FROM SCIENCE AND SOCIETY TO SCIENCE IN SOCIETY: TOWARDS A FRAMEWORK FOR 'CO-OPERATIVE RESEARCH'

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EXECUTIVE SUMMARY

Introduction

We live in a time of ever-increasing opportunities and challenges associated with new science and technology. As a result, there is growing interest and attention to the relationships between research, innovation and society. Nowhere is this more true, than in the organisation and prioritisation of scientific research and technological innovation themselves and in the use of science as an input to wider policy making.

Real contrasts and tensions emerge between high level policy agendas concerned with the '***knowledge based society***', with the stewardship of '***democratic governance***' and with the pursuit of '***sustainability***' and '***precaution***' in science and technology. These are key areas of interest and responsibility for the European Commission's Directorate General for Research (DG RTD). This report arises from intensive discussions at an innovative two-day ***'Gover'Science' Seminar*** organised by the Governance and Scientific Advice Unit of DG RTD in November 2005. The Seminar focused on a variety of complex and hotly contested questions that are central to current efforts to move Europe towards a 'knowledge based society'. ***What is the appropriate role for science in the governance of modern society? How should research itself be governed? What is the function of public engagement?*** Attention focused on a variety of detailed topical areas: including the communication of risk, the provision of science advice, relations between government, industry and civil society and the best ways to balance involvement by experts, stakeholders and citizens. As leading figures in the European research community in this area, the 37 participants brought deep specialist expertise and broad practical experience covering a range of relevant disciplines, national contexts and sectoral backgrounds. The event itself took the form of a novel form of 'open space' participatory workshop. This allowed participants to raise and pursue their own interests in discussion and draw their own conclusions. The self-organised process gave a high degree of autonomy from the organiser's own agenda. Although there was no requirement for consensus, there emerged a ***clear and coherent central message***, with a series of practical implications.

[1] The full report will be posted soon on the Science and Society web-site and its content reflected as much as possible in the preparation of the 7th Framework Programme.

As the process unfolded, this focused most intensively on the role of '***public engagement***' in the governance of research and in the science advice process. In one sentence, the bottom line recommendation was that ***European activities in these areas should be informed by, and should themselves incorporate, more effective forms of symmetrical two-way deliberation, empowering inputs from a wide diversity of social actors. In short, this might be thought of as a move towards a new style of 'co-operative research'.***

The present innovative 'Gover'Science' Seminar itself offers an example of just this kind of process. Drawing on a wide diversity of freely-expressed viewpoints, the present report and executive summary has been produced by an independent Rapporteur, with the aim of highlighting the main lessons that can be drawn from the Seminar discussions for policy making and further research. The main body of the report syntheses the key themes in the Seminar discussion, in three principal sections.

- ***Section One*** examines the background to science governance activities in Europe.
- ***Section Two*** looks at the strengths and weaknesses of emerging developments – including areas of agreement and disagreement in discussion at the Seminar and the identification of key current challenges for policy making.
- ***Section Three*** looks to the future: drawing lessons, identifying opportunities and pointing towards this new paradigm of '***co-operative research***'.

The whole account is closely cross-referenced to a series of detailed ***Annexes***. Using hyperlinks (in the electronic version of this report), these fully document the findings from each session of the seminar and show how each underpins the discussion and conclusions in the main report.

The principal elements in the argument are outlined in the ensuing passages of this executive summary. Both here and in the main body of the report, key points are indicated in bold italicised font. A shorter bullet-point summary is provided in the Conclusion.

Shared Understandings

The governance of European science and the role of science in European governance take an enormous variety of different forms and play out in an even greater diversity of contexts. The baroque institutional environments, widely distributed consequences, strong vested interests and sometimes hotly contested values serve further to compound the complexity. Against this background, it is difficult to make clear generalisations, let alone draw concrete practical conclusions. Despite this, there emerges a clear picture of growing stated commitments on the part of government, industry, civil society and the research community itself, to different forms 'public engagement'.

This rising interest and proliferating activity is understood in contrasting ways under different perspectives. To some, it is about enhancing equity and democracy in the 'knowledge society'. Elsewhere, it is about fostering trust and credibility in order to further competitiveness. For others, it is about informing more 'sustainable' or 'precautionary' decisions and policies. ***Each view holds contrasting implications for the design, implementation and evaluation of public engagement in science***. What seems clear, however, is a consistent pressure away from minimal 'instrumental' tinkering with established procedures for policy 'consultation' and public reassurance – and towards more 'substantive' commitments to genuine stakeholder involvement and citizen participation.

Although they can take a multitude of equally legitimate forms in different contexts, these more robust forms of public engagement display a number of identifiable qualities:

- They emphasise engaging with a ***wider diversity of social actors*** (rather than just the usual directly affected 'users' or 'customers').
- They involve ***symmetrical two-way dialogue*** (rather than the *pro forma* elicitation of 'responses' to pre-formed proposals).
- They embody ***open in-depth deliberation*** (minimising constraints on the issues or options introduced for consideration or the styles in which they can be discussed).
- They prioritise ***empowerment and agency*** on the part of the participants' themselves (rather than the sponsors – including a say in the design, scope and focus of the engagement process itself).

Examples of the different concrete approaches to public engagement mentioned or implicit at the Seminar include: consensus conferences, participatory modelling, science shops, citizen's panels, stakeholder commissions, transdisciplinary collaboration, focus groups and deliberative polls. Each of these different approaches may variously be applied to different contexts, stages or issues in science governance, including: risk regulation, technology policy, expert advice and science communication. Beyond this, public engagement refers to an over-arching continuous aspect of the governance process, in which these kinds of approaches form elements and inputs.

Seen in this way, increased public engagement holds out the prospect for a series of different benefits. ***It is emphatically not about second-guessing the technical expertise of scientists and engineers***. Rather, it is about acknowledging the fact that science and innovation are social, cultural and institutional – as well as technical and specialist – activities. As such, ***public engagement offers a way to be more accountable for the particular values and interests, which underpin both the governance of science and the general use of science in governance***. What are the priorities and purposes, which justify the allocation of resources to different areas of innovation or lines of enquiry? What are the assumptions that inform the interpretation of scientific advice, concerning the behaviour of institutions or technologies in the real world?

In short, public engagement is about the '***framing***' of scientific evidence and technological projects, not about the details of specialist methods or technical analysis. It is about being as rigorous and careful in validating the questions, as science itself is rightly respected for being in approaching the answers. One especially important implication of this emerging shared understanding, is that ***public engagement holds greatest value when it occurs 'upstream' – at the earliest stages in the process of research or science-informed policy making***. It is at this stage when the 'framing' of the research or policy developments remains relatively flexible and open to influence. If engagement is undertaken too late, then it is more likely to be constrained by commitments that have already been made – being less about 'deciding what to do' and more about 'deciding how to do it'. The resulting political pressures to either limit or ignore the role of public engagement can be highly corrosive of the credibility of the organisations involved, and of wider public trust.

Key Challenges

Of course, it is at this early stage when the nature of future opportunities and challenges are most uncertain. This is sometimes held to present particular difficulties for public engagement: ***how can such wider involvement be useful when even the experts are unsure of the possibilities?*** The answer to this, is that 'ambiguity', 'uncertainty' and 'ignorance' about the implications of science and technology themselves present compelling

incentives for more (not less) social engagement. Individual specialist disciplines (like 'risk assessment') may offer powerful and effective responses to 'risk' in a narrow sense. But these wider and more intractable forms of incertitude demand attention under a more plural array of different forms of knowledge. ***Public engagement is about just this: including a diversity of knowledges and experience in order to inform more robust long term choices***.

Even where we are unsure of the detailed consequences of scientific or technological activities, we may still scrutinise the assumptions, purposes and values that are driving these developments. It is only through public engagement 'upstream', at the earliest stages in science, innovation and policy making that we can ensure that the right questions have been asked, that a full range of interests have been reflected and that society as a whole is effectively learning of the real opportunities and challenges.

Yet the type of discussion that can arise in public engagement may itself pose significant challenges. ***The focus often centres in one way or another on the exercise of political and economic power in the field of science and technology***. The resulting queries over 'who?' and 'why?' may sometimes be rather uncomfortable for incumbent decision makers and institutions. Who is accredited to engage in discussions of science and technology? Who asks the questions to be researched? Who prioritises the allocation of resources? Who makes the assumptions in interpreting the answers? How and when are results to be communicated and to whom? Which knowledge is held privately and subject to proprietary rights and which is placed in the public domain? What is stated and what left unsaid?

Perhaps partly as a reflection of this, the Seminar identified that ***a significant obstacle to public engagement often lies in the prevailing attitudes of senior figures – and wider cultural perspectives – in the institutions concerned with the governance of science and technology***. In particular, there is in some such quarters a persistent scepticism over the status of public knowledge and understanding. There are tensions between institutional priorities and more widespread public values and interests. There is a reluctance to commit to open self-reflection and the sharing of power and influence.

Despite the high profile afforded to the language of 'involving stakeholders', 'public participation' and 'social inclusion', such perspectives serve to impede progress in achieving genuine public engagement as a pervasive feature of science governance. Each individual exercise tends to remain isolated and often decoupled from decision making. ***A constant pressure is exerted on those exercises that are undertaken, such that they are forestalled, or become diluted, diverted, constrained, or eventually neglected in the subsequent policy process***.

Lessons and Responsibilities

But contemporary attitudes in high-level policy making are not the only difficulty faced in 'mainstreaming' public engagement in science governance. The Seminar also identified ways in which ***advocates and practitioners may themselves also unintentionally contribute to the current isolated state of genuine public engagement and low level of general uptake***.

For instance, a tendency to over-promise and over-claim may sometimes raise unjustified expectations. ***Just because public engagement offers an effective response to challenges of 'framing' science and technological activities, does not mean it is a***

panacea for wider difficulties of credibility and trust. Inevitable shortfalls in the delivery of overstated promises, can serve to compound scepticism.

Likewise, there can sometimes be ***questions over independence and professionalism*** and a lack of ***commitment to evaluation***. Indeed, there is a general lack of attention to the complexities in the way in which evaluation itself necessarily depends on perspective and context. Engagement processes can sometimes be overly complex. Greater attention might be given to the proportionality achieved in the costs and benefits of engagement. Much could be done to be cautious, self-critical, realistic and pragmatic on these issues.

Beyond this, insufficient consideration is often given to the wider communication of science – both as part of individual exercises and in the wider encompassing processes of public engagement. ***Effective public engagement can take place only against a wider background of successful science communication***. The role of the media is especially important in this respect, requiring greater attention to the exercise of responsibilities, both in the accurate handling of scientific detail and in the frank and measured treatment of uncertainties. With the development of the Internet, this also presents a series of challenges and opportunities – especially in relation to the 'scaling up' of public engagement to address higher levels in the governance process. In seeking to learn the lessons for developing more generalised two-way dialogue in science communication, much can be learned from the accumulated hard-won experience gained by the 'science shop' movement.

A further crucial series of questions concern the need for systematic reflection and evaluation on the strengths and weaknesses of public engagement, and the nature of the relationship between more direct participatory forms of public engagement, and the wider institutions of representative democracy. Although addressing the practical needs of policy makers for robust methods of appraisal, evaluation presents a series of neglected difficulties. Rather than being a simple question of identifying 'best practice', important aspects of evaluation depend on the context and perspective in question. With respect to the particular issue of the representativeness of participatory process, this also depends on what is meant by 'representation' in the first place. Again, the answer depends on the context and viewpoint. In the end, the conclusion must be that care should be exercised with overly simplistic notions of 'evaluation' or 'representation' and that greater efforts are required to understand the ways in which these might legitimately vary.

In practice, the relationship between representative democracy and participatory methods becomes most clear and complementary, when engagement is approached as a means to 'open up' the range of possible decisions, rather than as a way to close this down. Choice among the options thereby identified then becomes a clearer matter of democratic accountability. In other words, participatory approaches are often better seen as an aid to 'decision making' than as a means of 'decision taking'. In the end, ***the appropriate relationship between participatory process and representative democracy is best treated as an explicit focus of attention in participation itself.***

Against this background, the responsibilities for 'mainstreaming' public engagement in science governance do not lie only with senior decision makers. There is much that researchers, advocates and practitioners may also do to be more effective and persuasive. ***In particular, more could be done to address high-level policy makers in a language that they can readily understand and by reference to their own interests and values***. This does not necessarily mean adopting these same interests and values in an instrumental fashion. Rather, it is a matter of the effective communication of the wider 'business case' for participation – taking seriously and treating with respect the pressing nature of real institutional priorities and constraints.

Designs and Possibilities

Drawing on this discussion, a number of more specific practical conclusions arise for the design both of general frameworks and individual exercises in public engagement. These can be discussed according to a series of frequently raised questions in discussions over public engagement:

- ***When to engage?*** This can occur at all stages in the governance process, but is particularly important at the earliest steps in 'framing'. Even if outcomes are uncertain, attention can focus on the driving purposes and visions.
- ***At what scale?*** Public engagement is not just about one-off individual exercises, but involves a coherent, continuous, nested, multi-scale process permeating different levels of governance.
- ***What to prioritise?*** Be clear whether the primary purpose is to enhance: *(i)* the democratic process; *(ii)* the state of knowledge or protection; or *(iii)* levels of trust and credibility in particular policies. Either way, social interests and values frame the technical details, not the other way around.
- ***Who does the framing?*** Ensure a high degree of autonomy from initiating or sponsoring bodies. Separate the functions of stakeholder oversight in design and the participatory process itself.
- ***Who to include?*** Be clear and realistic about goals and recruit accordingly. Allow participants to identify gaps. Avoid overblown claims, aspirations or criticisms concerning representativeness.
- ***Which balance to strike?*** Be proportionate in the balancing of costs and benefits of the process itself and apply a 'principle of responsibility' to the consequent recommendations.
- ***What is independence?*** This lies less in efforts at definitive 'objectivity' or 'neutrality' than in the pluralism and diversity of the perspectives involved. Provide participants with freedom to negotiate, but ensure that effective links are retained with the constituencies they represent.
- ***How to convey outcomes?*** Depending on purpose and context, engagement may aim at 'closing down' or 'opening up' the scope of wider policy discussion. In the former, outcomes are presented as prescriptive recommendations. In the latter they are plural, with explicit conditions attached.

Looking Forward

Taken together, these elements of effective design for public engagement address the full range of contexts, stages and scales in the science governance process. In particular, they span distinctions between fields of research policy, science advice and risk regulation with which this Seminar was concerned. However there also emerged in the Seminar discussions a bigger picture concerning the general orientation of scientific research and technological innovation activities. Here, it is important to recall the newly intensified governance agendas noted at the beginning of this executive summary. Current European policy-making is driving towards a competitive 'knowledge based society', whilst striving to ensure effective stewardship of 'democratic governance' and active efforts to promote 'sustainability' and 'precaution' in science and technology. ***These present a series of powerful imperatives for radical innovation – and require a commitment to change – in the science governance system***.

Some of the principal implications that were discussed at the Seminar, might be summed up as a move towards an emerging paradigm of '***co-operative research***'. ***This is a new form of research process, which involves both researchers and non-researchers in close***

co-operative engagement. It encompasses a full spectrum of approaches, frameworks and methods, from interdisciplinary collaboration through stakeholder negotiation to transdisciplinary deliberation and citizen participation.

In particular, co-operative research requires effective engagement with stakeholders and public constituencies in order to explore the driving aims and purposes, the alternative orientations, and the wider social and environmental implications of scientific research and technological innovation. To these ends, we may identify a series of concrete distinguishing features of co-operative research.

- The process of '***social learning***' enabled in co-operative research is as important as the scientific and technological outcomes that arise.
- The way in which co-operative research is '***framed***' is an ***explicit and autonomous*** part of the research process itself – and not imposed from outside.
- Co-operative research treats different forms of ***knowledge*** and ***understanding*** in a ***symmetrical*** fashion, and affords equal status to contending social values and interests.
- Co-operative research allows for more ***effective integration*** of currently artificially separate processes of research ***design, implementation*** and ***dissemination***.
- Co-operative research includes a ***wide variety of specific approaches*** to inclusive engagement in different contexts and at different stages, levels and scales in science governance.
- Co-operative research ***clarifies the essential role of science***: not as a definitive body of knowledge, but as a systematic way to ensure effective communication, transparency and accountability.
- Co-operative research embodies a richer, more positive understanding of the ***facilitatory role of social science***, both in framing, as well as in presenting research and appraising the social impacts.
- The development of practices for co-operative research is itself an important ***focus for further research***, and offers important arenas for ***innovation*** and ***experimentation*** on these very practices.

The report concludes by identifying a series of specific strategic research needs of particular relevance to DG RTD, followed by a bullet point summary of the main elements in the argument. In the end, the key challenge in realising the full promise of co-operative research for the wider process of science governance, lies in a shift in our basic understanding of the relationship between science and society. This applies as much to social scientists, practitioners and specialist policy makers in this field, as it does to senior decision takers, wider stakeholders and the general public. In short, we need to move away from the somewhat fragmented, introspective and reactive preoccupations of ***science and society***, to a more integrated, open and proactive understanding of the inescapable place of ***science in society***.