the ritual presentation of results to policy-makers. Obviously, some forms provide more suitable links to representative democracy than others.

Thirdly, there is an inherent conflict between participatory governance and denationalisation. Today even liberal political theorists have begun to admit to a growing tension between input and output legitimacy, or in Robert Dahl's words: between citizen participation and system effectiveness (Dahl 1994). Dahl even speaks of a fundamental 'democratic dilemma' reinforced by Europeanization and globalization; he argues for increased citizen participation – at the national level. Today, science and technology is developed in transnational networks (the Human Genome Project is an outstanding, yet not unusual example), just as economic actors often operate on a global level. Citizen participation is still limited to the national or even local level. This raises the crucial question as to what the evolution of 'world society' implies for TA in general and for pTA in particular.

³ The legal hearing public hearing is an exception, where the strong link between participation and decision-making brings up severe problems (Bora 1999).

Democratising expertise

Participatory TA is considered to be a form democratisation of expertise. Democratisation means in this context the representation of a plurality of social positions. These actors contribute additional sources of knowledge and expertise to pTA. In this sense, pTA is a form of 'mode 2' knowledge production. In pTA this requires that the expert discourse is 'translated' into a form of discourse that is more accessible to a non-expert public. At the same time, however, public concerns have to be 'translated' into an expert discourse. This two-directional translation is necessary to ensure social learning among the actors. Yet, again, what is 'social learning' and how do we prove that it took place? Lay people certainly improve their knowledge of the field under consideration, and some experts, on the other hand, may pick up a thing or two from the lay perspective – but without wanting to turn to the old and insufficient deficit model of public understanding: does this really qualify as social learning?

According to the ideal of pTA, the improved input due to better citizens' participation is supposed to result in an improved output and, in so doing, helps to increase the system effectiveness. The key to the reconciliation of citizens participation and system effectiveness is then, again, a strengthening of the input side of the process: the citizens. This proposed strong link between input and output is problematic for a number of reasons: First of all, it raises the question of the quality of expertise resulting from the deliberative procedure. There are established systems of peer review for scientific expertise, which don't always work and surely have their flaws. The question remains: what quality standards can be applied to non-experts or lay-person expertise such as a citizens' report? A key aspect of pTA is that, depending on the specific model, lay persons can bring their everyday, moral concerns and develop an informed position. Yet, the status of moral expertise in a pluralist society is anything but clear. However, this reinforces the tendency to polarise 'science' and 'the public'; while the latter engages in ethical debates, the scientific debate is left to scientists. The quality question should not be neglected. Nowotny (2005) calls quality control the Achilles' heel of the 'mode 2' model of knowledge production. The pTA literature shows that when lay people dominate pTA, reports and recommendations are often broad and unspecific. Domination by experts may lead to arguments that are socially and factually stronger, increasing the legitimacy of the results and contributing to system effectiveness. The 'balanced' model further complicates the picture by introducing also political or stakeholder expertise.

A second issue involves the utilization of expertise and its prerequisites. Informed opinions offered by lay-persons are often very general and not easily applied to actual policy-making. Even excellent advice is no guarantee that it will have an impact on policies. Policy recommendations are always transformed once they are 'injected' into the political process. Input and output are two sides of the policy process; in between there is the complicated process of *throughput*. The political system functions according to different relevance criteria; policy-makers are, first of all, strategic actors, not knowledge recipients. Balanced models seem more promising insofar as policy-makers are integrated on equal terms in the actual deliberative pTA process and the production of knowledge. This could improve recommendations and increase social learning.

Thirdly, the role of interest groups in the production of expertise is critical. Interest groups are an important form of citizen participation in liberal democracies; their usual mode of communication is bargaining over preferences among each other and with policy-makers. They play a dual role: they bring in expertise, while representing their own special interests. They are simultaneously stakeholders and 'knowledge-holders' (Philipp Schmitter). Expertise is their major resource, one of the main reasons for involving them in the participatory process; however, their use of knowledge is strategic: it has to serve their preferences. The deliberative procedure forces interest groups into a mode of argumentative communication with other parties, especially with lay citizens, who are assumed to represent public good. Interest groups now have to defend their interests on better arguments that take public interests, rather than their own special, albeit legitimate preferences. The practical and theoretical effects of this integration of deliberative and pluralist elements in pTA are not clear. While it seems more realistic, the question remains whether or not interest group preferences are really shaped by pTA. In

other words: can strategic actors become interest-free deliberators? Why should they restrict themselves to contributing expertise, if they can mobilise other channels of influence to lobby for their interests? What about the danger of stakeholder capture? The debate on this crucial aspect has only begun (Hendriks 2002; Abels and Bora 2005).

Conclusions

The practical expansion of pTA and its conceptual development is an exciting political and theoretical challenge. The participatory revolution, starting in the 1960s, has finally reached the field of science and technology governance. Participatory TA is a fascinating way to trace interaction between members of the general public, interest groups, professional experts and policy makers in multi-actor spaces not only at national level, but also at supranational level.

However, political enthusiasm is one thing, scientific analysis and theorizing is a different story. There are serious theoretical reasons for scepticism; the quality of expertise, the democratic foundation and the link to the political and public arena are some of them.

There are also empirical reasons – at least based on the current status of empirical knowledge. Given the lively political, academic debate, it is amazing that systematic and theoretically informed studies lag behind. Even though several research projects over the last years have been highly informative and relevant, particularly empirical, cross-national and cross-sectoral comparative studies regarding the practical relevance of participatory science governance. Participation can mean very different things and its normative functions have to be clarified.

One thing emerges from the literature as well as from real world science/society conflicts: Science governance does not work without public participation. If it works with public participation – or more precisely: with which kind of citizen participation, in which fields and for what purpose -, this is open to future research.

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Appendix: Typology of participatory technology assessment procedures

- → Number and heterogeneity of participants +							
	Type 1 Dialogue procedure	Type 2 pTA in a narrow sense	Type 3 legal public hearing	Type 4 consensus conference	Type 5 extended consensus conference	Type 6 voting conference	Type 7 scenario workshop
Key feature	<i>Interest group procedure</i>	<i>Expert – stakeholder procedure</i>	<i>Decision oriented procedure involving those concerned</i>	<i>Lay people – expert procedure</i>	<i>Lay people, interest groups and experts</i>	<i>Voting-oriented procedure</i>	<i>Procedure involving those affected, experts and policy-makers</i>
Participants							
Lay people			X	X	X	X	X
Sci. experts		X	X	X	X	X	X
Interest groups	X	X			X	(X)	X
Policy-maker						X	X
Criteria for selecting participants	Representative; partly affected groups	Representative	Everybody; those who feel affected	citizens: representative & 'lottery'; experts: deliberate selection by lay people	citizens: representative & 'lottery'; experts: deliberate selection by lay people; interest groups: co-optation	citizens: representative & 'lottery'; experts & policy-makers: representatives	Representative
Form of participation							
Social roles	Participants enjoy equal procedural rights	Experts = key position	Decision-maker (administration) = key position; Citizens give arguments, experts deliberate	Lay people = key position; experts deliver knowledge	Lay people = key position; experts deliver knowledge (esp. for dialogue with interest groups)	Participating groups enjoy equal procedural rights	Participating groups enjoy equal procedural rights

Procedural rules	Dialogue/discourse between interest groups (sometimes experts are consulted); transparency regarding interests involved; understanding for different perspectives	Discourse between scientific experts and interest groups	Legal decision; affected persons have an advisory role	Questioning of experts by lay people	Participating groups often deliberate separately; interest groups deliver opinion, which is evaluated by lay people	Evaluation of different scenarios handed in by stakeholders; voting on scenarios	Evaluation of different scenarios; participating groups deliberate separately as well as in joint sessions
Function of participation							
Major issue	Technology assessment and planning	Technology in general	Specific cases	Technology in general	Technology in general	Technology in general	Technology in general
Target group	Policy-makers; interest groups; general public	Policy-makers in general; general public	Public administration, decision-maker	Policy-makers; interest groups; general public	Policy-makers; interest groups; general public	Policy-makers; interest groups; general public	Policy-makers; interest groups; general public
Primary tasks and objectives	Initiate dialogue among opposing groups; interactive exploration of goals; identification of areas of consensus and lack of agreement	Resolving status of scientific knowledge by experts and counter-experts; in so doing, clarify political options; legitimize political decisions	Deliberation in a strict sense, i.e. influence decisions by good arguments	communication between lay people and experts; fostering and enlightening of public debate	fostering and enlightening of public debate	fostering and enlightening of public debate; reveal perspectives of different groups	Planning process; dialogue between all involved groups of actors; foster understanding for divergent perspectives

Attributed/ expected achievement	Disclose divergent perspectives of concerned interest groups; overcome inertia; feed- back into interested associations; settling alternative options for policy-makers	Risk assessment based on technological state-of-the- art; identify uncontested knowledge as a basis for decisions	Inform citizens and of administration; representation and legal protection of citizen's interests; foster acceptance and legitimacy of administrative decision	Typical opinion of informed lay person; also agenda setting	Exploration of objectives; typical opinion of informed lay person	Filter for competing policy options	Disclose divergent perspectives of participating groups; agenda setting; political legitimacy; overcome deadlock
Underlying model of democracy	Pluralist, but with deliberative elements	Not specified, rather deliberative	Formally participatory, actually deliberative	deliberative	deliberative- pluralist	Deliberative with some pluralist elements	Participatory- deliberative with pluralist elements
Typical procedure	Mediation- oriented stakeholder discourse	Discursive pTA in a more narrow sense	Public hearing as part of administrative decision-making	Consensus conference, citizen's jury	Modified consensus conference, citizen's jury	Voting conference	Scenario workshop (Danish style)
Empirical examples	Dutch Gideon Project; German Discourse on Agro-biotech- nology; Traffic forum in Salzburg	pTA on herbicide- resistant plants at the Science Centre Berlin (WZB)	German law on atomic energy as well as law on administrative procedures	UK Consensus Conference on Plant Biotechnology; Consensus Conference on GM Food, Australia	UK Citizen Foresight Project GM Food; Citizens Jury on GM Crops, India	Danish Voting Conference Drinking Water	Danish Scenario- Workshop Urban Ecology; Future Search Conference Traffic Copenhagen

Source: Abels and Bora 2004

Forms and functions of participatory technology assessment – Or: Why should we be more sceptical about public participation? Article. Full-text available. Gabriele Abels. It is this role as translator that is considered to be most innovative and worth exploring in the theory and praxis of pTA. View. Show abstract. Amidst proposals for participation, there are diverse models of what would count as a democratic assessment of technology (Joss 1998: 4). According to a survey of participatory technology assessment (TA) exercises, these rarely have a demonstrable impact on political decision-making (Bätschi and Nentwich 2002). Perhaps such exercises matter in more subtle ways, which therefore need different analytical questions about democratic accountability. ... Public participation has many benefits (PWCNT 2002; IAP2 2006); some are shown in Table 1. The main aim of public participation is to encourage the public to have meaningful input into the decision-making process. participation programmes – Specialised public participation techniques and training in public participation design and processes – The community should be consulted about public participation design and process before the agency finalises its approach – To address the needs of specific groups, special participation techniques are required – Public participation programmes should aim to capture the full diversity of people within a community – not only people that are the most publicly active or socially capable. via participatory technology assessment (pTA) and the function and role of participatory methods. Also, the – discovery – of participatory TA as an object of. or even completely indiscernible. (b) Participatory TA is being misused: The increasing use of participatory. procedures in science and technology policy is not an indicator of a new. understanding of – technological citizenship, – an extension of citizens’ rights. in science and technology policy making (Frankenfeld 1992). Yet participatory TA procedures. share this fate with forms of independent scientific consultation, as we know from. research on the use of scientific knowledge in consultations (Albaek 1995; Hoppe. 2005). Many opportunities exist to use participatory approaches in impact evaluation, so it is important to systematically think through who is best involved in which aspect of the evaluation, and to be clear about the purpose of more or different forms of participation. Participatory approaches can be used in any impact evaluation design, and with both quantitative and qualitative data collection and analysis methods. Participatory TA is being misused: The increasing use of participatory procedures in science and technology policy is not an indicator of a new understanding of – technological citizenship, – an extension of citizens’ rights in science and technology policy making (Frankenfeld 1992). On the contrary, participation is instrumentalized to push through specific goals in innovation policy. Thus, we should not set the bar any higher for participatory TA than for independent scientific consultation in general.