Master's Thesis

Public Participation and its Normative Context

The Participatory Turn's Legacy and the European 'Responsible Research and Innovation' Emerging Framework

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Synopsis

Over the last two decades in Europe, science and technology's unforeseen impacts led many STS scholars to plead for a 'participatory turn' in order to make our democracies more able to handle sociotechnical controversies. However, since the outset of this participatory turn, critiques sharing the common emphasize on the importance of taking into account the context in which public participation takes place have pointed to the risk of participation being either romanticized or instrumentalized. This thesis contributes to the critical scrutinizing of public participation in science and technology. By drawing on a set of qualitative data collection strategies and on a discourse analysis of collected materials, it investigates the normative context in which public participation is currently conceived and promoted at the European level and links it to historical perspectives in order to grasp the way in which the participatory turn's legacy has been impacted. At it shows, far from being left opened-up, public participation is strongly closed-down by normative forces that lies in the context is which its promotion is currently taking place. As argued, public participation appears as instrumentalized in Horizon 2020 due to the increasing economization of policies and the steering of science and innovation toward tackling societal challenges. However, while acknowledging that these trends are characteristic of current developments, some longer ones are highlighted. Indeed, as this research suggests, the instrumentalization of public participation goes largely beyond the mere Horizon 2020. From the Sixth Framework Programme already, it appears that the normative context in which public participation in science and technology has been conceived and promoted has always tended to instrumentalized and to close down the deliberative governance of science.

Keywords: Public participation; Science and technology governance; European research policies; Responsible Research and Innovation; Instrumentalization dynamics.

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Introduction

The relationship between science and technology and society has been questioned for decades now. Reflections on this subject lie at the heart of the emergence of Science and Technology Studies (STS) as a new scientific discipline. Among various topics, the interactions between science, technology, and the political sphere have been the object of a growing attention.

Over the last two decades in Europe, science and technology's unforeseen impacts led many STS scholars to plead for a 'participatory turn' in order to make our democracies more able to handle sociotechnical controversies. This gave rise to the establishment of new deliberative forums, which share the ideal to accommodate different ways of reasoning and portray participation as free from strategic bargaining and manipulation. However, since the outset of this participatory turn, critiques have pointed to the risk of participation being either romanticized or instrumentalized. These critiques share the common emphasize on the importance of taking into account the context in which public participation takes place.

Against the backdrop of new political discourses at the European level, such as the emerging European 'Responsible Research and Innovation', these critiques recently found a new echo as science and technology seem increasingly steered by a strong political and economic pressure to innovate in order to fix the so-called 'grand challenges of our time' such as, for example, climate change, unemployment, or ageing societies.

This research scrutinizes the normative context of public participation at the European level and links it to historical perspectives on the participatory turn by answering this question: How does the way in which public participation in science and technology is currently conceived and promoted at the European level impact the participatory turn's legacy? We hypothesize a possible shift to a renewed version of participation, only

valued for its capacity to include multiple stakeholders as early as possible in order to incorporate once for all the social dimensions into innovation. We therefore investigate this diagnosis and see in what extent it may contribute to the closing down of participation as it has been promoted in the STS field. Thanks to multiple data collection strategies we also seek to show that public participation's context, from the early 2000's to nowadays, has always resulted from interactions between macro and micro dynamics at the European level, which allows for critique and social action. All in all, this analysis contributes to the critical examination of past and current trends in science and technology-related issues' governance.

Theoretical perspectives on the participatory turn and on the governance of science and technology are presented in the first chapter. The second chapter presents the emerging 'Responsible Research and Innovation' framework and details the methodology used to characterize its normative context. Main findings are presented in the third chapter, which is divided in three sections corresponding to the three last European framework programme for research. The last chapter is dedicated to the cross analysis of the three periods considered and to the answering of our research question. Finally, the conclusion summarizes all the previous developments and provides suggestions for future research.

Chapter 1. The governance of science and technology and its context

This first chapter presents the different theoretical approaches that inform our research. It is divided into two sections. The first one presents theoretical perspectives on the deliberative governance of science and technology, while the second one stresses the importance of a taking into account the context in which this governance is promoted.

Section 1. Theoretical perspectives on the deliberative governance of science and technology

A brief history of governance

Over the last twenty years, a striking development in the analysis of politics and policy-making has occurred: the shift in vocabulary from 'government' to 'governance'. This new vocabulary reflects important changes in politics. Indeed, as expressed by Hajer and Wagenaar (2003): "a new range of political practices has emerged between institutional layers of the state and between state institutions and societal institutions" (p. 1).

The term 'governance' is polysemous. Governance can be defined as "the reflexive self-organization of independent actors involved in complex relations of reciprocal interdependence" (Jessop, 2003). In more recent European developments, this mode of co-ordination is qualified as democratic, participative, and pragmatic (Maesschalck, 2001). It is often seen as a way to describe "the changing nature and role of the state in advanced societies and the changing boundary between state and civil society" (Lyall et al., 2009).

The deliberative imperative

What these definitions commonly emphasize is the increasing importance of the involvement of stakeholders in policy research, as opposed to the traditional "top-down" forms of policy formation and implementation. In this perspective, the idea of governance integrates the active role of actors in the

setting up of the norms and rules they will have to obey. This idea is well captured by the term 'deliberative governance', whose main characteristic is that it "rests on the assumption that open debate and engagement can create a satisfactory foundation for decision-making" (Hagendijk & Irwin, 2006, p. 172).

This trend toward public deliberation is highly important in political science. Indeed, political theory over the last decades has taken a strong deliberative turn (Dryzek, 2000). This deliberative turn has been promoted by famous political theorists, such as John Rawls and Jürgen Habermas. According to Rawls (1971), discussion involving many persons has more chance to reach the correct conclusion than the deliberations of one of these persons by herself. This plural discussion is said to allow the combination of information and the enlargement of the range of arguments. Later on, Rawls (1993) pointed at the mutual learning that citizens can gain from conflict and argument, and at the resulting instruction and deepening of society's public culture. In Habermas' approach (1997), social actors, possessing communicational capacities, engage in deliberation and reach agreement through a process of revision submitted to logical rationality. This agreement, collectively achieved, is the basis of any political decision's legitimacy.

The deliberative governance of science and technology

Due to the coming together of several developments, deliberative political theory strongly echoed in the field of Science and Technology Studies.

Research in sociology of scientific knowledge and Science and Technology Studies suggests that science and technology are not merely technically constituted, but encompass strong social and political dimensions (Winner, 1977; Bijker et al., 1987; Kleinman, 2005). It is now generally accepted that our techno-scientific modernity is inherently uncertain (Callon et al., 2009) and that science and technology's development has potentially harmful unforeseen impacts (Hacking, 1986; Beck, 1992). To deal with this

uncertainty, authors plead for our democracies to be "enriched", "expanded", "extended", in order to be "more able to absorb the debates and controversies surrounding science and technology" (Callon et al. 2009, p. 9). Indeed, scholars have demonstrated that lay people can meaningfully engage in discussions about science and technology (Irwin & Wynne, 1996).

The discourse promoting public dialogue and engagement is also largely conceived, especially in policy spheres, in response to an apparent legitimation crisis, which is notably powerful in the public reaction towards great crisis such as 'mad cow disease' scandal or genetically modified food, for example. In this perspective, public involvement is seen as a way to reduce opposition to technical change by achieving a broad social consensus (Irwin, 2006).

These developments led to a situation in which the idea of engaging the public in scientific and technological change has become highly fashionable (Hagendijk, 2004). This has been described as a 'participatory turn' among Science and Technology Studies' scholars (Jasanoff, 2003), which is said to engender a shift away from traditional hierarchical notions of *government* to more open-ended, inclusive and decentralized *governance* (Hajer and Wagenaar, 2003). Indeed, particularly in Europe, new deliberative forums on science and technology-related issues have been established over the last two decades, involving and engaging stakeholders as well as members of the wider public (Grove-White et al., 2000). In the line of previously mentioned political theorists, the deliberative ideal underlying many of such exercises promotes mutual respect for different ways of reasoning and portrays participation as free from strategic bargaining and manipulation, and oriented toward broadening the perspectives of the participants (Dryzek, 2000; Smith, 2003).

Section 2. Governance and its context

The dangerously presupposed context in deliberative theory

However, one of the main elements that has been neglected by deliberative political theories, whether Rawls', Habermas', or science and technology studies scholars', lies in the role they give to the context in which public participation takes place. Indeed, they tend to presuppose that the deliberative process is capable in itself of taking into account all the possibilities that are available for a social context to be regulated. This presupposition is problematic because it ignores that any deliberative process necessarily encompasses an operation of selection of the possibilities at stake. This selective operation is prior to deliberation itself and therefore depends on something different than the discursive operation. Then, individuals deliberate according to their values and their visions of the world, which are not immutable but constantly evolving. This is well expressed by Lenoble and Maesschalck (2003):

> "… the epistemological insufficiency of every theory that, in one way or another, supposes the context as 'given of identifiable' what makes the exercise of reason 'possible or capable'. This is because (…) such a presupposition, even in the form of conventions that are adaptable or revisable by individuals, does not take into account the 'reversible or reflexive' character of the operation by which one gives oneself this 'preference', this convention or whatever it is that makes this ability to adapt or revise possible" (pp. 90-91).

In this perspective, the context is not a mere thing that we can objectively observe and assess. Rather, it is something produced by our own perspective and framing of the environment we live in, something "reflexively constituted" (Lenoble & Maesschalck, 2003, p. 87). Hence, public participation always encompass a highly normative dimension, because of both the broader context in which it takes place and the values and norms that every involved

actors hold, which in turn contribute to shape participation's context (Lucivero et al., 2016).

Research on public participation therefore has to investigate the context in which the latter takes place and the processes by which it is conceived, assessed and implemented. Participatory approaches are to be challenged in light of the relation they build between the imperative to make participate and the context in which this imperative is formulated. Hence, as these approaches often lack attention to contextual dimensions, they leave unaddressed the practical issue of the implementation and efficiency of deliberative processes themselves.

The lack of reflection about the context(s) of public participation in science and technology

This absence of reflection on public participation's context is also notable regarding participation in science and technology-related issues. In these domains, indeed, numerous critiques have been addressed at participatory approaches: far from being neutral, they are submitted to framing effects that can reinforce the dichotomy between experts and lay persons; moreover, there is a lack of clarity about the purposes of participation and the risk of its instrumentalization (Mouffe, 1999; Rowe and Frewer, 2005; Kerr et al., 2007, Stirling, 2008). The 'instrumentalization' of public participation hereby refers to the will of securing pre-established political goals. It is marked by a focus on outcomes rather than on the process of participation in itself and frames the latter in order to "close down the range of possible technological commitments" (Stirling, 2008, p. 264).

These critiques led to the acknowledgment of the highly political and normative dimensions of public participation itself, as well as the mutual shaping with the political and economic context in which participation exercises are set (Button and Ryfe, 2005; Powell and Colin, 2009). Indeed, given their goal to contribute to public decision-making and/or to contribute to the empowerment of participants, participatory processes are inherently

embedded in systems of values. All the actors involved in such processes have their own normativity, which means that their values and norms will impact all the choices they will make. Normativity, in this sense, is a major factor to consider if one wants to deeply analyze how participation is conceived, framed, and conducted (van Oudheusden and Laurent, 2013).

In spite of such critiques, participatory approaches often lack reflection on and remain disconnected from their context of application: recent studies have shown that "participatory procedures do not *per se* improve the democratic legitimacy and accountability of policy-making. In order to do so, their linkage to the political system has to be reconsidered and improved – empirically as well as conceptually" (Abels, 2007, p. 103). Moreover, it has been argued that there is no such thing as an 'ideal discourse' in real-world communication, because it is always affected by social and contextual factors (Abels, 2007). Other studies pointed at the "lack of reflection on the part of institutions and governance actors in relation to their own assumptions and framing precommitments that shape the governance object or issue in question, the public's relation to these issues, and the possible social (and other) implications of emerging science and innovation" (Chilvers, 2012, p. 299).

Attempts at characterizing contextual trends surrounding public participation in science and technology

Even if the context is, as previously mentioned, produced by actors' own perspective and framing, scholars have recently pointed at global trends in the way public participation in science and technology is currently conceived and enacted. Two major trends can be observed, concerning both the institutional and political-economic contexts in which public participation takes place.

First, it has been argued that many familiar challenges of science-society relations remain in place with these new participatory approaches. As Irwin (2006) points out: "occasional experiments in engagement depend on wider

institutional cultures and their operational assumptions", which crucially lack reflection at policy level (p. 301). As he pursues:

> "… we should be cautious in the face on institutional claims to have embraced a new social contract of dialogue, transparency and consultation. At best, they imply that a more fundamental change in institutional practices – and in the cultural and epistemological assumptions which lie beneath them – is required before the transformation from deficit to democracy can be complete in those (largely European) countries in which such a shift is being advocated" (p. 302).

In sum, there is little evidence that deliberation processes have brought about a wider cultural and institutional transformation. Rather, following Wynne (2002), it seems that "the dominant culture reinvents and extends its unreflexive commitments in the face of (…) critique and public disaffection" (p. 472).

Second, another contextual trend is to be found in the political-economic context in which public participation in science and technology is set, which is dramatically evolving (Pestre, 2008; Tyfield, 2012): in the aftermath of the global financial and economic crises, the European Union actively promotes new policy discourses, like 'Responsible Research and Innovation' (RRI), in order to remedy grand societal challenges such as global warming, economic crisis, unemployment, and ageing societies (Stilgoe et al., 2013). This context exacerbates the reorientation of science and technology towards increasingly mostly economic ends. This phenomenon has been labeled 'economization' and describes the fact that science and technology are increasingly used to improve economic outcomes, while concepts such as "'the economy' (…), productivity and competitiveness became more political important" (Berman, 2014, p. 419).

Now that we have identified potential trends characterizing the context in which public participation in science and technology studies, it is time to present the current framework in which the latter is conceived and promoted at the European level. This is the aim of the next chapter, which is also dedicated to presenting the methods we used through this research.

Chapter 2. Deliberative governance in practice – the emergence of Responsible Research and Innovation in the European Union

This chapter presents the current framework in which the deliberative governance of science and technology is conceived and promoted at the European level. It is divided into two sections. The first one introduce the emergence of Responsible Research and Innovation from a theoretical point of view. The second one presents the methodological protocol we use to answer our research question.

Section 1. The emerging concept of Responsible Research and Innovation

The deliberative governance of innovation

Since the 1960's and the growing awareness of environmental issue regarding the development of science and technology, our societies have tried to manage innovation toward better environmental and social outcomes (Parto, 2007). This gave rise to a large domain of policies, whose last salient example is the emerging European 'Responsible Research and Innovation' framework.

Terms such as 'responsible innovation' and 'responsible research and innovation' have a history that goes back to the early 2000's (Hellstrom, 2003). Their rise is linked to the emergence of different issues. First, there was a growing will to set up an integrative vision of social and natural sciences (Owen et. al., 2012). Second, the limitations of existing policy approaches to the managing of ethically-problematic areas of science and innovation became

recognized (see, for example, Grove-White et. al., 2000). Third, the previously mentioned 'participatory turn' has been promoted: the demand for greater public involvement in assessing the costs and benefits, as well as the risks and uncertainties of new technologies (Jasanoff, 2003). New discourses emphasizing public participation in science and technology thus developed in a context of growing concern about the role of public participation in setting research agenda as well as modulating research trajectories towards socially desirable ends (Fisher et. al., 2006).

The research and innovation policy at the European level is currently strongly marked by the promotion of the 'Responsible Research and Innovation' emerging framework. The more or less broadly shared definition of this concept is the one offered by René von Schomberg (2011), scientific officer at the European Commission:

> "a transparent, interactive process by which societal actors an innovators become mutually responsive to each other with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)" (p. 9).

Given this definition, the main idea of Responsible Research and Innovation is to include every actors (researchers, civil society, industry, policy-makers) at the beginning of the decision-making process in order to reach a better decision, which will not be problematic in the future. This would allow the production of innovating technologies with a certified 'right impact' that corresponds to the normative anchor points provided different texts, notable the Treaty on the European Union, whose article 3 specifies that:

> "The Union shall (…) work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance. (…) [It shall] promote (…) harmonious, balanced and sustainable development of economic activities, (…) sustainable and non-inflationary growth, a high degree of competitiveness and convergence of economic performance, a high level of protection and improvement of the quality of the environment". (European Union, 2010)

Following one of the normative anchor points, innovation should contribute "to the EU's objective of sustainable development (…) consisting of economic, social and environmental dimension in their mutual dependency" (von Schomberg, 2011, p. 10). In this goal, a foresight and deliberative approach fostering public debate should be established to "improve the quality of the decision making process" (von Schomberg, 2011, p. 7). Bringing together actors from industry, civil society and research, "responsible innovation should be materialized in terms of the research and innovation process as well as in terms of (products) outcomes" (von Schomberg, 2011, p. 12). In this perspective, the concept is thought as inducing a paradigm shift from previous approaches of science and technology governance: from downstream assessment to upstream engagement, as it is firmly rooted in the innovation process itself.

Potential contextual pitfalls for Responsible Research and Innovation

Once again, the issue of deliberative governance's context of application is left unquestioned in the Responsible Research and Innovation political discourse. No study has either shown how to concretely apply deliberative governance of innovation in practice, or proposed an in-depth reflection on the context in which Responsible Research and Innovation is situated.

Moreover, several critiques have been addressed to the concept of Responsible Research and Innovation, concerning its fuzzy definition and its lack of contextual explanation. Indeed, given its highly emerging dimension, its purposes and motivations at policy level are not clear yet and it is not exempted of instumentalization at all. As Owen et al. state (2012):

> "… RRI (…) also risks being used instrumentally, to smooth the path of innovation in society, and/or to achieve precommitted policies. This, we argue, should be a primary point of discussion and clarification, acknowledging that we are at a stage before the term itself becomes locked-in" (p. 757)

This consideration is echoed by Landeweerd et al. (2015) who highlight the fact that RRI seems to consider innovation as a trigger for socio-economic progress in a very linear perspective. This, according to the authors, "may steer governance into a direction in which private interests overrule public legitimacy, and uses integrative approaches for other goals than as goals in themselves" (p. 16), which might ultimately "render the public sub-servile to private interests" (Landeweerd et al., 2015, p. 16).

Here again, the previously highlighted principal contextual trends surrounding public participation in science and technology seem to be at play.

In the light of these developments, the context in which public participation is to be conceived and enacted through the emerging discourse of Responsible Research and Innovation must be taken into account in order to avoid potential pitfalls. Precisely because it is still emerging, and still remains a fuzzy yet influential concept, RRI is highly interesting to focus on, as it presents ongoing negotiations around normative dimensions such as ethics, sustainability and public inclusion.

Section 2. How to grasp public participation's context? Strategies for data collection and analysis

This research aims to study the way in which the normative context standing behind public participation as currently conceived and promoted at the European level, through the Horizon 2020 Framework Programme and the emerging Responsible Research and Innovation framework, impacts the participatory turn's. In order to be able to tackle this goal, we therefore developed a research design that allowed us to characterize not only the current European context of public participation, but also the way this context has been evolving from the first concrete institutionalization of science-society issues in the European institutions.

To do so, a systematic literature review – presented throughout the previous developments – has been conducted. This literature review helped narrowing the scope of our research and provided with hypothesis to be further challenged through our empirical data collection and analysis. However, we did not designed our research in a purely deductive way by trying to make our data analysis fitting into a pre-established theoretical frame. We thus tried to progressively construct our object, by letting theoretical perspectives emerge from our field observations, while continuously feeding the latter with theoretical aspects. An in all, we designed our research as an iterative process, merging theoretical reflections with data collection and analysis, which for a research that was itself co-constructed by the diverse methods we used.

This co-construction has also been made possible by the use of different data collection's strategies, which will now be explained.

As soon as we had delimited our research framework to the European normative context of public participation, we found essential to confront ourselves to the field and thus launched a first phase of observations consisting in participant observations of events – be they conferences or workshops – related to Responsible Research and Innovation. This observation

phase is crucial, as the data gathering it provides allows for the next steps of the research to be conducted (Grawitz, 2001).

We thus attend several 'Responsible Research and Innovation' events. The relatively large period of our participant observations in such event – from January to May 2016 – allow us to continuously pursue our reflections throughout our research. The events we attend are as follows:

- The Go4 Joint Final Conference, untitled *Responsible Research and Innovation and across the World – Shaping new Horizons*. This conference was held in Brussels on January 14th and 15th. The event aimed at presenting the key results of four EU-funded projects, all launched in February 2013 and sharing a common concern to improve the understanding our the emerging concept of Responsible Research and Innovation;
- The workshop, organized by the King Baudouin Foundation (Belgium), called *RRI from theory to practice*. Held in Brussels on January 27th, the workshop aimed at connecting Responsible Research and Innovation to the main Belgian research funding institutions. It fostered the debate on what Responsible Research and Innovation would imply for the funding of research in Europe's Member States;
- The international conference organized by the University of Basque Country and untitled *Responsible Research and Innovation: The Problematic Quest for "Right" Impacts*, held in Donostia-San Sebastián on March 10th and 11th. This conference was the occasion the hear for academic critical perspectives on Responsible Research and Innovation;
- Finally, the first European Citizen Science Association's international conference, called *Citizen Science – Innovation in Open Science, Society and Policy*, held in Berlin on from May 19th to 21st. This conference offered strong insights on the recent promotion of Citizen Science at the European level. It also gave us the opportunity to test some of our hypothesis, as we had the opportunity to present a critical paper related

to the potential instrumentalization of public engagement through the sudden promotion of Citizen Science in the European institutions[1].

Each of these events was the occasion to observe new dynamics, get in touch with key people, and to develop our reflection. Overall, our participant observations taught us much about what was at stake within different communities and help us refining our research design. They thus strongly contributed to alimenting the two others strategies we used: data collection through documents and semi-structured interviews.

First, as visible in the following chapters, we intensively drew on official documents as sources of data. We conceived these documents as physical traces of social setting constituting "particular readings of social events" (May, 2001, p. 176). These documents turned out to be particularly useful as they provided with precious insights on the norms and values shaping public participation's context at a given time. We selected them according to their relevance in the shaping of European innovation policies in general, and of European science-society policies in particular[2].

Second, to deepen our understanding of the analyzed context and of the way it has progressively been constructed as the result of macro as well as micro dynamics, we completed our data collection by conducting six interviews with key members of the diverse science/society directorates and units this were set up within the Directorate-General for Research[3]. We chose to conduct semi-structured interviews, in order to leave room open for new insights that could not have been anticipated earlier, while at the same time guaranteeing a certain structure in order not to completely move away from the research objectives. We constantly adapted our interview guides during the interviews themselves but also from one interview to another, allowing from iterative

[1] This hypothesis will be detailed within a specific title later on.
[2] All the analyzed documents are referenced in the reference list.
[3] We decided to focus on the Directorate-General for Research and Innovation because of its salient role, as the European Commission's dedicated service, in defining and implementing the European Research and Innovation policy.

loops between the different interviews, between the different sources of data, and between data and theory. The interviewees were identified through our literature review, participant observations and documentary research, as well as via snowball sampling. The list of interviewees is as follows:

- Policy Officer 1[4], who has been working as a policy officer at the Directorate-General for Research since 1998 and who was deeply involved in the emergence of the Responsible Research and Innovation framework;
- Policy Officer 2, who started to work at the Science in Society Directorate in 2013, who then joined the Science with and for Society unit in 2014 and left it in 2015. He now work at the Research Executive Agency;
- Policy Officer 3, who worked at the Science and Society Directorate from 2003 to 2006, who then worked at the Sustainable Development unit and who now works at the Directorate-General for Communications Networks, Content and Technology;
- Policy Officer 4, who was member of the Science and Society Directorate from the very beginning, who then joined the Science in Society Directorate and who now works at the Science with and for Society unit.
- Arie Rip[5], STS scholar who was involved in the writing of two reports mentioned below and who chaired the independent advisory group for the *Science with and for Society* programme.

The interviews were recorded and transcribed in order to allow for their analysis[6].

[4] The different policy officers we met preferred to remain anonym. We thus refer to them as Policy Officer 1, 2, 3, and 4 following the chronological order of our meetings. In order to allow for a justification of their relevance as interviewees, we nevertheless found it useful to provide with a short biographic notice.
[5] We conducted two distinct interviews with Arie Rip, allowing for new perspectives to come up and be discussed from the first one to the second.
[6] The transcripts can be found in annexes.

In order to analyze our set of data, we conducted a discourse analysis. This method, concerned with the production of meaning through talk and text, will allow us to grasp the representation standing behind the analyzed language (Tonkiss, 2004).

Overall, our methodological protocol allowed us to grasp the way in which the European context of public participation's in science and technology has been constructed through the different framework programmes, and how it has contributed to shape public participation's conception and promotion at the European level. The presentation of our analysis, taking the Sixth Framework Programme as a starting point, will therefore be deployed throughout the next chapters.

Chapter 3. Historical perspective on the participatory turn in the European Union

This chapter is dedicated to presenting our main results. Given the richness of our data, we decided to present a broad historical perspective on the participatory turn that is said to have happened at the European level. We then divided the present chapter into three sections, corresponding to the three last European framework programmes for research.

Section 1. The Sixth Framework Programme (2002-2006) and the 'Science and Society' Programme

A new vision of the relationship between science and society

Science the late 1990's, the European Commission has started to produce new discourses on the relationship between science and society. However, things really began to institutionalize in the early 2000's. Until then, the actions of the European Commission regarding science and technology were mainly focused on monitoring and communication. These actions were taking place in a particular frame: the deficit model was powerfully shaping the European officers' mindsets. Citizens were then perceived as ignorant on science and technology, and therefore irrational with regard to judgment or decision making on such issues.

This vision started to evolve with the arrival, in 2000, of a new Commissioner for what was then solely called 'Research'[7]: Philippe Busquin. As soon as the latter took office, he started to promote issues that would soon be grouped under the label 'Science and Society' and that were radically changing from the previously mentioned deficit model. Under his impetus, policy officer Michel André was appointed to write a political paper

[7] The portfolio has progressively been extended and now encompasses "Research, Innovation and Science". As detailed further on, the current Commissioner for Research, Innovation and Science in Carlos Moedas.

reflecting on the evolving relationship between science and society. Michel André thus produced an internal working document, untitled *Science, Society and the Citizen in Europe* (European Commission, 2000) which, according to Policy Officer 4, contains "*most of the ideas that will be developed in the following twenty year*" (Policy Officer 4, personal communication, 17 May 2016).

The analysis of *Science, Society and the Citizen in Europe* document offers precious insights on the new vision that was developed in the early twenty-firth century with regard to science and technology. This policy paper expresses a central focus geared toward the implementation of research policy around the real aims of society, as well as toward the full involvement of society in seeing through the research agenda. It rests on the basic assumption that the relationship between science and society at that time was a sort of paradox:

> "Expectations of science and technology are getting higher and higher, and there are few problems facing European society where science and technology are not called upon, one way or another, to provide solutions. Conversely, advances in knowledge and technology are greeted with growing skepticism, even to the point of hostility, and the quest for knowledge no longer generates the unquestioning enthusiasm that it did some decades ago" (European Commission, 2000, p. 5).

The growing importance of what has then been called 'science/society issues' in society is presented as the product of several converging trends: developments in knowledge and technology which allowed human beings to act at the very heart of both animate and inanimate processes; developments in scientific, technological and social relations which led to social change affecting the research agenda by generating new needs, especially in terms of major economic, financial, and commercial interests increasingly being linked with the advance in knowledge; developments in a more social and political sense toward a greater capacity among the public

to criticize current developments, together with the erosion of confidence in political authority. These changes are said to appeal for a profound reconfiguration of science-society relationship, especially because science and research are presented as having a powerful impact on economic and social issues. The document hereby makes a direct reference to the Lisbon Agenda[8]:

> "These changes and the tensions they cause are a warning to scientists, political authorities, economic and industrial decision makers and members of the public to establish new relationships among themselves. (…) New relationships are needed that fit the new mould of science, technology and society. These have to change because of the impact of science and research on competitiveness, growth and jobs and on the quality of life in Europe. All the more so, given the central role they play in the knowledge-based economy and society that the European Union committed itself to building at the Lisbon European Council. (…) The Lisbon objectives will be achieved only by an economy geared to innovation and a society fully committed to it. There is a need to develop an open mind to innovation, in full knowledge of the associated benefits and risks, and to create an open dialogue between researchers, industrialists, policy-makers, interests groups and the public as a whole" (European Commission, 2000, pp. 5-6).

The document therefore formulates several aims, including underpinning the dialogue between science and society, improving the public's knowledge of science, increasing the interest of the young in scientific careers and expanding the role and place of women in science and research. These aims are grouped under three main goals: bringing research closer to society; using scientific and technological progress responsibly; and stepping up the dialogue between science and society.

[8] The Lisbon Agenda, also known as Lisbon Strategy, was set out by the European Council in March 2000. Although it is hereby briefly mentioned, we will come back to it when detailing the institutional context in which the Sixth Framework Programme takes place.

The will to bring research closer to society encompasses different dimensions. The first one is concerned with structuring research policies around society's aims, which are defined as becoming the most competitive and dynamic knowledge-based economy in the world, reaching a sustainable economic growth, and producing bother a quantitative and qualitative improvement in jobs and a greater social cohesion. The second one seeks to involve society in the scientific venture: representatives of civil society are to be involved "*particularly in defining the priorities of publicly-funded research*" (European Commission, 2000, p. 8). The third one concerns the benefits of foresights: it expresses a need to mobilize broad sections of all the parties interested in research to give collective thought to priorities and thus to prompt discussion. Finally, the fourth one highlights to role of economic, social and human sciences which are said to be able to provide better understanding and management of scientific development.

The objective of using scientific and technological progress responsibly is similarly divided into several points: the need for a better risk management in order to find a level of protection adequate to keep the risk at an acceptable level to society; the use of the precautionary principle as a risk management tool which should guide the action in the face of scientific uncertainty; the improvement of scientific expertise; the development of an ethics of research; and the promotion of the two dimensions of relationships between science and freedom, namely the freedom to conduct research and the freedom to access knowledge.

Finally, within the aim of stepping up the dialogue between science and society, a few actions are invoked. The first action is to create a scientific information system for Europe, concerning both communication within the scientific community and information for the public at large. It is also wished to boost the attractiveness of science and careers in science. The important role that women should play in science and research is also mentioned.

Lastly, the document appeals for the setting up of new forms of dialogue between the different actors involved in science and research:

> "Dealing with technological risk and 'science/society' more generally calls for the development of new forms of dialogue between researchers, experts, political decision-makers, industrialists and members of the public, especially at European level" (European Commission, 2000, p. 16).

Specifying what could these new forms of dialogue be, the document refers to citizens' juries and citizens' conferences. It then explains that these dialogues are not conceived as potentially replacing existent decision-making processes. Rather, they should be experimentally tested in specific issues:

> "Far from being intended to replace the democratic debate in its traditional, recognized forms, still less the political decision-making process, initiatives of this type are designed to help this debate to unfold and to aide decision-making. Approaches of this type could be applied, at least experimentally, at European level, drawing inspiration from the various forms of social dialogue that exist, to issues of European interest, such as questions of food safety, the use of GMOs, energy options or certain information technology use" (European Commission, 2000, p. 16).

As we can see throughout the analysis of this policy paper, a new vision of science and society relationship started to take shape in 2000. The deficit model, seeing the citizens as lacking knowledge and understanding of scientific issues and focusing on science communication, started to be turned into a vision where citizens were seen as actors to be involved in new forms of debates about science and technology. This new vision slowly started to be institutionalized in the European Commission's dedicated

service for Research: the Directorate-General for Research and Technological Development[9].

The institutionalization of science/society issues and the creation of the Science-Society Directorate

Following the dynamics launched by Philippe Busquin and soon after the release of *Science, society and the citizen in Europe* document, the Directorate Science and Society was created in 2001. Policy Officer 4 was then asked to establish an action plan on the basis of the previously analyzed policy paper and new units were created within the Directorate, focusing on issues such as governance, risk, and scientific advice. The *Science and Society Action Plan* (European Commission, 2002) was set up in 2002 and lists the initiatives already present in this domain while proposing others to be developed. Then, this political Action Plan joined what his author calls "the financial flows" (Policy Officer 4, personal communication, 17 May 2016) and found a translation into the Sixth Framework Programme for Research and Technological Development. Its political orientations and the actions it promoted were indeed integrated into the Framework Programme to form a specific 'Science and Society' part of the whole programme. This Science and Society programme was funded up to 88 million euros, which represented only 0.5 percent of the overall framework programme's budget but was, according to its author *"relatively modest but substantial anyway and sufficient to start reflecting on all the subjects at the European level"* (Policy Officer 4, personal communication, 17 May 2016).

In spite of these huge steps in the institutionalization of science/society issues in the Directorate-General for Research and Technological Development, the launching phase of the Science and Society programme

[9] The current name of this directorate-general is: Directorate-General for Research and Innovation.

was not easy. When the members of the Science and Society directorate prepared the first call for projects, there were a lot of uncertainties about the real demand for concrete projects in such emerging domains as public participation and governance of science. They then tried to make a mixt which produced undesirable effects:

> "We put into concurrence things that should not have been: research actions, conferences, coordination actions, gender issues, participation issues, etc. The result was that established networks were highly favored and that it got more difficult for the issues that were then emerging" (Policy Officer 4, personal communication, 17 May 2016).

After this contrasted first year of call for project, directorate members started to refine the distribution of funding and therefore allowed issues such as public participation to launch the first significant projects. Then, over the years, a certain number of projects were successful and produced valuable results in terms of allowing to start a global reflection at the European level on the relationship between science and society. Projects funded under this framework programme were also highly useful to link together the various people that were working on these issues at the European level.

Regarding the specific issue of public engagement, the Sixth Framework Programme's period was mainly characterized by attempts at codifying it. Members of the Science and Society directorate tried to precise what they meant by terms such as 'civil society participation'. According to Policy Officer 4, this was more a period of research on public engagement than a period of action of public engagement. In this perspective, the only event this Policy Officer mentioned during the interview was a "big conference on civil society" (Policy Officer 4, personal communication, 17 May 2016). This conference, organized in 2003 and untitled "Giving society a key to the lab",

reunited more than two-hundred representatives of civil society in order to discuss the role of civil society in research[10].

Through these developments, we have shown that science/society issues, promoted by the new Commissioner for Research and Technological Development Philippe Busquin, quickly started to institutionalize, with the setting up of a dedicated Science and Society Directorate within the Directorate-General for Research and Technological Development, and the incorporation of a dedicated Science and Society part in the Sixth Framework Programme. This led to the establishment of call for actions and to the enactment of specific projects on science/society issues. We will now broaden the scope of our analysis and analyze the whole European political context in which these changes took place.

Science and Society's context: between STS, crises and knowledge-based society

The changing vision of science/society as promoted by Philippe Busquin is certainly due to a conjunction of different phenomenon, concerning both the academic debates and the changes that occurred in the European institutions.

Regarding the academic dynamics, the new vision of science/society that emerged in Busquin's mind and in the Directorate-General for Research and Technological Development has strongly been influenced by the growing academic literature in the STS field. The latter, in late 1990's, produced lots of articles and reports on technological controversies such as the mad cow crisis, GMOs, etc. STS scholars strongly criticized science policy and gained a certain echo inside the analyzed Europe institutions. According to Policy Officer 3, STS scholars played an important role in the emergence of Science and Society programme. Especially Brian Wynne's critique of the

[10] For more information, see: http://ec.europa.eu/research/infocentre/article_en.cfm?id=/research/headlines/news/article_03_06_23_en.html&item=&artid=

deficit model[11] which contributed, to a certain extent, to put the policy-makers' way of perceiving the public into debate.

But the changing vision of science/society issues at the European level was not the mere product of the incorporation of STS views into the institutions. Indeed, the institutionalization of Science and Society is a landmark event taking place in a context characterized by to major changes in the European institutions.

First, the period was marked by a wide reflection on governance in a context of legitimacy crisis. The 1990's were marked by technological crises (e.g. the mad cow crisis) which contributed to the emergence of a growing lack of confidence in European institutions on the part of citizens. In reaction to this dynamics, the European Commission produced a White Paper on European governance (European Commission, 2001). In this paper, the need to reform European governance is justified by the fact that many Europeans are said to feel alienated from the Union's work, despite of what is considered as EU's previous achievements: the European integration has delivered fifty years of stability, peace, and economic prosperity. In addition to this, others arguments are mentioned: the decreasing turnout in the previous European Parliament elections and the Irish "no" vote on the Treaty establishing a Constitution for Europe. All in all, the White Paper adopts a similar position as the one adopted by the *Science, society and the citizen in Europe* policy paper, emphasizing on a paradox hereby concerning the relationship between European political leaders and European citizens:

[11] See Wynne, B. (1991), "Knowledge in Context", *Science, Technology, and Human Values*, 16(4), pp. 1-19.

> "Today, political leaders throughout Europe are facing a real paradox. On the one hand, Europeans want them to find solutions to the major problems confronting our societies. On the other hand, people increasingly distrust institutions and politics or are simply not interested in them" (European Commission, 2001, p. 1).

It therefore pleads for more connection between Europe and its citizens, which is presented as the starting condition for more effective and relevant policies. It claims that the European Union must follow a less top-down approach and complement its policy tools with non-legislative instruments. It also states that the way European Union policy is prepared and adopted must be more open and easier to follow and understand. These dimensions are perfectly summed up in the following sentence, which explicitly mentions the opening up of policy making:

> "The goals is to open up policy-making to make it more inclusive and accountable. A better use of powers should connect the EU more closely to its citizens and lead to more effective policies" (European Commission, 2001, p.6).

One of the keys to this new mode of governance is participation, which means that European citizens' should be involved throughout the policy-making chain, from conception to implementation. This wider participation is promoted as a way to enhance the quality, relevance and effectiveness of EU policies. We thus see a promotion of public participation at the European level, because it is considered as an intrinsic condition of the new mode of governance supposed to help solve the legitimacy crisis of the European institutions.

The second institutional change relates directly to policies for research and innovation. The early 2000s period is indeed also marked by the setting up of the Lisbon Agenda, which institutionalizes the discourse around the notion of 'Knowledge Society'. In March 2000, the fifteen Member States of the European Union reunited in the Lisbon European Council set out a

global strategy for political economy and development of the Union. This political strategy explicitly refers to the new goal for the decade to come: "to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" (Lisbon European Council, 2000). This strategic goal is said to be reachable under the condition of producing better policies for research and development, and of stepping up the process of structural reform for competitiveness and innovation. As we can see, the future of European Union is presented as lying in its ability to produce knowledge and innovation, which emphasizes the need for a further Europeanization of research and innovation policies. Interestingly, in order to facilitate the consolidation of the European knowledge society, the Lisbon Agenda proposes a "new open method of coordination as the means of spreading best practice and achieved greater convergence toward the main EU goals" (Lisbon European Council, 2000). This new method of coordination promotes a decentralized approach in which civil society will be actively involved. Therefore, the engagement of civil society in policy-making is presented as important because it contributes to the completion of the Lisbon Agenda.

What can we learn from this analysis of the broad context in which science/society issues started to institutionalize at the European level? It appears that the promotion of science-society interactions – including public participation – within the Directorate-General for Research and Technological Development took place in a favorable broader context.

This context was indeed composed of a growing academic critique of science policies within the STS field as well as of a set of institutional transformations inside the European institutions regarding governance and the knowledge society strategic goal. The STS promotion of an opening up of science policy-making encounters a promotion of such an opening up inside the EU. However, the reason why European institutions started to

promote a new mode of governance are worth to be looked at. The involvement of civil society in decision-making processes related to science and technology issues was indeed seen as a way to solve the European Union's legitimacy crisis, partially due to technological controversies such as GMOs, mad cow, contaminated blood, etc. It was also promoted insofar as it contributed to the completion of the Lisbon Agenda. In this perspective, the opening up of policy-making in science and technology-related issues was perceived as a way to support a policy-making approach appropriate to a competitive European Research Area.

One could therefore see a certain degree of public engagement's instrumentalization in this context. The apparent promotion of the opening up of policy making could indeed be seen as a mere tool for fostering legitimacy and promoting innovation in order to achieve pre-established strategic goals included in the Lisbon Agenda. The previously quoted *Science, society and the citizen in Europe* document offers hints of this potential dynamics, when stressing the need to act toward an economy geared to innovation and a society fully committed to it. The following quote from Policy Officer 4 offers another input in this sense, when answering a question about the reason why Philippe Busquin started to promote science/society issues:

> "I think Busquin felt that there was something in the air which made that there was a need for more anchoring. Because in the 1990s there had been a lot of different scandals, about food, medicine, contaminated blood, asbestos, Tabaco, etc. A lot of controversies. And so, in one way or another, these things had to be handled. Moreover, the ambient discourse was to say that there will never be enough scientists to nurture the knowledge society and that there was therefore a need for more young people in scientific studies" (Policy Officer 4, personal communication, 17 May 2016).

As Policy Officer 3 mentions it, the deficit model did not totally disappeared under the Sixth Framework Programme. There still was a global will that science should determine the good options and close the debate and, as the following quote suggests, this period can be summed up as the product of a balancing game between the traditional deficit model approach, still being held by a lot of people inside the European institutions, and the STS way of thinking:

> "So it is a sort of balancing game between STS Community and the administrations on the maturity of science and society issues" (Policy Officer 3, personal communication, 10 May 2016).

We will now pursue our historical perspective of the participatory turn in the European institutions and look at the Seventh Framework Programme.

Section 2. The Seventh Framework Programme (2007-2013) and the 'Science in Society' Programme

Further steps in the changing vision of science-society relationship

As we have seen, the Sixth Framework Programme witnessed the progressive institutionalization of science-society issues. This move was taken further under the Seventh Framework Programme, starting in 2007.

However, our analysis suggests that the Sixth Framework Programme's period was still very much concerned with doing communication around science, with a certain degree of deficit model approach remaining very powerful in the institutions. In the Seventh Framework Programme's period, the members of the former Science and Society Directorate, now called Science in Society, started to focus more on the exchange between researchers, stakeholders, and a community that was often still standing apart from research projects: citizens, NGOs, etc. According to Policy Officer 2, a real change occurred in this new period, "from deficit model to a real exchange" (Policy Officer 2, personal communication, 27 April 2016).

An evolution of the discourse on science-society issues emerged, emphasizing more than what had been done in the Science and Society programme on the role of civil society, and the importance of public debate and upstream public engagement in research projects. As Ulrike Felt (2010) notes it, the shift from 'Science and Society' to 'Science in Society' denotes an integration of science and technology society, which therefore calls for a real engagement of civil society and the public:

> "The 'Science in Society' initiative aims to stimulate a harmonious integration of scientific and technological endeavor and associated research policies in European society. It will encourage Europe-wide reflection and debate on science and technology and their relation with society and culture. (…) It is not enough to simply inform the public about scientific advances. There could be a real engagement of civil society and the public. We should seek to raise the profile of science as an integral part of our common European culture, corresponding to the major impact of science on our lives. Organizing the debate on scientific choices, priorities and implications for society is fundamental to research policy. To underline this new thinking, the relevant activities in the new Seventh Framework Programme have been labelled 'Science in Society'" (extracts from the Seventh Framework Programme's website, as cited in Felt, 2010, pp. 18-19).

This quote shows that the will in Science in Society programme was to engage in negotiations with actors of "civil society" and of "the public". The debate hereby concerns large issues of science and society, like scientific choices and their implications for society.

The 'Science in Society' part of the Seventh Framework Programme is quite explicit in this perspective:

> "The influence of science and technology on our daily lives is becoming increasingly profound. Products of social activity and shaped by social and cultural factors, science and technology nevertheless remain a remote domain far from the daily concerns of a large part of the public and of policy decision makers, and continue to be the subject of misunderstandings. Contentious issues relating to emerging technologies should be addressed by society on the basis of will informed debate leading to sound choices and decisions" (European Parliament and Council, 2006, p. 34).

The document continues and, when specifying the activities to be undertaken in this part of the framework programme, states among others:

> "Broadening the engagement of researchers and the public at large, including organized civil society, with science-related questions, to anticipate and clarify political and societal issues, including ethical issues" (European Parliament and Council, 2006, p. 34).

The two above-quoted extracts from the Seventh Framework Programme show a deepening of the vision that emerged in the Science and Society part of the Sixth Framework Programme. Here, science and technology are directly presented as shaped by social and cultural factors, which serves as a justification for broadening the engagement of the public. This enhancing of public engagement's promotion is also well reflected in the 2007 Green Paper on the European Research Area, a key paper on research policy published by the European Commission:

> "European research policy should be deeply rooted in European society. Besides the pursuit of scientific excellence, European research should support knowledge advancement and dissemination and underpin policies for sustainable development in fields of major public concern such as health, energy and climate change. It should experiment with new ways of involving society at large in the definition, implementation and evaluation of research agendas and of promoting responsible scientific and technological progress, within a framework of common basic ethical principles and on the basis of agreed practices that can inspire the rest of the world" (European Commission, 2007, p. 9).

This qualitative advance in the vision on the science and society relationship has been accompanied by a shift in the work of the Science in Society Directorate's members. As we have shown in the developments concerning Science and Society, they were back then mainly focusing on how to codify public engagement in science and technology issues. In Science in Society, they started to set up dedicated instruments to enact public engagement, which will be presented in the following title.

From reflecting to acting: a number of new tools

The Science in Society programme is marked by the creation of several new instruments designed to meet the overarching goal of society's participation in science and technology-related issues.

Members of the Science in Society Directorate first tried to create a specific instrument called "Research for the Benefit of Specific Groups". The main idea was that civil society organizations (e.g. non-governmental organizations) could also formulate their research agenda, and that this capacity was not a privilege only reserved to the industry through the already existing "Research for the Benefit of SMEs" instrument. It was then a copy of what was already existing for the involvement of small and medium-sized enterprises but directed toward civil society organizations. However, this new instrument was not often used, as mentioned by Policy

Officer 4 who evokes a sort of inertia that make innovative instruments hard to be initiated, even in a top-down manner:

> "If we want to introduce an instrument, a novelty, an innovation in the instruments, if there is no top-down pressure, there is very few chances that it would work. And even if there is a top-down pressure, it is sometimes really difficult" (Policy Officer 4, personal communication, 17 May 2016).

This failure initiated a reflection among the Science in Society Directorate's members. This reflection led them to state that their goal was not to promote the participation of civil society as the only actor to be involved. Rather, they developed a will of bridging the gap between all the actors they considered as being the most important in science and technological development:

> "So, civil society's participation, ok, but to us the essential was to create links between what we considered as the four main actors of scientific ideas' and technological innovations' generation, so the researchers, the industry, the policy-makers, and civil society" (Policy Officer 4, personal communication, 17 May 2016).

They thus tried to launch another type of instrument: "Mobilization and Mutual Learning" projects, which aimed to enhance the cooperation between the different actors. Concretely, these projects required that at least one representative of each of the four types of actors was involved and that these representatives worked together in order to generate scientific knowledge or technological innovations. These projects gained a certain success (at least as perceived by Science in Society Directorate members), and many actors involved realized that this kind of interactions could be really benefiting for them. During our interviews, two Mobilization and Mutual Learnings projects were mentioned by policy officers: GAP1 and GAP2. Both concerned fishery policy and brought together researchers, fishermen, environmentalists, and policy makers in order to engage in a

dialogue about environmental legislations. However, as recognized by Policy Officer 4, in both projects the industry remained the central actor, and civil society and citizens were given a minor place:

> "And so, in terms of engagement then, well, in terms of citizen engagement, what really happened should be further analyzed but I think that the main component there remained the fishery industry (…) I think that the maximum gain has been reached more on the side of fishermen and public authorities than on the side of citizens" (Policy Officer 4, personal communication, 17 May 2016).

Hence, the Mobilization and Mutual Learning projects' goal of involving all types of stakeholders, including civil society, has only partially been reached, in the sense that the concrete involvement of civil society remained marginal compared to the involvement of the industry.

A third kind of project was mentioned during the interviews. It relates to the VOICES project, answering the Science in Society 2013.1.2.1-1 call on citizen participation in science and technology policy, which is considered as really important in terms of public engagement among the Science in Society Directorate's members. Its aim was to include citizens, which are normally excluded from research, and to make them participate in the definition of a research agenda. Here, the will was really to allow the citizens to express their priorities and to actively participate to the research agenda setting. It is presented as innovative in the sense that it was the first time that the European Commission was really committing itself to interact with citizens of all Member States and, through a transparent process, to integrate the result of this interaction, in terms of research questions and priorities, into the Work Programme dedicated to Environment Action.

As shown in these developments, Science in Society programme is marked by the experimentation of new types of interactions between science and society. It is also characterized by the ever-growing involvement of STS scholars as sources of recommendations, as we will now see.

The turning point of STS scholars' involvement

As previously mentioned, Science and Society programme had been influenced by the work of STS scholars. In the aftermath of several technological controversies, Brian Wynne's critique of the deficit model approach found a certain echo among European policy officers and contributed to shape the changing vision of the relationship between science and society in the European institutions.

The Seventh Framework Programme similarly showed an influence of STS scholars on European policies, as this period witnessed the publication of two important reports involving members of the STS community. A brief analyze of these reports offers precious insights on the role played by this community in the shaping of the European Union's science and research policy.

The first report was published in 2007, just at the beginning of the Seventh Framework Programme[12]. Untitled *Taking European Knowledge Seriously* (Felt and Wynne, 2007), it was produced by an expert group regrouping some of the most influential STS scholars: Michel Callon, Sheila Jasanoff, Pierre-Benoit Joly, Arie Rip and Andy Stirling, among others. The expert group was acting under mandate from the Directorate-General for Research and Technological Development on the topic of European science and governance. As the report explicitly mentions, its authors took into consideration three main concerns, namely the widely-recognized problem

[12] It has to be mentioned that this report was funded under the Sixth Framework Programme. Nevertheless, its year of publication led us to include its analysis within the Seventh Framework Programme's period.

of European public unease with science, the European Union's commitment to improve civil society's involvement in science and governance, and the need to address urgent European policy challenges often presented as highly scientific in nature (e.g. climate change and sustainable development). The report presents a strongly critical perspective, considering that the sources of public concerns with certain technological advances lies in what it calls "inadequacies in the governance of innovation itself" (Felt and Wynne, 2007, p. 11). It then criticizes the institutional focus on post-innovation, downstream questions as the only ones of interest to the public, which is said to marginalize "legitimate democratic concerns about the inputs that drive innovation research in the first place" (Felt and Wynne, 2007, p. 11). It therefore pleads for the development of upstream public deliberation and the resolving of normative questions concerning the prior shaping of science and innovation, including their directions, scale and speed. It also criticizes the instrumental vision of science's meaning and rationale, and the responsibility invested in science to deliver public authority, conducing to high expectations placed in scientific innovations to solve public challenges. Overall, the report features a powerful critique of European science policy and opposes a demand for more democratic governance to the European context of global economic imperatives and of the promotion of innovation as a possible solution:

> "Global economic imperatives to pursue science-led innovation as quickly and efficiently as possible conflict with the inevitable frictions and demands of democratic governance. In response, we suggest that (…) it is in the realization of diversity and multiplicity, and in the robust and distributed character of publics, their capacities and imaginations, that we may justly conceive robust and sustainable pathways of technoscientific development. In the perceived pressing need to encourage innovation, democratic governance has become dislocated in ways that cannot be remedied by technical methods and tools alone. Policy making should not stop at simple or mechanical solutions; it should address the complex issues of science and governance honestly, thoroughly, patiently and with humility. Only then will European policy take 'knowledge society' seriously, and fulfill its abundant promise" (Felt and Wynne, 2007, p. 12).

This critique of the way science and innovation are perceived by European policy makers is further supplemented by a critique of the way the latter perceive the publics:

> "Implicit in this agenda are fears amongst policy leaders and officials that if and when science defines the proper actions in mitigation of climate change and global biodiversity-loss, or similar sustainability issues, the associated necessary civil society commitments may fail to materialize. There are hints here, not only of a broad public mistrust of science, but also of an unstated but deep mistrust by experts and policy makers of the publics themselves" (Felt and Wynne, 2007, p. 81).

The report ultimately develops a list of practical recommendations, which are all related to "procedures for achieving more deliberate forms of 'reflexive learning', occurring before (rather than in the wake of) public opposition and failure to exercise authority" (Felt and Wynne, 2007, p. 83).

Interestingly, the authors seem to be well aware of the radical character of their critiques and recommendations, which are not expected to be directly taken-up in policy:

> "Furthermore, realistically, we do not expect that all or even a majority of these recommendations will be welcomed and taken up in policy, as they involve a strong degree of challenge, cultural change, and thus institutional risk. We present them partly as a measure of just how serious we feel the recognized symptoms of unhealthy democratic relations with science to be – that is would take this much, in our view, to address them" (Felt and Wynne, 2007, p. 87).

This last paragraph is of uttermost importance, because this possible lack of concrete impact was mentioned in all the discussions we had about *Taking European Knowledge Society Seriously* report throughout the interviews we conducted.

Arie Rip, who was member of the expert group that wrote the report, said that he was quite skeptic about it. The reason he invoked to this skepticism concerns the 'STS character' of the report, who missed the chance to reach its institutional audience:

> "The [Taking European Knowledge Society Seriously] report, it has a whole history, but it is very much STS and a few of the members actually saw it as an occasion to bring, to convey the message of STS. And my criticism during the work of the group already was that if you just convey the message of STS in STS terms, people will not understand or even if they do understand, or think they understand, they might want to go against it" (Arie Rip, personal communication, 9 May 2016).

According to him, the academic response to the report has been massive, and people of the STS community often like to refer to it. But they do so without realizing that, actually, the report has had almost no impact in influencing the European institutions. This is confirmed by Policy Officer 1, who strongly criticized the report by saying that it did not influence policy makers: "that report did not do a good job in terms of influencing us, because it missed the point on quite few things" (Policy Officer 1, personal communication, 22 April 2016).

Policy Officer 3, who has been working with the expert group in 2006, pursues this critique by addressing two main reproaches to the STS community. First, she criticizes the STS vision of an upstream engagement that should replace the downstream one. To her, this vision is only concerned with replacing the power relation without changing it, because the process is still a linear one. She calls it the 'upstream illusion' and she claims that enacting upstream public engagement cannot change the whole process of policy making, precisely because it reproduces a linear dynamics. Second, she criticizes the STS scholars' tendency to remain in a constructivist way of thinking. This critique is mainly related to the way the expert group acted during meetings, before producing the report. According to Policy Officer 3, group's members were quite reluctant to propose concrete recommendations, and they felt more comfortable with deconstructing European science policy in order to address critiques. She presents this position as counter-productive, saying that if the STS community wants to constructively contribute to changing the way research and innovation is conceived and enacted at the European level, it has to address concrete propositions:

> "They were in deconstruction all the time. Because of course there is a critical approach, that is normal, but at a certain point I asked them anyway: "so, what do you thing we should do?" (…) So they realized that, when affirming things, there were going to be criticized by others, and this they did not want" (Policy Officer 3, personal communication, 10 May 2016).

This critical position, without concretely wanting to "propose things", was also evoked by Arie Rip. To him, apart from the highly 'STS character' of the report, another explanation to its lack of impact derives from the fact that it gave a different view, a sort of outsider view of what was happening regarding the European Union policy. The report was not disconnected from

policy realities, but its highly critical perspective was hard to be heard within European institutions:

> "Quite a number of people in the group were well aware of what was happening in Brussels, and they wanted to say something else. (…) and many people do not like that" (Arie Rip, personal communication, 9 May 2016).

This leads us to turn to the other report that was published during the Seventh Framework Programme. Indeed, while criticizing *Take European Knowledge Society Seriously*, Arie Rip expressed his preference for another report, published two years later: *Challenging Futures of Science in Society*, written by the MASIS[13] expert group (Siune and Markus, 2009).

What is striking when analyzing the MASIS report is that the perspective it adopts is slightly different than what *Taking European Knowledge Society Seriously* did. The MASIS report similarly advocates for more public engagement but presents it as an ongoing trend that should be further pursued:

> "Citizens have an increasing stake in the European Research Area and in science in Europe in general. (…) Institutions and practices of science become more and more re-contextualized in society. This is an ongoing process, with overlapping partial transformations, and it is not without contestation. (…) [A] general diagnosis of patchwork of transformations and tensions is visible, such as the need for the debate on the place of science in society to continue, and to have dynamic governance which opens up opportunities for experimentation rather than closing them down. (…) European institutions tend to attribute a more active and creative role to their publics, and as a result, further encourage such social capacity. This will not be straightforward, and explorations and experiments are in order. These should be supported, and also systematically evaluated in order to enable learning. This is where EU

[13] MASIS stands for Monitoring Activities of Science in Society in Europe.

> Science in Society programme and its successors can, and should, play a role" (Siune and Markus, 2009, pp. 4-5).

Moreover, it does not adopt a direct promotion of upstream public engagement. Rather, it advocates for "more engagement", which is presented as necessitating prior education and capacity building. It also stresses the importance of "participatory assessment practices involving European citizens" (Siune and Markus, 2009, p. 69).

These two characteristics, namely the presentation of science-society issues and public engagement as ongoing processes in European policy, and the promotion of precise recommendations without any radical critique of the existing practices nor promotion of upstream public engagement, made the MASIS report much more understandable and appealing for policy makers. This is not surprising, according to Arie Rip – which was also one of the members of MASIS expert group – since this report was written explicitly in the view of reaching its intended audience. There were still some STS scholars in the expert group (Ulrike Felt, Arie Rip, and Sally Wyatt, among others) but the overall group's composition was more heterogeneous, comprising members of civil society and science institutions. The STS people therefore tried to advocate for things that were understandable and acceptable by the other members of the group and this, according to Arie Rip, has proved to be very useful. Indeed, these negotiations between people with different backgrounds allowed for an outcome that could have a possible impact at the European level.

These developments concerning the two main reports involving STS community members are highly relevant in this research's perspective. They indeed allow for a reflection on STS community involvement in the European science governance, which will be further pursued in this thesis. Up to this point, it suffices noting that we can observe a certain turning point. In sum, *Taking European Knowledge Society Seriously* marks both a

sort of consecration of STS community, with its most influential members being asked by the Directorate-General for Research to produce a whole report on science governance, and a failure of this community to concretely impact European policy makers. As shown, the reason for this lies in an attempt to convey the STS way of thinking bluntly, which led to the adoption of a highly critical perspective and an 'outsider' position that did not reached its audience. Conversely, the MASIS report, with its more nuanced STS character, proved much more ability to concretely impact policy makers.

Now that we have detailed the STS scholars' influence in the Seventh Framework Programme's period, it is time to broaden the scope and to look at the whole context of Science in Society programme.

Science in Society's context: between dialogue, competitiveness, and the emerging discourse on grand challenges

As shown in this section, Science in Society programme presented a new focus on dialogue and participation. It saw a deepening of the changing vision of science-society issues and the establishment of several new tools dedicated to enacting the participatory governance of science. However, when looking at the broad political context in which it emerges, other dynamics are to be noted.

As mentioned by Felt (2010), the evolving vision of science-society issues in Science in Society did not substitute to the traditional deficit model. Moreover, it still had to be compatible with a strong competiveness requirement, which remained the main frame. In this perspective, huge economic and technoscientific promises were still guiding the governance of science. Concretely, this context produced maintained a sort of division of labor between technology promoters and enactors, and civil society. Any upstream engagement of the latter was hard to conceived, because technology promoters had to work on technological promises in order to allow citizens to benefit from innovations. This is perfectly expressed in a

2006 report untitled *Creating an Innovative Europe*, also called the *Aho Report* after its chairperson:

> "At the core of our recommendations is the need for Europe to provide an innovation-friendly market for its businesses (…). This needs actions on regulation, standards, public procurement, intellectual property and fostering a culture which celebrates innovation. (…) Europe and its citizens should realize that their way of life is under threat but also that the path to prosperity through research and innovation is open if large scale action is taken now by their leaders before it is too late" (Aho et al., 2006, p. 2).

The window of opportunity for the opening up the governance of science-society interactions, whose one of the major driver had been the several technoscientific controversies arising throughout the 1990's and 2000's, is therefore still limited in the Seventh Framework Programme's by this strong competitiveness frame, insisting on the benefits of technological innovations for European society.

Moreover, at the end of the 2000's, the discourse surrounding research and innovation started to evolve toward the necessary resolution of so-called 'grand challenges' (see the 2009 Lund Declaration). As it will be further detailed, this shift toward research and innovation presented as solutions to these grand challenges produced a twist from a Science in Society programme apparently oriented toward producing legitimacy through more open processes, to a new frame focusing on producing legitimacy through the expected outcomes of research and innovation. This emerging context slowly witnessed the emergence of the new Framework Programme, Horizon2020, and of the concept of Responsible Research and Innovation.

Section 3. Horizon 2020 (2014-2020) and the 'Science with and for Society' Programme

Research and innovation geared toward solving economic crisis and grand challenges

The context in which the Eighth Framework Programme, called 'Horizon 2020' took shape is characterized by two mains dynamics: the economic crisis which produced a discourse centered on economic growth and employment, and the emergence of a parallel discourse focusing on so-called 'grand challenges'.

In the aftermath of the financial and economic crisis, the European Union adopted a new strategy, called *Europe 2020. A strategy for smart, sustainable and inclusive growth*. The dedicated European Commission's communication (European Commission, 2010) offers strong insights on how this new strategy redirected research and innovation toward economic goals. In its preface to the document, José Manuel Barroso, the then President of the European Commission, states:

> "The crisis is a wake-up call, the moment where we recognize that "business as usual" would consign us to a gradual decline, to the second rank of the new global order. This is Europe's moment of truth. It is the time to be bold and ambitious. Our short-term priority is a successful exit from the crisis. (…) To achieve a sustainable future, we must already look beyond the short term. (…) The purpose of Europe 2020 (…) shows how Europe has the capability to deliver smart, sustainable and inclusive growth, to find the path to create new jobs and to offer a sense of direction to our societies. European leaders have a common analysis on the lessons to be drawn from the crisis. We also share a common sense of urgency on the challenges ahead. Now we jointly need to make it happen" (European Commission, 2010, p. 2).

Through its communication, the European Commission thus proposes five measurable target for 2020, related to employment, climate change and

energy, education, combating poverty, and research and innovation. The way research and innovation are perceived through the document is highly revealing. Knowledge and innovation are presented as "divers of our future growth" (p. 11) and the document stresses the need to ensure that "innovative ideas can be turned into new products and services that create growth, quality jobs and help address European and global societal challenges" (p. 12).

Concretely, the Europe 2020 strategy proposes to invest massively in research and development, as well as to improve the conditions for private research and development. To do so, it proposes the launching of the 'Innovative Union' flagship initiative, aiming at re-focusing research and innovation policy on the challenges faced by European society. Several goals are mentioned: developing a research agenda focused on challenges, improving framework conditions for business to innovate, strengthening and further developing the role of Union's instruments to support innovation, and promoting knowledge partnerships and strengthening links between education, business, research and innovation. All these goals are concerned with one thing: "unleash Europe's innovative capabilities" (p. 12). Interestingly, the document comprises a part related to the role expected from different types of actors. When specifying what role should stakeholders and civil society play, the emphasis is mainly put on receiving communication from the European institutions:

> "The success of the new strategy will therefore depend critically on the European Union's institutions (…) explaining clearly why reforms are necessary – and inevitable to maintain our quality of life and secure our

> social models -, where Europe and its Member States want to be by 2020, and what contribution they are looking for from citizens, businesses and their representative organizations. (…) The Commission will propose a common communication tool box to this effect" (p. 30).

As we can see, the document is explicit: far from being involved in the definition of the orientation of science and innovation policies, civil society is perceived as needing to receive clear explanation in order to understand why pre-established policies are necessary.

Apart from Europe 2020 strategy, another major document contributed to shape the context in which Horizon 2020 emerged. Approved at the 'New world – New solutions' conference, held in Lund on 7-8 July 2009, the *Lund Declaration* is quite explicitly subtitled "Europe must focus on the grand challenges of our time" (Lund Declaration, 2009). The declaration stresses the importance of tackling the so-called "grand challenges", such as "global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security", which can be turned into sustainable solutions in order to turn "Europe into an eco-efficient economy" (Lund Declaration, 2009). The identification and response to these grand challenges are said to require the engagement of stakeholders from both public and private sectors, including the European institutions, business, public services, NGOs and the research community. No direct reference to any form of citizens' engagement is made, and the proposed solutions all focus on fostering research and innovation. Interestingly, the imperative of tackling the so-called grand challenges is directly linked to the promise of economic growth: "Meeting the Grand Challenges will be a prerequisite for continued economic growth and for improved chance to tackle key issues" *(*Lund Declaration, 2009*).*

As hereby shown, the late 2000's and early 2010's context is characterized by a new political discourse in which research and innovation are powerfully encouraged in order to solve both the economic crisis and the grand societal

challenges. As we will now see, this new discourse has been accompanied by some changes among European Commission's staff members working on these issues, which ultimately deeply impacted the emergence of Responsible Research and Innovation.

Impacts on Directorate-General Research and the birth of Responsible Research and Innovation

The year 2010 saw the arrival of a new Commissioner – Máire Geoghegan-Quinn – for what was then called Research, Science and Innovation, as well as of a new Director General for Research and Innovation – Robert Jan Smits. From this point, a profound restructuration of the Directorate-General was conducted in order to better integrate research and innovation in the programmes[14].

When Robert Jan Smits took office, he reduced all the science-society aspects inside the Directorate-General. He turned the dedicated Directorate into a simple unit and strongly diminished the importance given to science-society relationship. This is mentioned by Policy Officer 3, which left the Directorate-General at this time:

> "It has to be said that the Director General, Robert Jan Smits, does not like [science and society] issues, this is why in 2010 he reduced all the services that were working on them. (…) His mindset is, above all, to get back to the good old face to face where research is the business of the academia and the industry. So to get back to this face to face without the complications brought by this third actor [civil society]" (Policy Officer 3, personal communication, 10 May 2016).

This diagnosis is shared by Policy Officer 4, who mentions that Robert Jan Smits has spent all his career at the European Commission and worked for the SMEs programmes, and that he has a strong technological vision, in

[14] At this moment, the former Directorate-General for Research and Technological Development is renamed Directorate-General for Research and Innovation.

which the progress happens more through technical objects than through social innovations (Policy Officer 4, personal communication, 17 May 2016).

From 2010 then, the number of staff members working on science-society issues has been drastically downsized. The previously-mentioned evolving context and discourse surrounding research and innovation policy, as well as the arrival of new leaders in the Commission and Directorate-General for Research and Innovation produced a certain reaction of panic among the people who worked on science-society issues. In this situation, the concept of Responsible Research and Innovation emerged as a means to keep all the previous components alive, by grouping them together under one big umbrella. This umbrella, of course, had to fit with the previous mentioned context, as Policy Officer 4 expressed it:

> "We had to do something else than something for the researchers, something for the industry, something for this or something for that. No, we had to help people working together on these grand challenges, because in the background there was all this Lund reflection stuff, the role of science in societal challenges, etc. And so the multi-partners approach, with hybrid consortiums, was fitting to foster creativity, and to make the potential solutions that could emerge and apply to the different challenges more adapted" (Policy Officer 4, personal communication, 17 May 2016).

This quote is highly revealing about the main driver for the emergence of Responsible Research and Innovation. The latter was designed as the best possible way to re-assemble the former science-society activities, by anchoring them directly into the evolving context surrounding research and innovation. Responsible Research and Innovation gained some limited traction, as it became included as a cross-cutting issue in the European Commission's proposal for Horizon 2020 (European Commission, 2011). However, the European Commission abandoned the will to have a specific part of the next framework programme dedicated to science-society issues.

Indeed, the analysis of the European Commission's proposal for Horizon 2020 shows the absence of any specific title dedicated to science and society issues. The proposal comprises three main parts: Excellent Science, Industrial Leadership and Societal Challenges, but no part is fully dedicated to science-society issues, such as in the two previous framework programmes (European Commission, 2011). This rather nuanced situation led the Science in Society programme's staff members to do some lobbying toward the European Parliament in order to better integrate science-society issues in the forthcoming framework programme. After this lobbying, the initial proposal from the European Commission received numerous amendments which allowed for the dedication of a full part to science-society issues:

> "The doxa back then at the highest level of the Commission was that these questions were more transversal ones (…) than real questions as such. (…) But knowing the Community mechanisms, the inertia, etc., I think the Parliament feared that, if these lines did not appear clearly, they would not be taken into account, because it is always difficult to integrate cross-cutting issues. (…) And then, we had the surprise, only a few weeks before the end of the negotiations, to see this line coming, which was richly gifted to us because we were not expecting to get anything" (Policy Officer 4, personal communication, 17 May 2016).

This is how science-society issues, through the Responsible Research and Innovation umbrella, entered the Horizon 2020 Framework Programme. A dedicated programme was established, renamed *Science with and for Society*. But how do Horizon 2020 and the dedicated Science with and for Society programme conceive public engagement in science and technology? This is the object of the following developments.

Public engagement as conceived in Horizon 2020

The first public mention of Responsible Research and Innovation appears in a 2012 document published by the European Commission: *Responsible*

Research and Innovation. Europe's ability to respond to societal challenges (European Commission, 2012). This document reproduces a quote from Máire Geoghegan-Quinn, the then European Commissioner for Research, Innovation and Science, who places the emergence of Responsible Research and Innovation in line with the previously mentioned Europe 2020 Strategy[15]:

> "As the Europe 2020 Strategy makes clear, to overcome the current economic crisis we need to create a smarter, greener economy, where our prosperity will come from research and innovation. Science is the basis for a better future and the bedrock of a knowledge-based society and a healthy economy. After ten years of action at EU level to develop and promote the role of science in society, at least one thing is very clear: we can only find the right answers to the challenges we face by involving as many stakeholders as possible in the research and innovation process. Research and innovation must respond to the needs and ambitions of society, reflect its values, and be responsible" (Geoghegan-Quinn, as cited in European Commission, 2012).

As this quote shows, Responsible Research and Innovation was directly promoted as a way to solve grand challenges, including the economic crisis. In this perspective, the relationship between science and society was recoded as stakeholders' involvement in order to find answers to these challenges. The promotion of both science-society issues and public engagement in the definition of science and technology policies' orientation has been abandoned in favor of stakeholders' involvement to produce a better science, presented as necessary to the improvement of the European knowledge-based society. Civil society, perceived as a set of stakeholders, is therefore to be involved as long as this involvement produces useful

[15] As mentioned in the document, the quote is an extract from a speech pronounced at the conference "Science in Dialogue – Towards a European Model for Responsible Research and Innovation", held in Odense, Denmark, on April 23-25 2012.

outcomes to tackle the challenges faced by European Union. This is well reflected in the following quote from the same document:

> "The grand societal challenges that lie before us will have a far better chance of being tackled if all societal actors are fully engaged in the co-construction of innovative solutions, products and services. Responsible Research and Innovation means that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society" (European Commission, 2012).

The document then presents Responsible Research and Innovation as consisting of six keys: Engagement, Gender Equality, Science Education, Ethics, Open Access, and Governance. The short text detailing the 'engagement' key is quite revealing: its states that "mutual learning and agreed practice are needed to develop joint solutions to societal problems and opportunities, and to pre-empt possible public value failures of future innovation" (European Commission, 2012). The 'Science Education' key is justified by the need for Europe not only to increase its number of researchers but also to "enhance the current education process to better equip future researchers and other societal actors with the necessary knowledge and tools to fully participate and take responsibility in the research and innovation process[16]" (European Commission, 2012). The 'Governance' key is defined as an umbrella one, allowing for the development of "harmonious models for Responsible Research and Innovation" in order for policymakers to "prevent harmful or unethical developments in research and innovation" (European Commission, 2012).

[16] This desire to pre-empt possible failures of future innovation has to be linked with the techno-scientific controversies that had already influenced the emergence of the Science and Society programme. In the European political leaders' mind, the GMOs crisis undoubtedly set a dangerous precedent whose reproduction should be avoided at any price. Hence this attempt at involving stakeholders in order to generate an upstream consensus on future innovation.

Here again, these three keys show a rather instrumental view of public engagement, which is promoted solely to contribute to pre-established political goals, namely the solving of the economic challenges and of the societal grand challenges. The emphasis put on science education, justified by the need to provide scientific knowledge to societal actors so that they can contribute to solving the previously-mentioned goals through public engagement, support this analysis.

This vision was logically transferred into the framework programme. In its fifth part, untitled *Science with and for Society*, the latter reflects this growing orientation of public engagement toward producing valuable outcome for the improvement of the European knowledge society. Its specific objective is as follows: "(…) to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility" (European Parliament and European Council, 2013, p. 167). Even more interesting is the rationale invoked to promote this objective:

> "The strength of the European science and technology system depends on its capacity to harness talent and ideas from wherever they exist. (…) Improving the cooperation between science and society to enable a widening of the social and political support to science and to technology in all Member States is an increasingly crucial issue which the current economic crisis has greatly exacerbated. Public investment in science requires a vast social and political constituency sharing the values of science, educated and engaged in its processes and able to recognize its contributions to knowledge, to society and to economic progress" (European Parliament and European Council, 2013, p. 167).

Here, we see that science-society relationship is merely conceived in a frame where society has to support science and technology because the latter powerfully contribute to knowledge, economic progress, and the

tackling of societal challenges. In sum, society has to support science and technology because science and technology are what society desperately needs to overcome the problems it faces. In this perspective, the analysis of the whole framework programme reveals that, when public engagement is – rarely – promoted in Horizon 2020, it is mainly defined in terms of "users' engagement". This narrowing of the 'public' defined in terms of 'users' denotes, as Policy Officer 3 mentions it, a "functional" vision of public engagement (Policy Officer 3, personal communication, 10 May 2016). The emphasis is put on the need to take users' preferences into account in order to produce marketable innovations that would be ensured to be socially accepted. As we can see, the only place left for public engagement consists in specifying the preferences of future technologies' users in order to avoid potential contestation at the end of technological development process.

In this frame, as reflected in the whole framework programme, the main actors to be involved in science and technology development are research communities and, above all, the industry. The necessary improvement of science and research is indeed thought as essentially coming from the private sector, through a growing focus on public-private partnerships. As Policy Officer 3 told us, the economic crisis played a major role in this increasing attention gave to the involvement of the industry in research policies:

> "I think [the economic crisis] gave an argument to people who were saying "we need research for the industry, to solve jobs problems" (Policy Officer 3, personal communication, 10 May 2016).

Policy Officer 3 even showed a concern to see the concept of Responsible Research and Innovation being instrumentalized by the industry:

> "The problem I have is when the industry asks us to transform Responsible Research and Innovation into a very clear constraint, so that they can say: "as long as we respect it, do not ask us anything

more, do not ask us to reflect etc." (Policy Officer 3, personal communication, 10 May 2016).

This power asymmetry between the industry and civil society has also been criticized by Policy Officer 2, who provides with powerful insights on the way public engagement struggles to find its place in Horizon 2020. According to him, members of Science with and for Society unit often try to counter-balance the focus put on the industry as the main actor to be involved in research and innovation policies, which is not an easy thing given the broadly perceived need to produce material outcomes:

> "When working on this programme, we tried to balance a little bit this vision in Horizon 2020. I mean that, to us, it was very important to make the industry participating but we wanted it to participate on equal terms with civil society, with citizens, and with the other stakeholders. (…) It is not always easy. It is not always easy and, when we had to explain the result of certain public engagement projects, it was a little challenge, because here you do not produce, at the end of your projects, a patent, something material. Here we are sometimes more in the immaterial, the impacts come after some years. It is more related to building trust, helping mutual knowledge, and so there is a whole challenge also to know how we can evaluate this kind of things. Where there is a very strong focus on the industry's participation, on innovation, and on concrete things like scientific outcomes, so publications etc., we do not have such publications. (…) So yes, effectively, it is not the easiest task" (Policy Officer 2, personal communication, 27 April 2016).

The process of public engagement's narrowing down in Horizon 2020 is further reinforced by more recent developments that happened at the European Commission's level and had an important influence on the work of Science with and for Society unit's members.

Citizen Science as the future of public engagement?

At the end of year 2014 Robert Moedas, a new Commissioner for Research, Science and Innovation took office. As Policy Officer 4 told us, people working at the Science with and for Society unit tried to introduce to him the notion of Responsible Research and Innovation but the new Commissioner and its cabinet found it too complex and, a few months later, came up with a new strategy, called 'Open Science, Open Innovation, Open to the World', which became the overall strategy of the European Commission concerning science and innovation (Policy Officer 4, personal communication, 17 May 2016).

Within this new strategy, a new concept related to the relationship between science and society has gained huge traction. Citizen Science, which promotes the participation of nonprofessional scientists to scientific research, is indeed currently being the object of an intense lobbying from the European Commission as well as from the highest people in the Directorate-General for Research and Innovation and is being framed as one of the priorities of the Science with and for Society programme. Citizen Science has its own history going back to the second part of the nineteenth century, and was traditionally conceived as a way to blur the frontier between scientists and society (see Irwin, 1997; Hand, 2010). However, what is striking in its sudden promotion at the European level is that Citizen Science is being taken up in a very limited way, merely consisting in involving citizens in data collection, rather than involving them in the definition of research agendas.

This emerging promotion of Citizen Science, and the imperative for Science with and for Society unit's members to include it in their programme, frightens Policy Officer 4, who makes a direct link to the potential denaturing of the old Science and Society programme:

> "… And Citizen Science, effectively, we were asked to handle this issue. So I was a little bit reluctant at the beginning because, in terms of

> resources, we were very limited. So if we have to manage something more, something different than what we are currently doing, we will have to make sacrifices. And so we will have to renounce to something more. This being said, Citizen Science, to me and to a lot of other people, it is essentially birds' counting, which means that it is often importing data into science. (…) But it is rarely (…) asking citizens their thoughts on research agendas or on an approach of innovation. (…) So I was, and I still am afraid that I could be asked to work on birds' counting and to drop the rest, because to me it would be denaturing the work of Science and Society"

This thoughts are shared by Arie Rip, who emphasized the risk of seeing the kind of Citizen Science that is nowadays promoted in Directorate-General for Research and Innovation not contributing at all to the removal of the frontier between scientists and society. In this sense, Citizen Science as promoted at the European level would rather be limited to benefiting from society to improve science and research in a one-way direction. The risk is high, according to Arie Rip, to see this push in favor of Citizen Science replacing "public engagement and really co-construction and co-creation with this slave labor stuff" (Arie Rip, personal communication, 9 May 2016).

As show is this development, the more recent developments regarding public participation in science and technology within the Science with and for Society programme highlights the risk of seeing the co-production of science and society being turned into a mere production of science by other means.

Chapter 4. The limited participatory turn at the European level

Now that the main results of this research have be exposed, this chapter presents a cross analysis of the main findings and therefore provides an answer to our research question. It is divided into two sections. The first one presents regroups main findings regarding the Horizon 2020 period. The second one links them with the two previous periods, in order to present major continuities in the European governance of science and technology.

Section 1. Horizon 2020 and the instrumental conception of public participation in science and technology

As shown throughout our developments on Horizon 2020 and the Science with and for Society programme, the in-depth analysis of the normative context in which public participation is currently conceived and promoted at the European level reveals important pitfalls for the opening up of the governance of science technology-related issues.

Corresponding to the contextual trend we identified in chapter first (see Pestre, 2008; Tyfield, 2012), the discourse surrounding science and technology, rapidly evolving toward the solving of the economic crisis as well as of the so-called 'grand challenges', produced a rationale emphasizing the benefits of science and technology for the common good of European society. It also created a feeling of urgency with regard to the need for more technological innovations. In this broad political frame, European policy priorities focus on fostering interactions between research communities, public authorities and the industry, the latter appearing as the main actor to be involved in technological development.

This science and technology policy narrative combined with concrete reforms within the Directorate-General for Research and Innovation. The renewal of science and technology's European staff members, including the Commissioner and the Director General, led to important changes in the European institutions. Science-society issues, formerly tackled by a whole

Directorate, saw their salience slightly squeezed and even threaten not to benefit from a dedicated part in the Horizon 2020 programme. In this context, Responsible Research and Innovation framework emerged in a defensive move from the part of former Science in Society programme's members. They tried to group the different dimensions they were working on and to reassemble them under a new umbrella, perfectly fitting to the above-mentioned context.

All in all, this combination of macro and micro dynamics produced a situation in which public participation in science and technology is conceived and promoted in an instrumental way. The involvement of the public, increasingly conceived as a set of stakeholders, is encouraged as long as it contributes to the pre-established political goal of fostering research and innovation in order to create growth and to tackle the grand challenges. This highly normative frame shape public participation in a certain way: the public is mainly perceived as regrouping individual users, whose participation is whished in order to help producing marketable innovations. The focus is therefore put on the expected outcomes of public engagement, which is conceived in a functional way to ensure for the social acceptability, if not acceptance, of future technological innovations, as well as to provide with creative ideas for speeding up the innovative process. Moreover, the public, even in this narrowed perception, is still perceived as lacking knowledge on science and technology, and science education is thus presented as vital for its useful participation.

As we can see, far from being left opened-up, public participation is strongly closed-down by normative forces that lies in the context is which its promotion takes place. However, is this trend proper to the current Horizon 2020 context? Has public participation in science and technology ever been fully opened at the European level?

Section 2. From 2000 to 2016: Business as usual?

Our historical perspective allows for a broader reflection on the legacy of the participatory turn as it has been promoted at the European level. While acknowledging the instrumentalization of public participation in Horizon 2020, and considering that some dimensions such as the increasing economization of policies (Berman, 2014) and the steering of science and innovation toward tackling societal challenges are characteristic of the Horizon 2020 period, some longer trends can be identified through our research.

As previously stated, the Sixth Framework Programme's period also showed hints of public participation's instrumentalization. Normative discourses, salient in the Lisbon Agenda, already presented public participation as a useful way to foster political legitimacy and to promote innovation in order to achieve pre-established strategic goals, which were already consisting in reinforcing the European knowledge-based economy and society.

Similarly, despite its growing focus on science-society interactions, the Seventh Framework Programme's period was also marked by a strong focus on competitiveness' imperative as the main frame in which public participation had to take place. Any promotion of public participation had to cope with strong incentives not to question the role of science and technology in society, as huge economic and technoscientific promises were guiding European governance in this domain.

As our results show, public participation's instrumentalization and closing down in the Horizon 2020 context is not a totally new phenomenon. Indeed, some similarities can be observed with regard to then European governance of science and technology throughout the three framework programmes we analyzed. These similarities all reflect European fundamental values and hierarchies that should not be put into debate.

First, similarities can be found regarding the budgets that have been dedicated to the specific programmes tackling science-society issues throughout the years. At first sight, these budgets increased in absolute terms: Science and Society programme was gifted with 88 million euros, Science in Society programme received 330 million euros, and the budget of Science with and for Society programme rose to 462 million euros. However, in relative terms, they all remained tiny parts of the whole framework programmes' budget: 0.5% of the whole Sixth Framework Programme's budget for Science and Society, 0.7% of the Seventh for Science in Society, and 0.6% of Horizon 2020 for Science with and for Society.

Second, the deficit model has perpetually been readapted: even if science-society interactions are presented as opened and participative, in the end they mainly consist in providing participants with adequate knowledge in order for them to participate in an informed way. Through this way of perceived public participation, the hierarchically primordial status accorded to scientific knowledge compared to other forms of experience is left unquestioned.

Third, the great need for European competitiveness has exerted a strong influence throughout the three analyzed period, really acting as a cornerstone principle for any science and technology-related policy.

Fourth, in spite of some efforts to foster a more-opened interaction between science and society, contextual normative forces are simultaneously at play. Hence, the will to create new paths of governance for the opening of science-society interactions must simultaneously ensure that the issue of these interactions copes with pre-conceived political goals.

What do these continuities imply for the participatory turn's legacy, then? Decades after the growing promotion of public participation in science and technology in grass-roots movements and STS literature, the way this participatory turn has been taken-up at European policy-level reveals rather mixed results. In spite of some attempts at fostering the deliberative governance of science in the European institutions, strong normative dynamics have tended to downsize the spaces left free for an open appraisal of science and technology-related issues. If any participatory turn happened at the European level, it did so to a very limited extend, as traditional ways of governing science and technology remain highly powerful in European policy. The diagnosis formulated by Irwin (2006) seems accurate to characterize the European Union's situation regarding public participation: the promotion of public participation in science and technology, which has notably been endorsed by members of the Directorate-General for Research, has not brought a wider cultural or institutional transformation at the European policy level. Rather, public participation has continuously been conceived and promoted in an instrumental way. In this perspective, the current Horizon 2020 context is nothing but a reinforcement of these dynamics: public participation is conceived in an ever more limited way given its submission to a discourse emphasizing current crises (economic, environmental, demographic, etc.). The emerging Responsible Research and Innovation framework does not engender any paradigm shift: created in a defensive move from threaten Directorate-General's staff members, it has precisely been designed in order to fit with pre-established political orientations.

As shown in this research, the instrumentalization of public participation goes largely beyond the mere Horizon 2020. From the Sixth Framework Programme to Horizon 2020, from 2000 to 2016, it appears that the normative context in which public participation in science and technology

has been conceived and promoted has always tended to instrumentalized and to close down the deliberative governance of science.

These observations confirm the theoretical perspectives we presented in Chapter 1. As mentioned, public participation approaches often rely on a deliberative ideal promoting mutual respect for different ways of reasoning. Following this ideal, participation is presented as free from strategic bargaining and manipulation. Then, it is said to allow for broadening the perspectives of the participants (Dryzek, 2000; Smith, 2003). However, as this research shows, when taking into account the context in which public participation takes place, the latter turns out to be highly framed in a way that does not allow for the broadening of the perspectives. We therefore see this research as a contribution to the growing concern about connecting participatory approaches to their context of application in order to avoid promoting them in a solely theoretical way, which often does not correspond to current political realities.

Conclusion

This research aimed at scrutinizing how the context in which public participation is currently conceived and promoted at the European level impacts the participatory turn's legacy.

The first chapter provided useful insights on the academic literature's state of the art on public participation in science and technology. Hence, the broad deliberative imperative emphasizing the importance of public's involvement in the setting up of the norms and rules they will have to obey, has been presented. It has been argued that deliberative political theory gained important traction among STS scholars, leading to what has been called the "participatory turn" in this field. Following this turn, traditional hierarchical notions of government are to be enriched by more open-ended and inclusive governance, which rests on the deliberative ideal portraying participation as broadening the perspectives independently of any manipulation. However, as it has been shown, this deliberative ideal tends to lack reflection about the context in which public participation takes place. As participatory processes are inherently embedded in systems of values, their linkage to the economic and political system in which they are situated has to be taken into account. We therefore proposed some potential contextual trends that have been further analyzed in this research: the lack of concrete institutional changes accompanying new participatory approaches, and the reorientation of science and technology towards solving the economic crisis and tackling societal challenges.

The second chapter presented the current framework apparently supporting the deliberative governance of science and technology at the European level. It offered theoretical insights on Responsible Research and Innovation, and pursued the reflection on its potential contextual pitfalls: if no care attention is paid to its context of emergence, the risk is high to see its promotion of public participation being instrumentalized. This chapter

also presented the methodology we used to scrutinize public participation's context. A complex set of strategies for data collection composed of participant observation, documentary research and semi-structured interviews, analyzed through a discourse analysis strategy, allowed for a deep understand of the dynamics at play.

Then, the third chapter presented our results. Divided into three sections, it detailed public participation's context throughout three periods corresponding to the three last European framework programmes. For each of these periods, dynamics of public participation's promotion as well as broader economic and political trends have been described.

Finally, the fourth chapter synthetized previous developments to provide with an answer to our research question. Hence, it has been shown that public participation is currently being promoted in a highly instrumental way at the European level, resulting in its closing-down. Moreover, our historical perspective provided strong evidences that this instrumentalization is not proper to the Horizon 2020 period. Rather, the economic and political context in which public participation has been promoted at the European level since the early 2000's has always tended to act as a set of constraints to the opening up of the participatory governance of science and technology.

However, our point is not to depict a fully deterministic perspective, in which public participation is doomed to instrumentalization and closing down because of an all-mighty context which exists *per se*. Our analysis, focusing on macro (broad lines of discourse) as well as micro (dynamics at play inside the Directorate-General for Research) proved useful to the understanding of the way the analyzed context has been shaped. The idiom of co-production usefully informs this analysis. Briefly stated, "co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which

we choose to live in it" (Jasanoff 2004, p. 2). The contextualization we operated helped understanding how multiple dynamics, situated at both macro and micro levels, shaped the normative context in which the promotion of public participation has taken place since the early 2000's. By taking into account the multiple interactions that took place between different actors, lines of argumentations, and levels of power, it becomes possible to present a constantly evolving context, which is permanently to be negotiated and renewed. Far from being completely determined by inarticulate forces, it appears as the product of human beings' will. The idiom of co-production therefore opens up "the possibility of seeing certain 'hegemonic' forces, not as given but as the (co-)products of contingent interactions and practices. These insights may, in turn, open up new opportunities for explanation, critique and social action" (Jasanoff 2004: 36).

To acknowledge these co-production phenomena allows for proposing a future research agenda. Hence, if the context of public participation is conceived as co-produced by contingent interactions and practices, then our analysis could be highly enriched by scrutinizing how norms and values concretely interact during participatory exercises. In other words, research could focus not only on the normativity *of* public participation, but also on the normativity *in* public participation. As each of the actors involved in participatory processes holds its own values, public participation's context has also to be understood in the light of the interactions that happen between different actors' system of values when participating. Future research therefore have to investigate how the context we hereby identified is negotiated through and/or produces concrete impacts on the process and outcomes of participatory exercises. The present analysis would then benefit from new insights to critically scrutinize the complex dynamics of public participation in science and technology.

Epilogue[17]

Throughout the previous developments, we have fruitfully answered our research question and proposed new research perspectives. Nevertheless, a last reflection disserves to be developed. The idiom of co-production allowed us to considered the context of public participation as co-produced by macro and micro dynamics, the latter mainly corresponding to interactions at play inside the Directorate-General for Research. However, as briefly presented in our developments, the STS community also played a role in promoting public participation in science and technology, and therefore participated in the co-production of public participation's context. Moreover, this research agenda we opened at the end of our conclusion leaves opened new perspectives for STS scholars, as will be hereby detailed.

As shown through this research, STS have played an important role from the 1990's in promoting and articulating the participatory turn, in an attempt at democratizing science and technology policy. Now that decades have passed, evidence suggests that STS failed to concretize this agenda, as the present research has shown concerning the European level.

This can and should be the starting point for a broader reflection on STS scholars' engagement. We indeed see the present study as providing useful ideas to develop a critically reflexive analysis of STS and to question the roles of social scientists in relation to public participation.

As STS scholars often engage in public participation, be it through advising policy-makers on this topic or through intervening directly in specific participatory exercises, they constantly have normative choices to make, which can shift or deepen their engagement (van Oudheusden and Laurent, 2013). We will reflect on STS scholars' engagement by drawing on the

[17] The reflections presented in this Epilogue are the fruit of the discussion we had with Arie Rip during our second interview (Arie Rip, personal communication, 2 June 2016). We would like to thank him once again for his precious insights.

comparative analysis we made of two reports involving the STS community: *Taking European Knowledge Society Seriously* and *Challenging Futures of Science in Society*.

As previously mentioned, *Taking European Knowledge Society Seriously* represents one of the peaks of STS' engagement in advising European policy-makers on science and technology governance. The expert group which wrote it was composed of the most influential scholars of the field. However, as shown, the report failed at concretely impacting policy-makers.

Contrarily, *Challenging Futures of Science in Society* received much more attention from policy-makers. As argued, the composition of the expert group in charge of writing it had a strong influence on this success. Only partially composed of STS scholars, the different members of this more heterogeneous group had to negotiate their positions during the meetings. The result was far less "STS" than *Taking European Knowledge Society Seriously* which allowed for the report to be better taken-up at policy level.

Through the comparison of these two reports, we would like to propose a broader reflection on two possible STS scholars' positions when advising policy-makers on public participation. Of course, these positions are exaggerated and do not reflect the whole complexity of scholars' engagement. They nevertheless are useful instruments to reflect on different normative choices that can be made through scholars' engagement.

The first position is marked by a direct promotion of upstream public engagement motivated by strong references to a participatory democratic ideal. It is also characterized by a rather outsider position, consisting in providing criticism to the way public authorities conceive and enact science and technology governance and public participation. As Irwin et al. put it, this kind of position is frequent among STS scholars:

> In the academic literature on Public Engagement in Science, numerous accounts have been published over the past decade that criticize particular engagement activities while often expressing a commitment to a wider principle of 'democratization'. Thus, PES studies regularly conclude that the issues put to the public are limited, that the actual involvement of the public is marginal and that institutional actors resist engagement by insisting that both science and innovation should remain unquestioned and beyond serious democratic control" (2012, p. 119).

This position well defines the one adopted by *Taking European Knowledge Seriously*, which developed a highly critical perspective on European policy. However, this position might prove to be counter-productive in the end, as it was the case for the report. Indeed, it might frustrate policymakers "with a sense that whatever they do will be will be criticized by the social scientists" (Irwin et al., 2012, pp. 120-121).

The counter-productive character of the first position leads us to consider another one. This second position consists in acknowledging the framed and often instrumentalized character of public participation while considering the potential perspectives for dynamics expression and critical exploration. The link we made to the idiom of co-production offers concrete ways to consider these potential perspectives, as the dynamic view of public participation's context it depicts allows for explanation and social action. As shown, the European policy context strongly instrumentalizes and closes down public participation. However, as Rip and Schot (2002) suggest, the understanding of these dynamics in context allows to identify possible spaces for action or "*loci* for intervention", which then require "intelligent intervention: it is not brute force but playing with the dynamics which will make a difference" (p. 167). STS scholars participating in advisory groups set up by the Directorate-General for Research illustrate this position. By advising policy-makers from the inside, they constantly try to negotiate their personal perspectives in relation to policy-makers' realities, and thus

try to find *loci* for intervention by playing with the dynamics at play inside the institutions.

As shown in this second position, the point is therefore not to solely criticize the closing down of public participation by waving the flag of opening up. Rather, a more pragmatic position, considering the co-production of closing down and opening up dynamics, offers more perspectives for engaged scholars to contribute to the shaping of the economic and political context of public participation. To come back to the two reports we presented, rather than trying to convey the STS message of science and technology's democratization in STS terms as *Taking European Knowledge Society Seriously* did, a more productive ways of acting may lie in the upstream negotiation of these STS perspectives, to make them fit better to the political context in which they are to be promoted, as what *Challenging Futures* did.

One could argue that this second position would engender very little moves. It indeed does not promise immediate breakthrough in the governance of science and technology. However, considering the failure of previous STS attempts at promoting and enacting the participatory turn, it may be the only way to generate at least some moves.

The future (of) public participation in science and technology might therefore lie in these *loci* for intervention that are to be found when one accepts to look for them, instead of *a priori* rejecting the very context in which public participation takes place. This appeals for STS scholars to consider alternative ways of perceiving public participation, presenting democratization and instrumentalization dynamics not as mutually exclusive but as simultaneously at play in the co-production of public participation's context. This is precisely what this research has tried to show.

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