Public Participation, Science and Society: Tools for Dynamic and Responsible Governance of Research and Innovation

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Introduction: PE in the context of research and innovation

Demands on science are increasing constantly.[1] Global social challenges call for fast solutions based on a science capable of integrating different disciplines and research communities, and to dialogue with government, industry, and civil society. Science is required to be more transparent and accountable, more communicative and inclusive, more ethically oriented and socially committed. At the same time, the authority and unity of science are becoming weaker, and people's trust in science is decreasing, while paradoxically, their expectations about the capacity of science to have large social and economic impacts are increasing.

A 'superman model' of science is emerging. Science is asked to do more, faster and better, often with fewer resources, less time and less institutional support. This is leading to higher levels of competition between research institutions and researchers in order to publish, access funds, attract talent and raise reputation. All these challenges are altering research institutions in their culture, procedures, decision processes and organisational structures. In many cases, these changes are not planned or oriented through policies and measures, but are simply borne by researchers and managers. Many factors make it difficult for research institutions to manage such developments, including internal resistance to change, lack of awareness about the benefits and costs involved, overwhelming demands for responsiveness to societal needs, insufficient skills and knowledge about effective societal engagement, paucity of funding and resources, or absence of a national policy environment supporting change (e.g., Maassen 2017; Shoemaker 2011; Regenberg 2010; Hessels et al., 2009).

The question is therefore whether these changes will finally result in a *drift*, a largely ungoverned and uncoordinated set of processes, or in a *transition*, a shift from one state to another, managed and driven, as far as possible, through specific measures, institutional strategies, science policies and cultural inputs.

Public participation is loaded with high expectations in this context. Beyond specific definitions, it can be understood as being a general approach aimed at getting different actors, cultures, interests and knowledge to interact to identify and attain common objectives in terms of governance of research institutions and development of the research process. Public participation is not the unique possible approach, nor can it be applied alone, but it is one of the more relevant and consolidated approaches. Particularly in the context of the European Union (EU), public participation has been established as one of six main pillars of an emerging policy framework for the EU's research activities – the *Responsible Research and Innovation (RRI)* approach – which, combining various objectives and aspects of the so-called science-society relations, including open access, gender, ethics, science education and governance, is trying to increase the alignment of science with the values, needs and expectations of society. *Public engagement (PE)* is mostly used interchangeably with public participation, a term that is perhaps more globally known. However, since 'public engagement' is the term adopted by the European Commission (n.d.a), several European research institutions, as well as the research team behind the project underlying this study, we have also adopted it as the core concept of this volume.

In the last three decades, PE has developed intensively, stimulated by the actions of some national governments and European institutions, mainly under the pressure of an increasingly wide movement – involving researchers, NGOs, and many other stakeholders – engaged to promote more advanced and democratic forms of governance of science and technology. Many facts provide evidence of this trend, including the increasing number of PE experiences in Europe and in other regions of the World; the wide diversification and specialisation of PE tools (for example, 76 different PE mechanisms applied in 280 PE processes were identified by Mejlgaard and Ravn, 2015); the shaping and consolidation of an increasingly wide community of practitioners and experts on PE approaches and techniques; and the increasing interests of researchers on PE, as shown by the growing number of papers, articles and scientific meetings devoted to it. Even though it is well known that the field of PE is developing fast, it is less clear where the development is leading. Where is the cutting edge of this development? In order to address these issues, *an analysis of the trends and characteristics of innovative PE* is one of the three main tasks of this volume.

Despite active development of PE, its diffusion and impact on science has remained limited, for many reasons. The reform of formal institutions of research are out of phase with rapidly changing science in society. Often PE is merely used as a sophisticated form of science communication, not as a permanent component of science governance. Its diffusion is also limited, since – apart from a few countries – in the great majority of European member states, PE is only occasionally applied by research organisations, and national strategies in this field are still weak or missing altogether. PE practices are often not organically connected to the research organisation's policy cycle and research processes. The risk involved with these tendencies is that they can feed disappointment and dissatisfaction with PE, at least as a potential governance tool. In order to address the potential mismatch between high expectations and reality, and support a healthy development in this field, this volume has set the *study of the different performative functions of innovative PE* as the second of its three main tasks. In particular, we will show how innovative PE processes have contributed to a more dynamic and responsible governance of research and innovation. These concepts (to be fully defined later) refer to the ability of policy making to handle issues effectively in a rapidly changing environment requiring continuous adjustment and dynamic interaction between multiple stakeholders, including society at large.

The third main task of this volume is to *develop a synthetic model for evaluating the impacts and benefits of PE*. As PE activity is becoming commonplace, and public money is increasingly being spent on it, it is critical to evaluate the appropriateness, efficiency and impacts of such investments. We will argue that an up-to-date PE evaluation framework should acknowledge not only the classic evaluation criteria just mentioned, but also take into account the multiple functions of PE, and in particular, its potential roles as a tool for dynamic and responsible governance of research and innovation. In other words, PE can result in new governance capacities, and it can induce important systemic functions that should be acknowledged in any serious evaluation of PE activities. A reader interested in relevant evaluation approaches and criteria should find the synthetic PE evaluation model particularly informative, since many of the existing models have been partial at best.

Evolution of science in society

Public engagement with science has been enjoying unprecedented development in recent decades. It has become a recurrent issue in the public debate on research and innovation. In some national contexts, specific policies aimed at stimulating PE initiatives have been devised. Over time, a wide scientific literature has developed, addressing PE from a range of perspectives.

To grasp the actual and potential role of PE today, it is necessary to widen the interpretive framework to encompass some broader sociological perspectives: How has the relationship between science and society changed in recent decades? How has the governance of science in society changed respectively? What types of PE paradigm can be discerned?

From a sociological perspective, the changes affecting science are part of a wider array of transformations touching contemporary societies as a whole. Usually such transformations are represented as a shift from modern society to a new society, to which many names have been given, including, for example, 'post-industrial society' (Bell, 1974), 'information society', 'knowledge society', 'risk society' (Beck, 1992), 'reflexive modernity' (Giddens, 1991), 'liquid society' (Baumann, 2000), 'network society' (Castells, 200), 'post-modern society' (e.g., Lyotard, 1984), and high-speed society (Rosa, 2013). Most of these models concern the changing relationship between social structures and individual actors. In the context of modern society, social structures (e.g., social norms, behavioural models, social roles, and values) and the institutions of modernity supporting and reproducing them (e.g., political institutions, religious institutions, economic institutions, trade-unions, and public administrations) were strong enough to exert a certain control over individuals and groups (in terms of behaviours, expectations, cultural orientations, worldviews and so forth). Now – under the pressure of a range of factors – such structures and institutions are weakening while the autonomy of individuals (e.g., to make their own choice, to shape their own identity, to develop their own worldview) and the groups they are part of is increasing. These complex dynamics are resulting in accelerated transformations of the society, the impacts of which to science- society relateions are difficult to anticipate (see, e.g., Bijker and d'Andrea, 2009).

Various theoretical models have been developed to capture the many changes affecting scientific production. These include, among others, the 'Mode1/Mode2' (Gibbons et al., 1994; Nowotny et al., 2003), 'Post-Academic Science' (Ziman, 1996), 'Post-Normal Science' (Funtowicz and Ravetz, 2003), and 'Triple Helix' (Leydesdorff and Etzkowitz, 1998) and 'Quadruple Helix' (Carayannis and Campbell, 2009), and 'Scientific Agency' (Miah, 2017) models that allow shedding light on some of the main trends of change affecting science as a social institution. To provide an overview, ten common trends emerging from these models are summarised below.

Diffusion of cooperative practices in scientific production. Research is increasingly a collective enterprise made up of programmes involving the coordination of an increasing number of scientists and research institutions. This is also due to the fact that in some areas of research costly and sophisticated equipment are increasingly required, which cannot be provided by single research institutions, and where their use is more efficient and economic, when shared among institutions. Moreover, interaction among research institutions is practically unconstrained, for example thanks to ICTs. Knowledge production is therefore lesser and lesser made within hierarchically organised academic institutions but more and more through horizontal research networks.

Contextualisation. Research is increasingly 'context-driven', in other words, carried out in a context of application, arising from the very work of problem solving and not only governed by the paradigms of traditional disciplines. Consequently, research tends to be 'problem-focused': it is no longer initiated only by the interest of the scientist, but it is aimed at coping with specific problems or seizing a given opportunity.

Socially diffused research. There is a much greater diversity of the sites at which knowledge is produced as well as of the types of knowledge produced. The university is no longer the unique environment for research production.

Transdisciplinarity. Research is increasingly transdisciplinary in nature, while in the past it was carried out narrowly in specific disciplinary domains. Another aspect of the same process is that relationships between universities, governments and industries are increasingly closer and coordinated. This results in the creation of 'hybrid' structures and institutions, such as academic spin-offs, high-tech incubators, and science and technology parks.

Quality control enlargement. Quality control systems are changing, involving actors other than peers (for example, knowledge brokers, final users, citizens) and applying multiple assessment criteria.

Accountability. There is an increasing need to make science accountable to a wide range of actors, with effects such as the proliferation of evaluation exercises and modification of research procedures (for example, disaggregation of transdisciplinary research in order to allow disciplinary-based evaluation).

Utilitarianism. Research results are often expected to have economic impacts. This does not only mean favouring applied research but adopting the potential economic impact as a parameter for assessing any kind of research programme. Consequently, a discovery is often assessed for its commercial value, even before for its scientific value.

Scientists as experts. In some cases, scientists are asked to support political processes, especially in sectors where facts are uncertain, values are in dispute, stakes are high and decisions urgent. This evidently involves scientists as experts with political decision-making processes, often supporting different and possibly conflicting interpretations, views and positions. This weakens the image of science as a consistent and unitary set of certified knowledge.

Political steering. Policy makers show an increasing desire to lead the research process and to steer research priorities, at both European (through the framework programs) and national levels. This has also led to increasingly competitive access to public research funds.

Bureaucratisation. Research is growingly deferred to bureaucratic and administrative regulations and standardised procedures, related to work security, application for funds, evaluation and assessment, fraud control, and management, for example.

These and other changes affecting scientific production are largely modifying science-society relationships. For a long time, such relationships were limited and institutionally well-regulated, as described by the ivory tower model (Bok, 1984). Now science-society relationships are more intense and complex, invoking new challenges for research governance. For example, decreasing authoritativeness and diminishing social recognition of scientific institutions is driving societies toward anti-science attitudes and pseudo-scientific beliefs. An ever-stronger connection between science and ethical and policy issues is triggering and feeding social tensions on controversial issues and 'public battles' among experts (e.g., Cook 2014; Caputo 2010; Rowe et al., 2005). People's decreasing trust in scientific institutions is leading to a growing demand for accountability and transparency (Boaventura de Sousa, 2010). Increasing costs of scientific investments are requesting that science institutions can increasingly demonstrate their social and economic usefulness to citizens as taxpayers.

These factors are plunging science into a paradoxical situation: it has become increasingly important for our life and our future, but at the same time, science has become increasingly fragile as a social institution. It is not by chance that some scholars are speaking about the need for a new social contract allowing science and society to regulate anew their interactions and mutual responsibilities (e.g., Pardo and Calvo, 2002; Gibbons, 1999).

Changing paradigms of PE

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Box 1.1 General definition of public engagement (PE)

PE refers to a range of participatory processes, through which there is a distinct role for citizens and stakeholder groups to contribute to research and innovation activities.

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In this volume, we have adopted a quite general definition of PE (Box 1.1). This is to ensure an open exploration of the different modalities of PE activity, ranging from science communication to public deliberation and public activism; from bottom-up to top-down processes of interaction. In fact, PE is also one of the many concepts which is susceptible to different and even contrasting interpretations and uses, ranging from those that are restricted in scope and technical in nature, up to those that are large in scope and almost philosophical in nature. Some alternative definitions of public engagement in science and society are provided in Box 1.2.

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Box 1.2 Alternative definitions of PE

National Co-ordinating Centre for Public Engagement (2017):

Public engagement describes the myriad ways in which the activity and benefits of higher education and research can be shared with the public. Engagement is by definition a two-way process, involving interaction and listening, with the goal of generating mutual benefit.

AAAS Center for Public Engagement with Science and Technology (n.a):

Public engagement with science describes intentional, meaningful interactions that provide opportunities for mutual learning between scientists and members of the public. Mutual learning refers not just to the acquisition of knowledge, but also to increased familiarity with a breadth of perspectives, frames, and worldviews. Goals for public engagement with science in addition to mutual learning, include civic engagement skills and empowerment, increased awareness of the cultural relevance of science, and recognition of the importance of multiple perspectives and domains of knowledge to scientific endeavours.

Higher Education Funding Council of England (2007):

‘Public engagement’ involves specialists in higher education listening to, developing their understanding of, and interacting with non-specialists. The ‘public’ includes individuals and groups who do not currently have a formal relationship with a higher education institution through teaching, research or knowledge transfer.

Association of Commonwealth Universities (2001):

Engagement implies strenuous, thoughtful, argumentative interaction with the non-university world in at least four spheres: setting universities' aims, purposes, and priorities; relating teaching and learning to the wider world; the back-and-forth dialogue between researchers and practitioners; and taking on wider responsibilities as neighbours and citizens.

Committee on Institutional Cooperation (2005):

Engagement is the partnership of university knowledge and resources with those of the public and private sectors to enrich scholarship, research, and creative activity; enhance curriculum, teaching and learning; prepare educated, engaged citizens; strengthen democratic values and civic responsibility; address critical societal issues; and contribute to the public good… The publicly engaged institution is fully committed to direct, two-way interaction with communities and other external constituencies through the development, exchange, and application of knowledge, information, and expertise for mutual benefit.

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Despite the many alternative definitions of PE, there is a general consensus at least since the beginning of this century, that a shift from communication oriented PE to dialogue oriented PE has occurred. After several years punctuated by scientific and technological controversies – over BSE, genetically-modified crops, applications of nanotechnology, mobile phones, nuclear waste, the MMR vaccine, and so forth – more and more scientists and engineers have recognised the need to become more open and accountable. Consequently, there are increasing interests in hearing and heeding public voices early enough, at a time when they can still influence research priorities. As the European Commission (2008) report on science in society has suggested, the evolution of PE in Europe can be discerned under three different phases or 'paradigms' of PE activity, including 'public understanding of science', 'public dialogue' and 'upstream engagement' (Box 1.3). Naturally, any history of complex processes such as PE is in reality more multilinear due to various local and national idiosyncrasies. However, as the three-phase model identified by the European Commission (2008) report suggests, there have also been some common trends in PE development, driven mainly by some Europe-wide crises of science that have influenced the research and innovation policy thinking both at the national and transnational levels.

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Box 1.3 Three phases of public engagement (European Commission, 2008, pp.16-17)

Phase 1: Public understanding of science

The initial response of scientists to growing levels of public detachment and mistrust was to embark on a mission to inform. Attempts to gauge levels of public understanding date back to the early 1970s, and have regularly uncovered gaps in people's knowledge of scientific facts. In the UK, Sir Walter Bodmer's influential 1985 report for the Royal Society argued that "It is clearly a part of each scientist's professional responsibility to promote the public understanding of science."

Phase 2: From deficit to dialogue

However, implicit in the language and methods of 'public understanding of science' was a flawed understanding of science, a flawed understanding of the public, and a flawed understanding of understanding. It relied on a 'deficit' model of the public, which assumed that if only people were told more about science, they would fall in line behind it. In 2000, an influential UK House of Lords report detected 'a new mood for dialogue'. In 2002, at the EU level, the first Science and Society programme was incorporated in the sixth Research Framework Programme with new initiatives around public participation. The language of 'science and society' became prominent, and there was a fresh impetus towards accountability and engagement. In the five years since, there was a perceptible change. The science community adopted a more conversational tone in its dealings with the public, if not always with enthusiasm, then at least out of a recognition that new forms of engagement are now a non-negotiable clause of their licence to operate.

Phase 3: Upstream engagement

Yet despite this progress, the links from public engagement back to the choices, priorities and everyday practices of science remained fuzzy and unclear. Dialogue tended to be restricted to particular questions, posed at particular stages in the cycle of research, development and exploitation. Possible risks were endlessly debated, while deeper questions about the values, visions, and vested interests that motivate scientific endeavour often remained unasked or unanswered. And as the genetic modification (GM) case vividly demonstrates, when these larger issues force themselves onto the table, the public may discover that it is too late to alter the trajectories of a technology. Political, economic and organisational commitments may already be in place, narrowing the space for meaningful debate. More recently, there has been a wave of interest in moving public engagement 'upstream' – to an earlier stage in the processes of research and development. There is a sense that earlier controversies have created a window of opportunity, through which we can see more clearly how to reform and improve the governance of science and technology. Most immediately, policymakers and the science community are desperate to avoid developments in fields like nanotechnology, neuroscience and synthetic biology becoming 'the next GM'. The wounds of that battle are still raw, and there is little appetite for a rerun.

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While the European Commission report (2008) refers to the different phases in the history of PE until the end of the 2000s, some more recent studies have detected the trends and patterns of PE since the early 2010s. One of them is the MASIS (Monitoring Policy and Research Activities on Science in Society in Europe) project (2010-2012) that surveyed science-in-society practices across 37 European countries. The analysis identified heterogeneous models and levels of PE in science and technology decision making in Europe (Mejlgaard et al., 2012). It found out that while many countries have introduced formalized procedures for involving citizens in priority-setting and assessment of research and innovation, the actual degree of public involvement differs significantly among European countries. Generally modest and highly unequal performance levels among European countries studied were also found by Rask et al. (2012a), who constructed a model of 'participatory performance' that they used to analyse the MASIS data basis. The levels of participatory performance were measured by identifying the number of structures and processes supporting open dialogues and public deliberation on research and innovation per country (Figure 1.1). The higher the 'participatory performance', in Figure 1.1, the more there was evidence of the country supporting public dialogues on SiS issues and possessing structures to host deliberations contributing to STI governance (see, Rask et al., 2012a; cf. Dryzek, 2009). Furthermore, in that paper, the different performance levels were explained through a Porterian approach, including 'participatory resources', 'demand conditions', 'related and supportive factors', and 'governmental strategies and approaches' as explanatory factors (see, Porter, 1998; Rask et al., 2012).

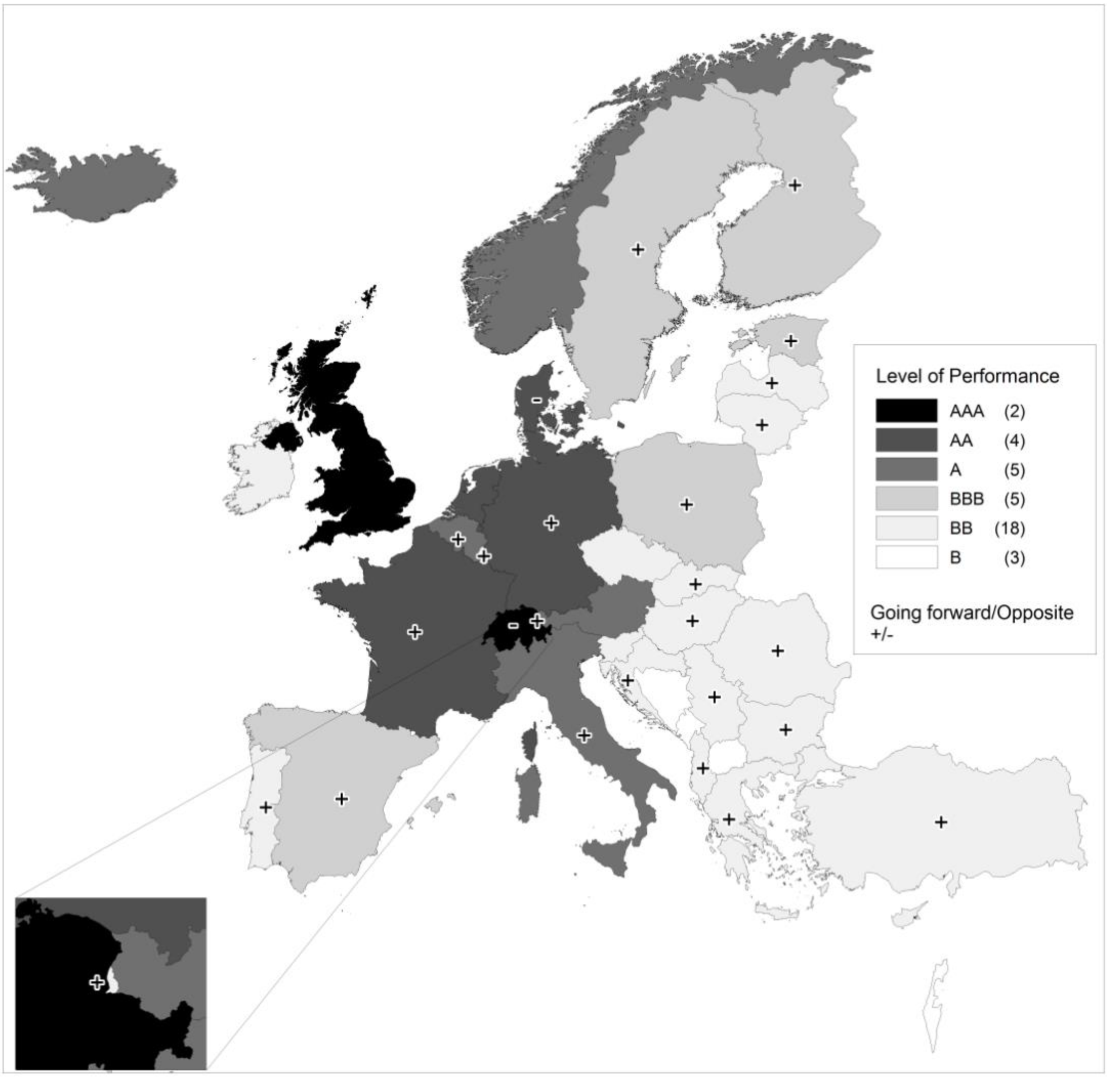

Figure 1.1 Participatory performance of nations (Source: Rask et al., 2012). The countries are ranked in six categories, best performing countries indicated with maximum (AAA) rates and worst performing countries with minimum (B) rates. Countries where participatory development is reported to go forward are indicated by a plus (+) sign and where the opposite is true by minus (-) sign.

As Figure 1.1 suggests, participatory performance is highest in Western European countries. Two countries with highest levels of performance measured are the UK and Switzerland – obviously two countries with very different political systems, one with a long history of constitutional monarchy and parliamentary politics, the other with a federal parliamentary democracy with strong elements of direct democracy. All grade B countries are located in the east of Europe. We can therefore assume that the past division of Eastern and Western Europe still plays a role in explaining the differences in cultures of public participation, while there are obviously many other explanatory factors.

In the following section we comment on how this volume will contribute to the discussion on PE, by focusing on the following three research topics: 'trend tracking' of new PE activities (*innovativeness*); developing of new conceptualisations about the *functions of PE,* especially as a tool for governing research; and proposing better ways for the *evaluation of PE*.

Current issues in PE research

Current development trends and functions of PE have been approached in several studies, like the question of how to evaluate such processes. These questions were studied, both empirically and theoretically, in the PE2020 project on the results of which this volume builds. In the following sub-sections, we will indicate the unique contributions of this volume on these research streams.

Innovativeness

Innovations in PE have attracted considerable attention by scholars from a range of fields. Scholars of democracy have studied innovations in democracy and democratic deliberation (e.g., Grönlund et al, 2014; Smith, 2009), while researchers in innovation studies have tracked new ways of involving users, consumers and 'prosumers' in the development of new products and services (e.g., Hyysalo et al, 2016; Ritzer, 2012). Overall, there appear to be two completely different places for involving 'the public': first, in identifying the 'public interest' and orientating the boundary conditions for science and technology, and secondly, involving real actors, mostly users, in shaping real technology (products, systems). As the MASIS expert group on science in society issues states: "…the notion of 'participation' has a double meaning. While initially it was an issue in theories of democracy, claiming a renewal of the more formal representative democracy and enriching it by forms of a deliberative and interactive democracy, it is now also used to describe the involvement of users in the shaping of specific technologies which would be sensible in many cases but does not have much to do with political democracy. Public participation loses its traditional and emphatic connotation of deliberative democracy and becomes more and more a means of involving users in the design of new products, driven by economic rather than political needs" (European Commission, 2009).

Unique in the PE2020 data base is that it covers examples of both public interest and product oriented PE processes, and actually, it expands the scope of analysis to 'public activism', which is a category rarely included in studies of 'orchestrated' PE processes. The data basis is also unique in providing probably the broadest sample of innovative PE processes in the field of R&I thus far collected: the sample was built on the basis of the MASIS (2010-2012) data base, which covered SiS activities in 37 European countries; the data were completed by circulating a new survey within the EU funded PE2020 project (2014-2017) and merging it with yet another set of data collected by an EU-funded sister project, Engage2020 (2013-2015). Resulting from the broad scope of this data base (fully described in Chapter 2), we suggested a new way of classifying the PE methods, and produced new knowledge on the innovative aspects of cutting-edge PE (Chapter 6).

Contrary to some earlier studies on PE, which paid attention to the limited impacts of PE and criticised PE from the tendency of remaining an 'intra-mural' exercise (e.g. Grönlund et al., 2014; Kies and Nanz, 2013; Rask, 2013; Goodin and Dryzek, 2006; Rip, 2003), *we found innovative PE to have truly diverse impacts*, not only on R&I but also on environment, society, politics – and individuals. We distinguished between three impact areas – substantive, practical and normative – and we found that close to *three-quarters of the reported impacts could be described as practical*. This is an interesting finding, since there is much talk about the rationales of PE: should it be driven by democratic, epistemic or pragmatic motivations? Our empirical finding is that innovative PE largely contributes to practical issues, such as cognitive and attitudinal changes (e.g., better awareness of environmental and scientific issues), development of new capacities (e.g., new professional skills, methods and platforms of collaboration), and mobilisation of resources for addressing scientific and societal challenges (e.g. research funding, political commitment, public awareness, and social acceptance). A sub-category of practical impacts includes impacts on policy making (e.g., development of policy recommendations, informing R&I policy making with citizens' viewpoints, and joint definition of research agendas).

Another type of impact identified was normative impact, such as democratization and increasing responsibility of research, which are at the core of the RRI approach (see, Section 3.2). Instances of normative impacts included consensus building, community building, political empowerment, increased gender equality in science, and introduction of the principles of deliberative democracy to R&I governance. *We observed that innovative PE only limitedly had a substantive impact, in other words, contributed to new scientific knowledge*. Considering that our primary focus has been on PE projects related to R&I, this can be seen as a disappointing result. However, there were important deviations to this pattern. Citizen science and science shops (organisations within universities or other knowledge institutes that conduct scientific research on behalf of citizens and local civil society, see Beunen et al., 2012), in particular, emerged as new concepts that not only involve co-design, but also co-implementation of R&I.

Functions of PE

Functions of PE have been studied from many different angles. A classic example is the 'Spectrum of public participation" by the International Association for Public Participation (IAP2, 2007). It distinguishes between five main functions of PE: information, consultation, involvement, collaboration and empowerment. The IAP2 model also acknowledges different promises of PE to the public. For example, the promise of information, simply, is to keep the public informed, while the promise of involvement is to ensure that public concerns are reflected in the alternatives developed by decision makers, and that the public will be provided with feedback on how its input influenced the decision. Another relevant example is the 'risk management escalator' model of stakeholder involvement (Renn, 2008). The model aims to allocate different risks to be treated through different discourses and actors involved. Yet another example is an EU-funded project TEPSIE (the Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe), which constructed a typology based on two basic functions of PE (either in providing information about the present state or developing future solutions) and small versus large-scale involvement strategies applied.

These and other similar models that distinguish between the functions of PE tend to be oriented towards specific purposes (for example, defining risk management strategies) and they are often normative in nature (informing about relevant management strategies). The model of 'participatory performance' elaborated in the PE2020 project involves a new specific feature of such models: *it focuses on the identification of the new capacities that PE can contribute to dynamic and responsible governance of R&I*. While the frame of this model is therefore highly theoretical, its orientation, unlike in the models mentioned previously, is fully descriptive: it is oriented at empirically analysing the ways in which such capacities become produced through PE practices.

In summary, the 'composite model of participatory performance' developed in this study explains how different functions and capacities of PE contribute to dynamic and responsible governance of R&I. We found that 'public reflection on R&I' is by far the most general function of innovative PE, followed by the capacities of anticipation and strengthening of transdisciplinary research. Quite interestingly, we found also that creation of continuity is becoming a more important capacity that is needed both to balance dynamic governance, and to sustain dynamism in the long run. Continuity was created through different types of institutional boundary work, for example, multi-level policy communication (local-national-international), multi-actor collaboration (public-private-people) and different types of political embedding. These and other findings regarding participatory performance are discussed in Chapter 7.

Evaluation of PE

Evaluation of PE has stimulated considerable attention in recent years, by scholars and practitioners of PE. In Chapter 8 we identify the various types of evaluation literature, including meta-evaluations, academic evaluation studies, handbooks, theoretical discussion on evaluation frameworks, and evaluations intended for practitioners.

A classic distinction between different evaluation frameworks is between formative and summative evaluations. Formative evaluations are conducted during programme development and implementation and are useful in the direction of how best to achieve project goals or improve project performance. Summative evaluations, respectively, should be completed once a project is well-established or completed, and the purpose is to clarify whether the project has achieved its goals. Some interesting recently developed evaluation approaches include 'realist evaluation' that is an emerging methodology, which explicitly addresses complexity in social interventions and processes, relevant for public engagement. It integrates qualitative and quantitative methods, emphasises 'learning' and applies multiple methods such as quantitative, qualitative, comparative and narrative evidence, as well as 'grey literature' (materials and research produced by organizations outside of the traditional academic publishing and distribution channels) and the insights of programme staff. The idea is to use the data and evidence gathered to 'test' the theory or theories of change under consideration and how well they explain the pattern of outcomes (Wellcome Trust, 2015). Some other recent models include 'Outcome Mapping', a participatory monitoring and evaluation approach that sees projects' outcomes as changes in the behaviour and activities of partners that the project directly influences, and the 'Most Significant Change' approach that is a qualitative and participatory monitoring and evaluation approach that uses stories of change to assess the impact of projects and programmes (Wellcome Trust, 2015).

In this volume, we are not proposing a new evaluation approach. Rather, we are contributing to the discussion on relevant evaluation perspectives, by proposing a structured set of evaluation criteria, based on some theoretical models and empirical findings. As explained above, we propose a 'synthetic model of PE evaluation' that acknowledges not only the classic evaluation criteria (appropriateness, efficiency and impacts), but more importantly, targets the evaluation to the different functions and capacities of PE as a tool for dynamic and responsible governance of research and innovation. An underlying idea is to broaden the evaluation from the habitual 'event focused' approach toward a more systemic approach, also acknowledging broader systemic and institutional impacts as well as indirect impacts, such as creation of spin offs, so often reported from real life example of PE. Actually, the main strength of the synthetic model of PE evaluation is that it is based on a broad sample of empirical PE cases: the test case for each of the criteria proposed is that they have been identified as important by more than one manager of recently conducted PE projects. – The idea of the synthetic model of PE evaluation is not to provide a ready-made universal evaluation framework but rather, to provide a solid and broad enough starting point for any evaluation process that is interested in capturing the most essential features and impacts of PE, based on up-to-date research.

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Note

[1] The introductory chapter relies on d'Andrea, L. and G. Caiati (2016), in which more information and references to research literature can be found. The remaining chapters are based on Rask et al. (2016). Both of these publications are results of the PE2020 project.