

**Public engagement in nanotechnology.
Competing meanings around three participatory mechanisms in France**

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I. Introduction

The notions of “public engagement”, “involvement” and “dialogue” have become important themes in nanotechnology policy. Science and technology scholars advocate “upstream public engagement” (Wilson and Willis, 2004; Wynne, 2001, 2003a), and this notion has been introduced in official discourses, especially in the United Kingdom (Royal Society, 2004), and also at the European level. In a 2004 document, the European Union calls for “dialogue” with the public (European Union, 2004), while the “Science and Society” part of the 6th European research and development framework program funded projects to explore the ways to “involve citizens in dialogue and participation”¹. In France, official political statements about public participation in nanotechnology remain rare. However Prime Minister de Villepin asked in May 2005 for a “national public debate”², and numerous public debates were held in 2006 about the societal implications of nanotechnology.

In the following, I will use the notion of “public engagement” in a broader sense, as long as it implies two-way exchanges between the public and those who have knowledge of or power over the particular issues at stake. Brian Wynne (2003) makes clear that public engagement is not value-neutral. By focusing on risks, it often constructs a particular “public” afraid of technological developments and unable to make good decisions without scientific inputs. Therefore the notion of the “public” itself should not be considered un-problematic, but rather a part of what is defined through the design, use and critique of participatory mechanisms.

The notion of public engagement can be granted different meanings. A reason for that is that different motivations can underlie a statement in favour of public engagement. Stirling (2003) proposes three motivations for public participation in science and technology: participation is good in itself (normative reason), it is more efficient as it has a legitimizing effect (instrumental reason), and it produces better end-products (substantive reason). That these three meanings can be present simultaneously about the

¹ Science and Society program, Directorate-General for Research, http://ec.europa.eu/research/science-society/science-governance/science-governance_en.html

² Speech of the Prime Minister given for the General Estates of Firms and Sustainable Development, May 31, 2005.

same mechanism can lead to certain confusion about what public engagement means for the actors involved. Indeed, in the case of nanotechnology, the official uptake of the notion of “public engagement in nanotechnology” does not go without “confusion and ambiguity” as MacNaghten et al. state (2005). One of the misunderstandings that these authors point to relates to projected “impacts” of nanotechnology: although it is not the purpose of upstream public engagement to predict them, references to this notion are numerous in official documents.

These accounts make clear that the notion of “public engagement in nanotechnology” can be understood differently among various actors. My aim is here to explore how actors involved in the design, the use or the critique of particular participatory mechanisms have different expectations for the role public engagement is supposed to play, as well as different understandings of the nature of the nanotechnology issues that need to be debated, and of the role of the citizen in the context of public engagement.

This paper is based on three French examples of public engagement in nanotechnology. The first instance is a series of public debate that were held in Grenoble from September to December 2006. Grenoble is a city in the French Alps where nanotechnology research projects are led, and have been facing opposition from activist groups. A citizen consultation organized in Paris in October 2006 by an association of private companies and an environmental association is the second example. The third example is a citizen conference organized in Paris by the *Ile-deFrance* regional administration that ended in January 2007.

In the following, I will first briefly describe the three public engagement mechanisms chosen as example, which frame differently nanotechnology issues. Then I will present different expectations of public engagement that the actors involved in the funding, design or critique of these mechanisms formulated. That will lead me to identify two main tensions in the understanding of public engagement in nanotechnology. I will conclude with some implications for the role of science and technology studies in public engagement in nanotechnology.

II. Three examples

The following analysis will be based on three recent examples of public engagement in nanotechnology in France. Table 1 characterizes the three mechanisms chosen as instances.

	NanoViv	Citizen Consultation	Citizen Conference
Location	Grenoble	Paris	Paris
Who commissions?	Local Administration	EPE (1)	Local Administration
Who organizes?	Vivagora (3)	EPE (1) / APPA (2)	<i>Ad hoc</i> committee
What design?	Series of public debates	Citizen Conference	Citizen Conference
Who participates?			
Public	debates open to the public	Representative panel (4)	Representative panel (4)
Experts	Scientists, industrialists, social scientists	Scientists, industrialists, social scientists	Scientists, industrialists, social scientists
Outputs	'16 propositions'	'Citizen recommendations'	'Opinions and recommendations'

Table 1. Characteristics of the three public engagement mechanisms

- (1) Companies for the Environment. EPE is an association the members of which are companies that 'seek to take the environment into account in their strategic decision and everyday management'³.
- (2) for the Prevention of Atmospheric Pollution. APPA is a non-governmental scientific body.

³ EPE, *Qui sommes-nous?*, <http://www.epe-asso.org>

- (3) *Vivagora* is a NGO that organizes public debates on science-society issues.
- (4) In both cases, the panel was first trained and was given lectures about nanotechnology issues.

III. Framing nanotechnology issues

These mechanisms focused on nanotechnology, yet framed it in a different way. *Nanoviv* and the citizen conference divided nanotechnology in a few general issues; environmental, health, defense and privacy were the four main areas discussed. They were the topics of specific debates in *Nanoviv*'s case, and of the training sessions for the panel members in the case of the citizen conference.

Nanoviv proposed to look at nanotechnology as several projects connecting political decisions and technological choices, some of them irreversible and others still open. On the one hand, this understanding of nanotechnology was not fully understood by the officials who sponsored *Nanoviv*, as they frame nanotechnology in terms of a global program for local economic development. On the other hand, anti-nanotechnology activists rejected the *Nanoviv* framing since they described nanotechnology as a global program of control, in which nano-chips, military applications, manufacturing at the atomic scale are examples of the control of nature and human beings that would be the purpose of nanotechnology research. The citizen conference structured the training of the citizen panel along the four themes we mentioned, but let the members of the panel decide how they wanted to organize the last sessions and whom they wanted to interview. What the panel proposed for the last session was actually very close to the framing of nanotechnology issues that had been articulated during their training. The experts they interviewed were for most of them those they had seen during the previous sessions. This was interpreted by activists as a sign that such mechanism enrolls the citizen and forces him or her to adopt the official viewpoint. On the other hand, the fact that the framing of the issues was eventually left to the members of the citizen panel was blamed for leading to neglect potentially crucial issues (De Neve, 2007).

The framing of nanotechnology issue articulated by the organizers of the citizen consultation was limited to the regulatory issues of environmental pollution. The

organizers did not want to be involved in debates about ethical issues, as they did not see themselves legitimate to treat these issues⁴. This choice was deliberate, yet strongly criticized, in particular by environmentalists groups. *Friends of the Earth* and anti-nanotechnology groups in Grenoble like *Pieces et main d'oeuvre* (PMO) stated that ‘the fact that the ethical and social aspects, individual liberty and intellectual property issues were deliberately excluded discredits this event and completely skew the conclusions’ (Berdot, 2006). For PMO, this framing nanotechnology as a set of products with potential impacts could not allow to question the global program of control they wanted to fight. The framing of nanotechnology chosen in the three mechanisms were commented on and criticized from the outside. Yet disagreements and contestation were formulated even from within. Disagreements occurred within the organizing committees of both the citizen consultation and the citizen conference⁵. A representative of *Vivagora* was member of the citizen consultation organizing committee, but she did not accept the limitation to the toxicology issues, and eventually left the committee. Within the organizing committee of the *Ile-de-France* citizen conference, arguments were frequent about the framing of each of the issues related by nanotechnology and the room let to the members of the panel to choose the experts to interview.

IV. Purposes of public engagement

When they design, use or critique particular mechanisms, actors articulate visions of who the public is, how he should engage and for what purposes. The various expectations for public engagement will be listed in this paragraph. Before going further, it is important to clarify that a given mechanism can be granted different meanings by its sponsors, organizers, participants and critics. Therefore, our aim is not the characterization of each of the three mechanisms but rather the clarification of the spectrum of the expectations of public engagement, using our three examples as basis.

⁴ Interviews with members of EPE and APPA staff, January 11 and January 12, 2007

⁵ This paragraph is based on personal communications of committee members during the final session of the citizen conference, on January 20, 2007.

1. Showing that “it’s possible”

An interest for the mechanisms of participatory democracy for themselves manifests itself in the discourse of many actors of the citizen consultation and conference in Paris. The citizen consultation was the first of a series that EPE wishes to organize. As such, the nanotechnology consultation was a way to prove that such mechanism was possible. For the industrialists’ viewpoint, this mostly meant that the recommendations written by the panel did not mention a moratorium, which for private companies members of EPE would not have been rational. Similarly, the citizen conference was described as a proof that participatory democracy could provide results, that is to say, recommendations that were ‘realistic’ and ‘coherent’⁶. This interest in the process itself is characteristic of the citizen conference format, which has not been widely used in France⁷. Those who saw the main interest of these participatory attempts in the experiment of a new mechanism saw nanotechnology as a topic among others, interesting for its current importance in public discourses.

2. Enlightening the citizen

Engaging the public in nanotechnology can be seen as a way to ensure a good understanding of the nature of nanotechnology issues. The clearest articulation of this vision is formulated in Grenoble by officials who sponsored *Nanoviv*. Reacting to the criticisms of anti-nanotechnology activists, they see public engagement as a way to ensure the transparency of technical and political decision-making, and a common agreement around a rational expertise seen as unique. For many of the Grenoble officials, *Nanoviv* was not supposed to cause any change in the local governance but rather to lead the citizen to recognize that nanotechnology issues were dealt with in the best way, based on unquestioned rational processes. This understanding of public engagement does not fundamentally question the dual technical and political delegation (Callon et al., 2001)

⁶ Interview with EPE staff members, January 12, 2007.

⁷ The main example is the 1998 citizen conference on GMOs (Joly and Marris, 2001).

but it goes beyond it. It seeks to make the technical delegation clearer. The public is invited to understand the full process that leads to expert decisions, can ask questions and raise concerns during dialogues. Public engagement is thus a way to organize these dialogues, and as such a means to enlighten the public. The “public” in this “enlightenment model” should be as broad as possible, and comprise every citizen, since “modern society needs a real trust in progress, a technological, social and societal progress that we have to accompany collectively”⁸. This understanding of public engagement is typical of Grenoble. But the citizen consultation and the citizen conference in Paris were occasions for the enlightenment understanding of public engagement to be articulated, yet with less weight than in Grenoble⁹.

3. Confirming the work of experts

Public engagement is sometimes framed as a means to confirm decisions that are made by bodies of experts. The general delegate of APPA, which co-organized the citizen consultation, was very satisfied by the fact that the recommendations written by the panel were nearly the same as those released by the Committee for Prevention and Precaution - a ministerial expert body, since it made public engagement be a way to demonstrate the validity of the expert decisions¹⁰. Such role given to public engagement goes one step further than the enlightenment model by giving the citizen the possibility to work by himself, and constructed conclusions that will necessarily be compatible with the experts’ ones. As in the enlightenment model, this vision supposes the uniqueness of the rational process that can lead to workable decisions.

⁸ “Grenoble, symbole du débat public et de la confiance dans le progrès scientifique”, Grenoble mayor’s blog, published online on June 2, 2006.

http://micheldestot.blogs.com/le_blog_de_michel_destot/innovation/index.html

⁹ For instance, a newspaper article (Les Echos, 18/10/06, ‘Nanotech in the spotlight’) described the citizen conference and the citizen consultation. The subtitle of the article was ‘more and more initiatives to make the public understand nanotechnology’.

¹⁰ Interview with JM Rambaud, general delegate of APPA, January 11, 2007.

4. Avoiding tensions

Connected to the last two expectations of public engagement is the desire to avoid tensions between industry, scientific research, administrations and the public. The GMO debates were often used as counter-examples. In this case, the industrialists would have failed to give enough assurance that GM products were safe. A newspaper article said about the citizen consultation:

*'Industrialists have decided to make the first move in order not to let [anti-nanotechnology] NGOs occupy the field. But also to avoid two well-known scenarios, the rejection of GMOs and the scandal of asbestos.'*¹¹

The general delegate of APPA explained that the central role of participatory mechanisms is to 'ensure that there is no tension and blockage between actors like we have had in the case of GMOs'¹². Bringing different people together before 'the positions are fixed and the debate is polarized' as a way to do that. Similarly the sponsors of both citizen conference and the *Nanoviv* debate series stressed the need for dialogue and trust between different social groups and saw public engagement as a means to produce them.

5. Integrating public inputs into political decision-making

Each of the three mechanisms sought to produce recommendations or propositions. The main objective of the citizen conference was the 'production of opinions and recommendations which will provide elements for the analysis for the elaboration of political decision by the regional elected officials'¹³. The question of the integration of the outcomes of the citizen conference was raised from the beginning. In the official statement describing the mechanism and its purposes, what the citizens would propose should 'provide elements for the analysis'. A regional councilor declared in his introduction to the final session that the recommendations formulated by the members of the panel would be 'taken seriously' if not 'directly followed'. However at the time of

¹¹ *Le Figaro*, 24 octobre 2006, « Faut-il avoir peur des nanotechnologies ? »

¹² Interview with JM Rambaud.

¹³ Presentation of the citizen conference on the *Ile-de-France* region's project webpage (espaceprojets.iledefrance.fr/jahia/Jahia/NanoCitoyens/site/projets)

writing, how the outcomes of the citizen conference will be taken into account is still unclear.

The citizen consultation mentioned a ‘debate directed toward action’¹⁴, which suggested that the recommendations produced should impact the actions of the industrialists involved through EPE. Yet no concrete action has been done by EPE and APPA to ensure that.

For many of the actors involved in *Nanoviv*, and particularly *Vivagora*, the NGO that organized the debate series, the main objective of public engagement lies in the involvement of the citizen’s expertise in political and technical decision-making. Although the objectives of *Nanoviv* were clear for the organizers, they were not understood the same way by the other actors involved. Thus, officials sponsored *Nanoviv* and scientists participated in it while understanding public engagement purposes as enlightenment of the citizens. Indeed, there is no sign in Grenoble at the time of writing that the recommendations will be taken into account. In the same time, activists have constantly refused to recognize any interest in this participatory attempt, and even more to participate in the public debate, as *Vivagora* would have liked them to do.

6. Cooptation and threat to social critique

Anti-nanotechnology activists have constantly criticized public engagement of being cooptation devices. The most vocal group, *Piece et main d’oeuvre* (PMO), is Grenoble based, but national associations like *Friends of the Earth* and the anti-globalization group ATTAC have also been critical of the three mechanisms we chose as example. All the visions of public engagement described above have been rejected by activists. For them they are ways to alienate the public and prevent it from fighting against what for them is nanotechnology, namely a program of control. The extract below gives a sense of the contents of activists’ criticism.

‘A citizen conference, it is useful to hinder the critique – which the Figaro like all the proponents of nanotechnology keep labeling fears. The industrialists, who have a catalog of nano-products they want us to buy, are eager to settle the issue of the opposition

¹⁴ EPE, citizen consultation presentation leaflet, Paris, October 2006.

*[against nanotechnology]. A 'citizen conference' will go for that, with a public relation operation. (...) Multiply the 'participative processes' and the 'recommendations' will cover up the contestation.*¹⁵

Therefore public engagement is for activists not only a communication tool unable to question the framing of nanotechnology in terms of global program of control, but also a way to prevent the citizen from exercising social critique, since consensus is a way to get rid of social opposition. Therefore activists see their critical stance toward public engagement as a democratic duty.

Uncertainties

The same mechanism can be interpreted very differently among actors. Table 1 synthesizes the different understandings of public engagement in the three cases; it indicates the identity of the actors who formulate each particular expectations. It is voluntarily simplifying. Even the same actor may shift her discourse and adopt different understanding of public engagement. This table limits the outside actors to the activists and does not include the positions of other commentators not directly involved in the mechanisms such as media or officials or scientists. In terms of quantity of written production, activists' contribution is greater than any other group's. If all the positions were included, all the understanding of public engagement made explicit here would be present for each mechanism.

¹⁵ PMO, "Et maintenant le tsunami de la communication", published online in October 2006, (pmo.erreur404.org/tsunami_de_la_communication.pdf)

Visions of public engagement	NanoViv	Citizen Consultation	Citizen Conference
Showing that a mechanism works		Sponsors	Sponsors
Enlightening the citizen	Sponsors		
Confirming the work of experts		Activists, sponsors, organizers	
Avoiding tensions		Sponsors, organizers	
Integrating inputs into political decision making	Organizers		Sponsors, organizers
Cooptation and threat to social critique	Activists	Activists	Activists

Table 2. Actors formulating the various understandings of public engagement in the three examples

These examples make clear that the understandings of public engagement purposes are not shared. The range of differences in how the actors define public engagement is greater for *Nanoviv* and minimal in the citizen conference, the citizen consultation holding a middle position. The range of different meanings can provide room for strategic alignments for the sake of one's agenda. But the disagreements – explicit or implicit- render difficult the most ambitious objectives, especially the integration of public engagement inputs in the existing political system. Thus in the *Nanoviv* example, sponsors and organizers articulated contradictory visions of public engagement, and the debate series did not lead to political uptake.

Each of these visions considers the nanotechnology issues that are the object of public engagement in a particular way. In parallel, it proposes a particular role for the citizen. These various positions are summarized in the table 3.

Visions of public engagement	Main Proponents	Nanotechnology social issues	Role of the citizen
Showing that a mechanism works	Sponsors and organizers of the citizen consultation and conference	Not the main object	Participating in the mechanism
Enlightening the citizen	Grenoble officials and scientists	Evaluation of impacts and risks	Understanding the decisions of experts
Confirming the expert decision	Organizers of the citizen consultation	Evaluation of impacts and risks	Producing the same conclusions as the experts
Avoiding tensions	Sponsors and organizers of the citizen consultation and conference	Evaluation of impacts and risks	Asking questions during a dialogue
Integrating inputs into political decision making	Sponsors and organizers of the citizen conference, Vivagora	Construction of socio-technical projects	Providing inputs in the construction of nanotechnology
Cooptation and threat to social critique	Activists	Denunciation of a global program of control	Exercising social critique from an independent position

Table 3. Understanding of the nature of nanotechnology issues and the role of the citizen in the six visions of public engagement

These differences have important implications for social scientists, and especially science and technology students ('STSers'). STSers were important actors in the participatory attempts in nanotechnology we considered here. STS scholars were invited in the *Nanoviv* public debates and gave talks to the panels of the citizen consultation and the citizen conference. As such, they intervened as experts in the social studies of technology. As far as the understanding and design of public engagement were concerned, STS works were used as theoretical reference by many of the organizers, STS scholars participated in the organizing committee of the citizen conference, and *Vivagora* members worked in close contacts with STSers or were themselves STSers. Most of the STS scholars involved adopted the integrating understanding of public engagement. We will see in the following that their position has to deal with tensions concerning on the one hand the nature of nanotechnology social issues and on the other the neutral position of the citizen.

V. Unresolved tensions

1. Evaluation or construction

Constructing socio-technical choices as STS suggests implies that the framework of analysis is not defined *a priori* in terms of risks and benefits of unquestioned technologies, but that the public can frame the issues it considers relevant (Wilson and Willis, 2004). The tension between this vision and the tendency to impose a risk/benefit framework has been noticed in other cases, particularly participatory attempts in biotechnology (Wynne, 2003; Irwing, 2006). The examples we consider here show a similar tension, albeit less visible for both *Nanoviv* and the *Ile-de-France* citizen conference. Indeed, the risk/benefit framework is clearly adopted by EPE and APPA for the citizen consultation. The two other examples introduced the notion of co-construction in their objectives. The citizen conference was presented as an occasion to 'allow a co-construction of research between academia and civil society'¹⁶. Similarly, *Vivagora* seeks

¹⁶ *Qu'est-ce que la conference de citoyens*, Ile-de-France project webpage, <http://espaceprojets.iledefrance.fr/jahia/Jahia/NanoCitoyens/site/projets/pid/4246>

the ‘involvement of all the actors to ensure a co-construction of collective choices.’¹⁷ These statements describe co-construction as a partnership of diverse actors, which can broadly defined as experts on the one hand and non-experts on the other. Another meaning of co-construction is to be found in STS works that analyze the coproduction of science and society (Jasanoff, 2004)¹⁸. Indeed, *Vivagora* is strongly influenced by STS works and seeks to construct ‘science and its social context in the same time’¹⁹. STS scholars involved in nanotechnology advocate public participation within such understanding of the co-constructionist framework (Joly, 2005).

As we saw, the ‘co-construction’ meaning ‘involvement of the public’ is understood differently among actors. The co-construction of science and society in the STS understanding goes further than the risk/benefit and impact analysis framework. Table 3 shows that the understanding of nanotechnology social issues as the construction of socio-technical systems rather than the evaluation of risks and impacts occurs within only one vision of public engagement. Indeed the tension was permanent between the evaluation of the impacts of unquestioned technologies and the construction of scientific and social institutions able to ensure the socio-technical robustness of nanotechnology. A scientist, member of the ethics committee of a European nanotechnology research network, said during the final session of the citizen conference:

‘the origin of misuses is not in technology. (...) It’s in society that it needs to be found’²⁰.

Such a statement followed a linear understanding of the impacts of unquestioned technology (here in terms of usage), and is one among many others of this nature that were said and widely accepted during the *Nanoviv* debate series and the *Ile-de-France* citizen conference. STS scholars were advisors in both cases and had advocated for a co-constructionist framework that goes beyond the impact issues. This example is a sign of the vigor of the tension between evaluation and construction.

¹⁷ *Vivagora*, ‘Our commitment’, September 2006.

¹⁸ the difference between ‘co-production’ and ‘co-construction’ in STS works could be studied. The latter term is used for example by Nowotny et al. (2001) to describe the parallel constructions of science and society, whereas ‘co-production’ seeks to encapsulate the complex interactions between science and society. In the context of this paper, we do not differ between the two STS notions.

¹⁹ Interview with D.Benoit-Browaeys, Paris, September 1, 2006.

²⁰ ‘*Les nanotechnologies vont-elles changer les pratiques médicales?*’, session of the final debate of the citizen conference, Paris, January 20, 2007.

2. Ensuring neutrality or reflecting upon one's interests

Organizers of the citizen consultation insisted on the necessary objectivity of the mechanism. The construction of a neutral place where experts can present their result to unbiased citizens was central for that respect. The neutrality and independence of the citizen panel was a key point in the citizen consultation, since it was a way to ensure objectivity and transparency, which are central in the understandings of public engagement as ways to enlighten the citizen, confirm expert decision and avoid tensions. The citizen conference went one step further by letting the panel members choose the experts. The two conferences tried to ensure the neutrality of the panels by making sure that none of their members were involved in nanotechnology, and that there was a balance in terms of gender, ages and professional situations²¹. For Grenoble officials who adopted the enlightenment understanding of public engagement, the *Nanoviv* debate series should have been neutral, had it exposed the rational processes through which technical decisions were made. What was expected from the participants is that they were not 'biased' or 'exaggeratedly suspicious' for 'ideological reasons'²². In this case, they could recognize the neutrality of the rational processes. The criticism from the activists followed the same criteria of evaluation based on neutrality. For them, the public good is gained through the respect of social categories and the independence from contestable interests. The criticism made about the three mechanisms can all be related to a criticism of contestable interests that deny the possibility of neutrality.

Looking back to the different roles of the citizens in table 3, we see that except the role of the citizen as a partner for the construction of socio-technical system, they all imply that the participants in a particular mechanism be neutral. What is considered neutral differs: 'ideology' for officials is 'independence' for activists, 'economic interests' for activists is 'economic rationality' for officials. But neither activists nor officials would define the public good as something linked to a particular social group²³. The tension concerning the construction of the public good and the nature of interests is most visible if one considers

²¹ As a consequence, numerous comments on these events questioned the representativity of the panels.'

²² all these expressions were heard during interviews with scientists and Grenoble councilors.

²³ Moody and Thevenot make a similar remark about the importance of the neutrality in the construction of the public good in France (Moody and Thevenot, 2000)

the position of social scientists, and especially STS scholars. The position they articulate supposes that each participant recognizes his interests and presents them during a discussion, by reflecting upon his own subjectivities constructed by his multiple attachments (Gomart and Hennion, 1998). The public should represent the variety of competing opinions, thus including the activists (although they have continuously refused to participate), so that science and policy can be constructed in a 'hybrid forum' (Callon, 2003). The notion of interest or prejudice is thus entirely redefined, in a way that does not follow the understanding of many of the other actors.

There is a distance between two ways of seeing the construction of the public good. One defines it a process free from interests, whereas the other supposes that everyone recognize his own interests. That the social scientists be the only ones who endorse the latter vision renders their position difficult.

VI. Conclusion : Implications for STS

In this paper, we used three recent public engagement mechanisms in nanotechnology to show that different expectations of public engagement manifest themselves. This multiplicity of meanings causes tensions in the understanding of the participatory attempts. This study would have to be continued to analyze the recommendations or propositions that were released, and their use by officials, scientists and industrialists. Another dimension we did not explore here is the reaction of the members of the public - panel members and participants in public debate. Even with these limitations, the analysis we proposed leads to ask questions about the role of STS in public engagement.

If we adopt an STS viewpoint and thus choose to favour the integration of public inputs into political decision-making, this analysis makes clear that its implementation is not straightforward. The two tensions we identified oppose the STS position with that of the other actors: the construction of socio-technical systems and the construction of objectivity as defined by STSers are not shared.

A clarification work would be a necessary condition to go further and ensure that every mechanism designed to provide inputs is taken into account. Dealing with the most radical activists is a complex problem. They seem to reject the STS vision of public

engagement while knowing what it is and what it would imply, namely giving up the independent position ‘from nowhere’, that they think is necessary to exercise social critique. Although it is more than likely that the activists will never accept STS propositions of public engagement, presenting clearly the objectives of STS involvement could show that STS academics and practitioners will not try to ensure acceptability of unquestioned technologies, even if they are funded by administrations to work on the social studies of nanotechnology.

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