Let Them Brew!

Reflexivity, and Division of Labour in Deliberation for Science and Technology Governance

Yun Jeong Lee

DPhil in Science and Technology Policy
University of Sussex

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I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree

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Yun Jeong Lee

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Yun Jeong Lee

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This thesis examines the theoretical premises of and ways that macro deliberative approaches to decision making function in application to specific instances of science and technology governance. Macro-level deliberations constitute complex, extended, distributed decision making processes, in contrast to individual micro deliberation exercises undertaken in particular settings. Macro deliberations employ the mechanism of 'division of labour' in terms of actors, tasks and methods in order to secure the two essential qualities of 'inclusiveness' and 'deliberativeness' – thus resolving the inherent tension between number of participants and deep discussion. Accordingly, the thesis focuses on the ways in which this paradoxical mechanism of 'inclusion by division' functions in macro deliberations. An interrogation of two UK nationwide public deliberation cases – GM Dialogue (on GM crops) and the CoRWM process (on radioactive waste) – sheds light on the significant role of reflexivity in such macro deliberative approaches to decision making.

The thesis adopts a triangulated approach towards both documents and interviews employing contending representations to cross-check the one with the other. In considering the ways in which reflexivity constitutes a critical quality of the process and outcome of division of labour in macro deliberations, the thesis argues that the notion of reflexivity is central to explaining how macro deliberation functions:

The reflective and self-contingent feature of reflexivity enables participants to explore diverse rationales on division of labour through continuous generation of new rationales; this recursive self-reconfiguration process of rationales on division of labour entails an evolutionary development of division of labour. As division of labour is played out not in a static, exogenous fashion, but through a dynamic, endogenous construction process, reflexivity in real-world macro deliberations illuminates some significant contrasts in the ways that 'deliberation' and 'inclusion' take place to those characterised in theory.

Indeed, deliberation emerges in practice as more than just open rational dialogue. In order to understand this more fully, it must be seen in terms of diversity of material, social and political interactions, and relationships – referred to here as 'discursive relations'. In reality, then, inclusion occurs in more emergent ways than intended by design, rather, unfolding as participants engage with each other. In this way, actors' divergent views are cross-reflected and mutually influence each other, not through theoretically-envisaged top-down aggregation but via a kind of endogenous 'fermentation' process. In this way, reflexivity actually makes macro public deliberation a more effectively inclusive and deliberative decision making process.

In short, recognition of this inherent reflexivity in macro deliberations offers practically to aid improved understanding of the complex process of engagement in science and

technology governance. It suggests that we would benefit from shifting our attention somewhat away from the direct provision of strictly prescriptive design protocols towards the construction of better general environments for facilitating more reflexivity, which should enable actors to shape their own reflexive deliberation.
Then let them brew!

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CHAPTER 1

PUBLIC DELIBERATION IN SCIENCE AND TECHNOLOGY GOVERNANCE IN THE UK (1997–2006)[1]

1.1 Introduction

This study's theoretical and empirical research seeks to answer the question of the implications of reflexivity in the understanding of the division of labour in macro-risk deliberations. Taking this question as its starting point, the study locates its context in the UK political arena from the late 1990s to the mid 2000s – a period in which public deliberative exercises were practiced more than had been the case hitherto, both in terms of frequency as well as in the area of Science and Technology (ST) governance. Such a change appears to have taken place as a reaction against the pervious dominant approach of the technocracy, and aimed at a better mode of governance in the development of ST (Wynne 2006; Chilvers 2007). This was particularly so in relation to policy making on technological risk-related regulation.[2]

Following a series of policy failures in various ST governance areas such as the bovine spongiform encephalopathy (BSE) crisis, and deadlock in government strategies for GM technology and radioactive waste management, the trust of the British public in policy makers' ability and intentions with regard to the good governance of ST diminished. In the mean time, it became clearer that there was increased public desire to participate in the policy making process more directly. The government side also realised that a change in the mode of governance was necessary in order to move away from its position of deadlock and lack of public trust. Therefore, across different ST development areas, there was a general acknowledgment of societal demand for public engagement in ST governance.

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[1] This study addresses the specific period 1997 to 2006 for the following reasons: it begins with Blair's New Labour party gaining power in 1997, one year after Bovine Spongiform Encephalitis (BSE) broke out in 1996, and covers the formative years of both macro-deliberation exercises examined later – GM Dialogue and Committee on Radioactive Waste Management (CoRWM). GM Dialogue was discussed from 2001 the actual processes unfolding in 2003. CoRWM was commissioned in 2003, publishing its final report in July 2006.

[2] This thesis discusses issues around ST governance in general, particularly from the late 1990s to the mid-2000s. Many recent issues around UK ST governance have been closely associated with newly emerging technologies and technological risk. Therefore, the discussion in this thesis addresses both (controversial) science and technology governance, and technological risk governance.

Broad societal support for and interest in the public deliberative approach to the ST policy making process notwithstanding, there were conflicting notions around the design and delivery of such a new mode of public engaged decision making (Chilvers 2008). Consequently, particular design preferences have been exercised, and various tensions and struggles have been reflected in practical deliberation exercises – e.g. GM Dialogue and CoRWM – in the UK over the last two decades or so.

Given this context of broad support for change in the ST policy making process – towards public deliberative decision making and yet with varying perspectives on purposes and expectations around innovation in the mode of ST governance – the present study addresses the ways in which different public deliberation mechanisms operate in the actual context of ST policy making.

Public deliberation mechanisms refer to the various forms of political decision-making processes that involve citizens' deliberation such as the consensus conferences, deliberative polls, and citizens' juries that have been implemented in recent decades. Such forms of political decision making share their essential principles with deliberative democracy theory (Pellizzoni 2001; Wilsdon and Willis 2004; Hendriks 2004; Chilvers 2008; Lövbrand et al. 2011). In spite of the difficulty in finding a single shared conception of deliberative democracy held by the many political theorists (Elster 1998; Pellizzoni 2001; Hendriks 2004), understanding the qualities that it seeks would help portray how distinct it is from other forms of governance.

The core set of qualities that deliberative democracy pursues comprises 'inclusiveness' and 'deliberativeness' (Elster 1998; Bloomfield et al. 2001; Hendriks 2004). This form of democracy addresses the inclusion of wider society in political decision making that extends beyond the narrow realm of the experts or elite; a process that it has been argued should proceed in a deliberative manner rather than as an aggregation of preferences or competition of interests (Pellizzoni 2001; Hendriks 2004). Yet, ironically, there is a tension between these essential twin qualities of deliberative democracy, as it is necessary to restrict the number of participants if the quality of the discussion is not to suffer.

In addressing this tension, among the different approaches to deliberative democracy, 'micro-deliberative democracy' emphasises the potential of in-depth discussion in helping

to ensure the quality of deliberativeness in the decision-making process. Due to this focus on in-depth discussion in the interests of a high level of deliberativeness, participation is inevitably restricted to a relatively small number of people with a tightly regulated procedure in a specific setting (Hendriks 2004; Parkinson 2006). On the other hand, proponents of macro-deliberative democracy believe that it is possible for many people to be included in and deliberate on a single decision-making process, by sharing overall deliberation process and allocating participants to different tasks using various micro-deliberative methods. Such a notion of 'division of labour' has been employed in this approach as a means of maximising in-depth discussion aimed at deliberativeness, as well as facilitating the engagement of a wide range of voices in discussion without compromising on inclusiveness. However, it is necessary to examine this concept more closely because it would seem to lead to a different tension, that between division and inclusion.

This thesis begins by examining how the alternative macro approach to micro-deliberative democracy might work in an actual deliberative process aimed at technological risk policy making. In so doing, it pays attention to the operation of reflexivity in macro deliberation exercises. In a thorough discussion of the issues that arise in considering reflexivity, Lynch (2000) argues that reflexivity is often claimed to be "a methodological virtue and source of insight" (p. 26), despite the difficulty of seeing "just what is being claimed" (ibid. p. 26). The concept of reflexivity indeed varies depending on the area in which it is interpreted and applied (ibid.). Given the variations in understanding and usage of reflexivity, this thesis confines its scope of study regarding reflexivity to indentifying 'its implications in the understanding of the divisions of labour of macro risk deliberations'.

The primary concept of reflexivity of this thesis pays attention to subject's reflection and its contingent outcome: reflexivity arises while a subject continuously reflects on (responses to) the environment (other subjects and its condition). Subject' reflection on other subjects and the condition, projects its representations (meanings and relationships) on to the environment. Consequently, subject's earlier representations serve to re-construct its own environment, which in turn, influences the subject itself by re-conditioning its subsequent reflections. Lynch (2000, p. 28) highlights this contingent quality of reflexivity as "some sort of turning back". This forms a common element across different conceptions of

reflexivity in the social sciences[3] as well as the basis for the general usage of the term in this thesis. In this sense, this inherent property of human interaction can be described as being reflective, endogenous, self-contingent and self-influential.

This property explains one of the distinctive characteristics of human interaction in society – the way in which knowledge about society is produced. As recognised in Giddens' famous 'double hermeneutic' (1984 p. 284), knowledge itself (and the processes through which it is produced) is socially mediated, social phenomena constitute both object and subject of any knowledge about society. As multiple actors mutually know each other as objects and subjects, the reflexivity iterates recursively.

Therefore, one specific element in understanding this relationship between reflexivity and social knowledge production in this thesis, concerns the plural identities of subjects. Is the 'subject' of specific bodies of knowledge concerning science and technology (ST), for instance, best understood as an individual, an organisation, a wider institution or an entire discourse. Each yields potentially contrasting social ontologies[4]. Reflexivity in this sense arises not only from the level of individual subject's reflection, but also from inter-reflections (or interactions) of agents across and within multiple nested social layers – of the kind that may be found in an ST system. This view of reflexivity is especially relevant to any attempt to understand the implications of contrasting divisions of labour in macro deliberation mechanisms.

The next section comprises a brief account of how the above notion of reflexivity is associated with the concept of division of labour in macro deliberation, as corroborated in the ensuing part of the thesis through the examination of empirical data.

Reflexivity has a significant influence on the process and outcome of division of labour in such macro deliberation. It is a unique quality that may be further developed while the various elements of macro deliberation interact with each other. In other words, while the

[3] Lynch (2000) categorises the various concepts of reflexivity discussed in the literatures as "mechanical, substantive, methodological, meta-theoretical, interpretative, and ethnomethodological." However, (as Lynch himself admits) the categorisations in his inventory of reflexivity are neither mutually exclusive nor exhaustive, and thus the conception of reflexivity employed in the present thesis may encompass any given one or combination of them.

[4] Adopting divergent ontologies allows a subject to exist with its different boundaries(identities). In other words, under different ontology, a subject is a different being. This concept is discussed in detail in Chapter 2 Theoretical Consideration.

internal and external elements of macro deliberation inter-reflect each other, the results re-condition subsequent reflections. And due to the recursive reflection process and self-contingent nature of reflexivity in the inter-reflection of participants (and wider stakeholders), a prolonged operation of the procedure continuously produces various rationales for the division of labour itself – generating different ideas on how to divide (or compose) the overall deliberation process. Participants (individually and collectively) develop divergent views on who should play what kind of role by what method. Through the recursive process of inter-reflection among participants, their ideas about the division of labour are changed and developed, meaning that overall deliberation becomes an evolutionary process.

Indeed, this inherent property arising from fundamental human interactions emerges more explicitly at the macro level of deliberative mechanism than the micro one. This means that despite the inherent nature of reflexivity, it is possible to promote this property and macro deliberative mechanism may support the condition for encouraging it. Therefore, the more explicit and deliberate form of reflexivity may more readily be achieved in a deliberative process that is constituted of plural and diverse elements in a less formally structured mechanism.

By explicitly recognising and promoting this inherent property of reflexivity, participants are able to deliberate and explore more effectively the widely divergent views concerning the 'labour' of deliberation (what to discuss, who should discuss it, and what methods should be used). This should in turn make it possible to be integrated more effectively into an overall process of macro deliberation, divergent understandings in different micro-deliberative exercises, concerning the appropriate or prevailing division of labour. This illuminates the role of reflexivity in terms of the way in which division of labour takes place in macro risk deliberation.

In short, it is reflexivity that enables macro deliberation to function. And paradoxically, macro deliberation facilitates reflexivity. Detailed evidence and discussion to support this argument proceed in the following chapters of this thesis.

1.2 Changes in UK Science and Technology Governance

Before exploring this study's key research subject – an inquiry into deliberative mechanisms – this section elaborates the context of the deliberative turn in ST governance during the last few years of the 20th century.

'Deliberative turn' (Dryzek 2000), 'two-way public engagement with science' (Wynne 2006), 'citizen engagement' (Horlick-Jones 2007), 'participatory turn' (Chilvers 2007; 2008), and 'participatory deliberation' (Stirling 2008) are some of the terms coined to describe the changes in ST governance that emerged in many democratic countries (Horlick-Jones 2007) in the late 1990s. Such a variety of articulations notwithstanding, the aforementioned key terms characterise a new mode of ST policy making designed to engage wider sections of society – the public and stakeholders – in the ST policy decision making process. This innovative means of decision making was applied in particular to policy areas that were closely associated with technological risk: areas that in many cases involve uncertainty as well as conflicting interests and values, which therefore often cause controversy.

While there were many causes of such changes, the BSE crisis of 1996 may be regarded as the event that most shook up the UK policy making environment in the late 1990s, provoking debate around a new mode of ST governance and suggesting a need to rethink the existing ST regulation system. However, the BSE crisis was not a single unfortunate and discrete episode, but a kind of symbolic juncture representing an accumulation of policy failures in ST governance. The political environment that brought about such changes was dubbed as the era of public mistrust in 'public institutions' (Löfstedt and Horlick-Jones 1999), in 'scientists' (Wilsdon and Willis 2004) and/or in 'science [itself]' (Wynne 2006). Due to worldwide experience of a series of policy failures in ST governance at the hands of governing agencies (Jasanoff 1997; 2003), for example, the Three Mile Island, Chernobyl, and Bhopal accidents; the genetically modified organism (GMO) debate; and mounting uncertainty around risk issues, the scientific expert community came to the realisation that it must justify its knowledge claims to the wider society (Wilsdon and Willis 2004; Lövbrand et al. 2011). Consequently, UK ST policy making circles could no longer reasonably deny the involvement of wider society in decision making on ST policy (Stirling 2008).

A number of different kinds of argument aimed at public engagement in ST regulation were advocated by various stakeholders with the aim of better addressing principles of openness and transparency (Irwin 2006; Wynne 2006). This approach was inaugurated with guidelines for science advice in policymaking (*The Use of Scientific Advice in Policy Making*)[5] in 1997 by Lord Robert May, who was at that time the government's chief scientific advisor (1995–2000). This policy document addressed the importance of openness in the science policy making process, and was followed by a series of similar proposals from various influential institutions advocating public engagement.

The Royal Commission on Environmental Pollution (RCEP) published a report in 1998, *Setting Environmental Standards,* addressing this new style of governance (Irwin 2006). The House of Lords Select Committee on Science and Technology also contributed to the debate, addressing the need of a "new mood for dialogue" due to the "crisis of public confidence," in their third report on *Science and Society* (2000). Such rhetoric was then adopted in the wider context, at European Union (EU) level, as a foundation for general governance. In July 2001, the European Commission's White Paper on Governance (2001) addresses the new mode of governance, proposing five principles 'openness, participation, accountability, effectiveness and coherence' for 'good governance'. In the same year, the very heart of UK government ST policymaking, the Office for Science and Technology (OST), published its *Code of Practice for Scientific Advisory Committees* (2001), which encouraged broad participation in science advisory committees. It was followed by the report *Risk: Improving Government's Capability to Handle Risk and Uncertainty,* which was published by the Prime Minister's Cabinet Office Strategy Unit the following year (2002). One of its six suggestions for successful risk handling is that departments and agencies should gain the public's trust before offering advice. In order to do this, it recommends "openness and transparency, wider engagement of stakeholders and the public, wider availability of choice, and more use of 'arm's-length' bodies" (Report Summary, p. 3).

'Openness' (OST 1997); 'crisis of public confidence' (House of Lords 2000); 'democratic governance' (The European Commission 2001); 'broad participation in scientific advice' (OST 2001); and 'public trust for risk and uncertainty' (Cabinet Office 2002) are some of the key terms employed by various agencies as foundations in their proposals for change in ST governance. Such words demonstrate the problem in- or direction of change for- ST

[5] Its second edition was published in July 2000.

policy making that those key agencies recognised as the central issue. Yet those different words lead up to an essential concept - 'public engagement'. Such differing but interrelated notions underpinned various rationales reflecting different priorities that were adopted by different perspectives in the debate on a public deliberative approach.

1.3 Various Rationales for Public Engagement in Science and Technology Governance

Given that there were different bases for the construction and operation of a range of public deliberation mechanisms, in setting the scene, this opening chapter focuses on the various rationales that underpinned such a deliberative turn in UK ST governance in the 1990s.

Fiorino(1990) addresses existing contrasting arguments on the rationale for public participation in technological risk governance for environmental decision making, that is, 'normative', 'substantive' and 'instrumental'. Some consider that the public should be involved in political decision making in the interests of democratic process; others think that public participation in policy making delivers substantive benefits in improved outcomes; and yet others suggest that engaging the public in the decision-making process constitutes an instrument for the achievement of specific policy aims such as public acceptance of final decisions (ibid.). Stirling (2005; 2008) further develops and applies this framework to elucidate different bases for the 'social appraisal of technology'. He (2008) elaborates on Fiorino's framework, arguing that three distinct rationales can be employed for different reasons from different perspectives and "any given cultural perspective [of institution]" (e.g. that of the UK Treasury or Department of Environment[6]) (p. 273) can accommodate all of three normative, substantive, and instrumental rationales in various contexts.

First, it can be argued that the democratic normative perspective in most cases forms the basis of the rationale for public engagement in ST governance, as in the aforementioned proposals (e.g. OST 1997, 2001; RCEP 1998; House of Lords 2000; The European

[6] Stirling (2008) cites these examples based on the respective documents HM Treasury (2004) *Science & innovation investment framework 2004–2014*, and DEFRA (2004) *Evidence and innovation: Defra's needs from the sciences over the next 10 years.*

Commission 2001; Cabinet Office 2002). Horlick-Jones et al. (2007) summarise the trend for 'citizen engagement' in the interests of 'good governance' and the 'democratic process', which was a response to the 'deficits of democracy', in addressing the "shortage of knowledge, trust, and legitimacy" (pp. 1–2). Kemp et al. (2006) in the same vein, also find that this recognition of the need for actual change in public engagement in 'radioactive waste management', and for further 'good governance' and 'sustainable futures', is an issue of "legitimacy and trust" (p. 1030). These commentators observe that this deliberative turn in ST governance was strongly based on democratic values.

'Citizen empowerment, equity, social justice (Chilvers 2007)', 'the scope, resourcing, openness, representativeness, accessibility, facilitation, transparency, or accountability of engagement (Stirling 2008)' were the terms for the qualities that would determine the democratic values of such new modes of ST policy making process. Therefore, in accordance with the democratic imperative, public engagement in the ST policy making process is considered to be right thing as long as it meets such criteria (Stirling 2008). 'The right process' is thus the most important aim for proponents of this perspective (Wilsdon and Willis 2004; Stirling 2008; Renn et al. 1995). For example, the European Commission's White Paper on Governance (2001) seems to suggest that democracy is the overarching prerequisite of good governance:

> "Five principles underpin good governance and the changes proposed in this White Paper: *openness, participation, accountability, effectiveness and coherence*. Each principle is important for establishing more democratic governance […]" (The European Commission 2001, p. 10)

In particular, as an arena in which scientific experts have traditionally dominated, a rationale for including the public and other stakeholders in the decision-making process based on the principle of openness and transparency would seem to reflect the democratic interests of equity, empowerment, legitimacy and accountability (Kemp et al. 2006; Chilvers 2007; Stirling 2008; Lövbrand et al. 2011).

One possible counterpart of this new mode of ST governance is 'technocracy' (Pellizzoni 2001; Chilvers 2008; Stirling 2008). Technocracy is the conventional approach to ST decision making whereby it is considered that only expert knowledge can legitimately contribute to decisions (Chilvers 2008; Stirling 2008; Lövbrand et al. 2011). Pellizzoni (2001) cites Dahl (1985) and Beck (1992) as examples of those who oppose this notion and

warn of the "anti-democratic and dysfunctional consequences of ever-increasing reliance on technocrats and bureaucrats, and they call for changes to be made to the political institutions and the democratization of science" (p. 64). Lövbrand et al. (2011, p. 475) articulate the reaction against technocratic dominance in terms of "efforts to democratize scientific expertise." This stance attempts to meet perceived societal demand for the questioning of the legitimacy of scientific expert decision making and, thus makes a case for the right of the public (and other stakeholders) to participate in decision making.

Another perspective on the rationale for public engagement in ST governance acknowledges the substantive benefits of, for example, quality and competence (Chilvers 2007), and social robustness (Stirling 2008) in decision making. Such advocates argue for the inclusion of wider social knowledge, values, and interests in political decision making in ST governance on the distinctive grounds that these will result in substantively better decision outcomes. This substantive rationale gains credence in the area of technological risk associated with uncertainty in particular (Fiorino 1990; Stirling 1998; Wilsdon and Willis 2004; Chilvers 2007). In this regard, Stirling (2008) argues that the precautionary principle helps condition forms of technology appraisal that include greater public participation in the interests of a more exhaustive and thorough exploration of issues, problems and their solutions, thus arguably leading to substantively better decisions.

A European Environment Agency (2001) report, '*Late lesson from early warnings: The precautionary principle 1898–2000'* also advocates the precautionary principle in seeking "to provide information of direct use for improving decision-making and public participation." Throughout the analysis of various cases, the report addresses 12 points for improved decision making on broad environmental issues that reflect the Agency's appreciation of 'pluralistic appraisal' (Stirling 2008, p. 271) through the inclusion of the knowledge and values of wider society in precautionary governance on health and environmental issues. The following three points in particular address the substantive perspective underlying the recommendations of the report:

> "7. Evaluate a range of alternative options for meeting needs alongside the option under appraisal, and promote more robust, diverse and adaptable technologies so as to minimise the costs of surprises and maximise the benefits of innovation.
> 8. Ensure use of 'lay' and local knowledge, as well as relevant specialist expertise in the appraisal.
> 9. Take full account of the assumptions and values of different social groups."

(European Environment Agency 2001, p. 169)

The second volume of the report (European Environment Agency 2013) evaluates the changes of the preceding decade in respect of those issues addressed in Volume 1. It concludes that its recommendation of 2001 of "involving a wider range of stakeholders [in order to obtain] a richer body of information from more diverse sources" (p. 670) has been followed, particularly in the areas of public health and environment policy, although few others have been learnt (ibid.).

We now turn to the instrumental rationale, according to which public engagement is seen as a means to achieve particular prior aims. In other words, engaging the public in ST governance could be useful for addressing the specific interests of certain groups, institutions or systems. This notion has been variously articulated in terms of a "more legitimate [decision] and leads to better results" (Fiorino 1990, p. 228)[7]; "enhanced public legitimacy, acceptability and trust in risk decisions" (Chilvers 2007, p. 198); and "specific forms of acceptance, trust or intelligence" (Stirling 2008, p. 271). The legitimacy addressed in this rationale has specific targets. In other words, public engagement in ST governance is legitimate only for specific groups, institutions or systems. Such specific interests and aims are not grounded in the general values or norms of the context in which the claims are made. Therefore, there must be those who are uninterested in, excluded from the benefits of, or even oppose the specifically targeted ends. Stirling (2008) points out that an instrumental rationale is defined in relation to "ends conditioned by [a] proximate power structure" (p. 274), for example, in order to ease "public opposition to those policy commitments like nuclear power, chemical pesticides, and food additives, and, more recently, some aspects of genetic technologies" (Wynne 2006, p. 213). In this line, one specific feature of this, is the focus on generating singular policy prescriptions, rather than a plurality of possible recommendations, each corresponding with alternative perspectives. The instrumental benefits of this singularity lies in its value for legitimating decisions, fostering credibility and providing a resource for blame management in wider political processes (Stirling 2008).

Perhaps in order to conceal such influence by incumbent interests, the instrumental rationale for public engagement tends to be less explicitly acknowledged in policy

[7] However, it seems that Fiorino's account for instrumental perspective is conflated with his account for substantive one.

literatures (Stirling 2008). Crucially, deliberative democracy theory, which is recognised as a kind of backbone to public engagement discourse and practice (Pellizzoni 2001; Wilsdon and Willis 2004; Hendriks 2004; Chilvers 2008; Lövbrand et al. 2011), tends not to address the realpolitik under which instrumental imperatives often come to the fore.

Variations in articulation and focus notwithstanding, deliberative democracy theorists commonly cite normative and substantive reasons why this form of democracy should be considered for solving contemporary problems (Hendriks 2004; Parkinson 2006). Examples of such a conceptualisation of deliberative democracy with the normative and substantive rationales include the debates around 'proceduralist and non-proceduralist' deliberative models (Bregman 2000), and 'procedural and epistemic positions' (Dryzek 2002). However, there seems to be an absence of acknowledgement of the instrumental rationale from these discussions. This is perhaps due to the inconvenient negative connotations of this point in a theoretical discourse that otherwise typically tends to advocate participatory practices. Therefore, instrumental motivations tend to be operationalised in an implicit way, and are more evident in practice than in discourse. Consequently, discussion of instrumental motivations is also more often to be found in the analysis of the practices of deliberative decision making (e.g. Fiorino 1990; Chilvers 2007; Stirling 2008) than in the direct documentation.

It may be that the implications of this instrumental rationale in forming discourse around and practice of public engagement are easily overlooked. Therefore, the following section probes this instrumental perspective-based rationale more deeply than the previous two explicitly discussed rationales. In particular, it addresses key issues in the discourse on the various rationales for public deliberation in ST governance that were portrayed by high profile policy institutions such as the House of Lords and the Prime Minister. In terms of their central role in the UK ST regulatory system, addressing key issues identified would seem to be essential to an understanding of the context of the deliberative turn.

Public understanding of science; the respective roles of scientists and the public; and the loss of public confidence were the key issues in the discourse of public engagement in UK ST policy making. It may be important to understand those key issues supporting, underlying in various rationales for the deliberative turn before exploring its different

mechanisms. Various discussions on how to design and deliver deliberative mechanisms reflecting such issues will proceed in the ensuing examination of the two case studies.

1.3.1 Public Understanding of Science

Burgeoning discourse advocating public engagement in science policy making helped to drive the change in ST governance in the UK. Some commentators argue that this trend was a shift away from the 'deficit model' of technocracy towards democratic decision making with public (and wider stakeholder) engagement (e.g. Kemp et al. 2006; Horlick-Jones et al. 2007).

Wynne (1991) employs the term 'deficit' in his earlier critique of the prevalent assumption in the perceptions of many scientists and policy-makers regarding public understanding of, or attitude to, science. In broad terms, this view holds that it is the public's ignorance of science that causes what is held to be a negative attitude toward science. 'The public', is thereby framed in terms of subjects to be educated in order to improve understanding of, and support for, scientific experts and their work (Wynne 1991, 1993, 2006).

Wynne (2006) argues that many assumptions in this deficit model (such as the deficit in public understanding of science) contrastingly, continued to underpin much of the newly-advocated mode of public engagement in ST governance. An important rationale for the new mode was again that the public's lack of understanding of science resulted in it losing confidence in science and science governance institutions, a situation that should be improved through education. Irwin (2006) contends that the model of deficit in understanding was replaced by the idea that there was a lack of trust, describing this shift as "a more subtle version of the old deficit model" (p. 306). Although Irwin (ibid.) does not deny such change of participatory mode or its importance in terms of ST governance and deliberative democracy, he argues that there was rather a shift in the 'rhetoric'. Chilvers (2007) also addresses this trend as a partial divergence from the old deficit model in his discussion. The narratives of many governmental institutions' proposals for public engagement support this argument (Chilvers 2008).

For example, the House of Lords Select Committee on Science and Technology (2000)

addressed "the new mood for dialogue", describing the situation as a "critical phase of crisis" in science (and society) that was due to the public's lack of trust. Their report consists of five chapters: its introduction (Chapter 1) addresses the 'crisis of public confidence in science'; Chapter 2 is entitled 'Public attitudes and values', which are diagnosed as negative due to a lack of trust; then, in Chapter 3, 'the crisis of trust' calls for 'a new mood for dialogue' and seeks a two-way understanding between the public and scientists. Yet, rather than promoting mutual appreciation, it seems that it is actually intended to improve the public's understanding of scientists' work, and improve scientists' understanding of the impact of the public's understanding of science on society and public opinion':

> "7. However, the crisis of trust has produced a new mood for dialogue. In addition to seeking to improve public understanding of their work, scientists are beginning to understand its impact on society and on public opinion.
> 8. Efforts to improve relationships between science and society take many forms. We have reviewed some of the principal influences […]
> 9. Much excellent work is being done to raise the public understanding of science. All these institutions must, however, respond to the new mood for dialogue." (Chapter 3)

The discussion then moves on to the issue of how to create dialogue: Chapter 4, which deals with 'communicating uncertainty and risk', addresses the need for a radically different approach to the process of policy making in the areas associated with science by emphasising the principle of 'openness'. Finally, Chapter 5, which is entitled 'Engaging the public', concludes with the claim that there is "the new mood for dialogue." Its final statement argued that the ultimate purpose of which is articulated thus:

> "17. All these approaches have value. They help the decision-maker to listen to public values and concerns; and they give the public some assurance that their views are taken into account, increasing the chance that decisions will find acceptance."

Chilvers (2007) also analyses the rationale for the need of public dialogue articulated by the House of Lords on this report (2000) is based on instrumental perspective seeking "enhanced public legitimacy, acceptability and trust in risk decisions" (p. 198)

Another example of evidence for an instrumental rationale based on the similar perspectives of public understanding of science was given by Blair in his speech (*Science Matters*, 2002). The narrative here basically champions the virtues of science for the sake of the UK economy and society in general; his position being that the public's lack of

understanding of science obstructed the development of new technology, which was contrary to the interests of the UK. Although he accepted that there were concerns around risk and uncertainty, he claimed they did not arise from bad science but owing to bad management of good science (ibid.).

Blair's (*Science Matters* 2002) speech may be summarised as follows: by the time New Labour came to power in 1997, people had lost trust in science and scientists due to the BSE crisis. This was because the previous government had not managed ST policy efficiently. The present administration was investing heavily in new technology in particular, which would be of great benefit to British society. New Labour had the correct approach; however, it was not merely a matter between the government and the scientific community, but necessitated an understanding between society and science. There was a need for people to understand science better. Although the precautionary principle was important, responsible ST policy should be made on the basis of the facts rather than prejudice or anxiety. Therefore, UK society needed a dialogue upon which to build trust in what science could do for the public:

> "We need, therefore, a robust, engaging dialogue with the public. We need to re-establish trust and confidence in the way that science can demonstrate new opportunities, and offer new solutions."

Therefore, the rationale for investment in science education was not to improve scientific capabilities or orientations, but to transform what was perceived to be society's generally negative and cautionary attitude towards science into a more positive and favourable attitude. This was the ultimate reason for the dialogue with the public. Indeed, Blair (ibid.) quite clearly expressed a patronising attitude towards the public, explicitly treating them merely as subjects to be educated:

> "The response of the government must be to encourage openness, transparency and honesty […] But this isn't just about Government and science. It's crucially about society. We need better, stronger, clearer ways of science and people communicating. The dangers are in ignorance of each other's point of view; the solution is understanding them. […] This task will be aided if we can embed a more mature attitude towards science in our society."

In addition to such an instrumental purpose underpinned the discourse around public understanding of (or attitude to) science as the reason for public engagement in ST

governance, there was another assumption firmly embedded in the dominant rationale but which was usually not explicitly reflected in discussion: an inherent dichotomy between the wider role of scientists and that of the public in ST policy-making.

1.3.2 The Respective Roles of Scientists and the Public

In the ST governance discourse, the way in which the public is viewed in terms of its relation with science determines the respective roles of the public and scientists. It may reasonably be argued that defining the respective roles of the public (and stakeholders) and scientists, then determines the design of a deliberative mechanism.

Underlying assumptions concerning the respective roles of the public and the scientific community continued to manifest essentially the same simple dichotomy as that embedded in the deficit model: namely, the assessment of scientific knowledge by scientists and the deliberation of values by the public. However, posing questions about the role of values (and interests) in determining scientific knowledge, shifts the discourse from the roles of the scientific community and the public in the ST policy making process, to the more general relationship between values and scientific knowledge per se. Therefore, such questions also draw attention to the role (or influence) of scientists' own values and interests in the construction of scientific knowledge.

Much advocacy for public engagement from various governmental institutions called for a serious consideration of public (and stakeholders') values and interests. However, the values in question were effectively restricted to 'external' political or ethical dimensions rather than those embedded in scientific knowledge per se. By this logic, political and ethical values were the cause of controversy that could be resolved through effective political dialogue. The ultimate aim was more to gain acceptance of predetermined decisions than to allow the serious consideration of the epistemic content of ST policy (Funtowicz and Ravetz 1992; Stirling 1998; Leach et al. 2005). Indeed, the simple dichotomy between the scientists' knowledge and the public's values (and interests) is quite heavily embedded in the discourse on the rationales for the public engagement in ST governance. For example, in the report *Science and Society* of the House of Lords Select Committee on Science and Technology (2000), public engagement was regarded as helping to assure the public that its values and concerns would be listened to, thus increasing the

likelihood of its acceptance of any given decision:

> "17. All these approaches have value. They help the decision-maker to listen to public values and concerns; and they give the public some assurance that their views are taken into account, increasing the chance that decisions will find acceptance." (Chapter 5)[8]

Blair (*Science Matters* 2002) also presented his concept of the role of values in science policymaking clearly in his speech: "We cannot have vital work stifled simply because it is controversial." According to his logic, values are not a criterion to be considered in making actual decisions on ST policy:

> "Science is just knowledge. And knowledge can be used by evil people for evil ends. Science doesn't replace moral judgement. It just extends the context of knowledge within which moral judgements are made. It allows us to do more, but it doesn't tell us whether doing more is right or wrong. Science is also fallible. Theories change. Knowledge expands and can contradict earlier thinking. All of this is true, but none of it should stop science trying to tell us the facts."

Therefore, his contention was that the legitimate process of science policy making should be based firmly on the facts, and there was no room for considering values that might have existed prior to or in parallel with the facts:

> "The fundamental distinction is between a process where science tells us the facts and we make a judgement; and a process where a priori judgements effectively constrain scientific research. We have the right to judge but we also have a right to know. A priori judgement branded Darwin a heretic; science proved his tremendous insight. So let us know the facts; then make the judgement as to how we use or act on them." (*Science Matters* 2002)

Chilvers (2007) identifies the distinction that the previous mode of risk governance utilised a science-centred approach led mainly by the scientific community, whereas the new mode constituted an 'analytical-deliberative' form of risk governance that was more of an 'opening up' of the risk decision process with, in particular, public involvement in 'front-end framing'. His analysis of recent radioactive waste management exercises found a dichotomy between "public deliberation and scientific analysis" (Chilvers 2007, p. 218). Therefore, such management did not employ 'front-end' public framing of policy. Instead of engaging the public from the early stage of framing, it amounted to a failure to integrate

[8] This part of the literature has been used in the previous section.

engagement throughout the decision-making process in its separation of 'science and citizen' (ibid., p. 197).

Chilvers' (2007) distinction between 'science and citizen' is based on knowledge: first, formal (specialist) knowledge among scientists; second, limited specialist knowledge among stakeholders; and third, lay (experiential or local) knowledge among 'publics'[9] of various kinds. In this regard, Chilvers (ibid.) refers to Collins and Evans' (2002) typology of expertise, finding it useful in its extension of forms of expertise – and their possible combination in analytical–deliberative processes – which consist of "scientific specialist expertise (core-set scientists); contributory expertise (non-specialists from the general public); and interactional expertise (i.e. facilitators) and translation expertise (communicators)" (cited in Chilvers 2007, p. 202). Although Chilvers (ibid.) mentions in passing that this typology fails to take into account values or interests (p. 202), he does not discuss the matter further. Rather, he develops a second typology of levels of 'citizen-science interaction or integration' in the analytical–deliberative process consisting of "non-interactive, interactive, and active level[s]," noting that the active level of integration eases the distinction between 'deliberation/analysis and citizen/science'.

Although Chilvers (2007) claims to integrate analysis and deliberation, criticising the separation between science and citizen, his discussion still reflects an implicit dichotomy between scientists and citizens. The key axis is still formed by who has what kinds of knowledge (determined and labelled by distinguishing scientists, publics, and communicative experts such as facilitators), rather than how scientific knowledge or decisions are constructed. The latter approach may offer a useful analytical angle if questions are posed concerning the role of scientists' values and interests in the construction of science and associated decisions. Instead, attention is just made only to the 'public framing role', which he finds to accord with Wynne's (1996) emphasis on the "cultural truths of lay actors and their role in shaping knowledge commitments" (cited in Chilvers 2007, p. 215).

Demeritt et al. (2009) argue that although public engagement in science and technology (PEST) is not a panacea for all ST governance-related issues, it can contribute substantively

[9] Chilvers (2007) acknowledges the plurality.

to "better science and science policy" in two ways: as "normative steering and epistemic checking." The normative steering role of PEST means that it can provide "a more acceptable science and science-based policy" with "clear mechanisms of democratic accountability and control." Epistemic checking, on the other hand, necessitates contributions from "knowledgeable (if uncertified) experts from among the lay public." Demeritt et al. (2009) also refer to Collins and Evans' (2002) study on expertise. They acknowledge that a more conventionally-accepted epistemic role for public engagement in ST governance would involve some knowledgeable experts from the lay community verifying and adding their contributions to formal scientific work:

> "In its very strongest form, it dissolves any epistemic or political distinction between scientists and citizens into a vastly expanded public debate. In this brave new world the specific need for public engagement with science is no longer so clear, since science carries no special epistemic status and truth is a matter of convention, determined through persuasion, popularity, and power. For many this radical version of PEST as epistemic checking strays too close to relativism. It denies any foundation for warranting belief and preventing the extension of debate by dissenters, however ignorant, ill-informed, or duplicitous their claims. Accordingly, the more common version of PEST as epistemic checking retains the traditional epistemic warrant granted to scientific experts, but opens up their claims to checking by, and contributions from, knowledgeable (if uncertified) experts from among the lay public." (p. 24)

Such rhetoric is in the same arena of debate as that concerning who has knowledge – in fact, in respect of the roles of values and interests, it more accurately addresses who has the facts rather than how scientific knowledge is produced and applied to ST policy-making. The simple equation of 'scientists: the public = scientific knowledge (facts) providers: values holders' was often taken for granted in discussions on public engagement in ST governance. However, according to this narrowly defined equation, any possible contribution to the construction of scientific knowledge from other aspects of scientists and the public such as scientists' values and interests, and the public's epistemic knowledge, was not considered.

Therefore, this dichotomy did not allow the exploration of other possible input such as political or ontological elements in forming various rationales for public engagement, or their potential influence on the design of practical exercises in ST governance. Application of such a constrained paradigm to public engagement in ST governance prompted accusation of such things as disempowered and exclusive participation, restricted institutional framing, strategic manipulation, and a narrowing of the debate (Chilvers 2007).

Different rationales for the design of public engagement partly reside in this fundamental disparity in assumptions about the way ST policy is determined.

Defining the roles of scientists and the public in the process of decision making is a contentious issue, as the above discussion demonstrated. Jasanoff (1987) argues that although it seems neutral, much of the language employed in the debate on the boundary between science and policy is concerned with the need to "explain or justify the allocation of power and prestige between the institutions of science and government" (p. 199). This conceptualisation is extended to the wider context of ST governance whereby such boundary-defining language becomes the preferred medium of all interest groups who are interested in "the way power is distributed among centres of scientific and political authority" (Jasanoff 1987, p. 199).

The following section addresses the discourse on public confidence, in which, conversely to the boundary-defining language above, boundary-conflating language (between science and scientific institutions) has been employed, but to the same end of serving the interests of groups in the policy making circle.

1.3.3 Between a Loss of Confidence in Science and in Scientific Institutions

Discussion around public engagement in ST governance also highlights the matter of the debate on 'public confidence'. 'Public confidence' (or rather the lack thereof) was claimed by various governance institutions to be the reason why public engagement had become such a burning issue in the first place – presumed earlier confidence had been lost and therefore needed to be found again. Although the arguments differed in their various foci on confidence in science, scientific advice to the government, science policy, the science policy-maker, and science governance institutions, this general theme became the dominant rationale for the need for public engagement in the many proposals for UK ST governance (e.g. the House of Lords Select Committee on Science and Technology 2000; Commission of the European Communities 2001; Blair 2002; the Prime Minister's Cabinet Office Strategy Unit 2002).

However, whether the call for public engagement was due to the public's loss of confidence in science, or in science governance institutions are rather different matters, and we can draw separate inferences from each assumption. For the public to lose confidence

in science implies that science as a body of reliable knowledge – presumably undermined by uncertainty, such that it is no longer sufficiently robust to inform judgements over on potential harmful or beneficial outcomes. On the other hand, for the public to lose confidence in governance institutions (including government advisory bodies) holds two possible implications: firstly, science has become insufficiently trustworthy – thus governance institutions cannot control it; and secondly, science is trustworthy but it is governance institutions that display the insufficiency in their capability to control its consequences. Yet, across different contexts and discourses, the ways in which the term 'public confidence' was used as a rationale for public engagement in various institutions' proposals obscured these crucial differences.

Indeed, in parliamentary debates and other meetings, the notion of lost confidence was tossed around between these two scenarios, with stakeholders talking past each other or shifting expediently between references to 'science' and 'scientific institutions'. Thus, the discourse around public confidence, which yielded radically contrasting proposals for the design of public engagement in ST governance, was instrumentally employed by different actors to construct their respective rationales depending on their particular interests, as exemplified by debate in the House of Lords Select Committee on Science and Technology (2000), and the argument adopted by Blair (2002).

When the issue of public confidence was raised in the context of UK ST governance in the late 1990s and early 2000s, many governance institutions discussed it in terms of consumers' confidence responding to the wake of the BSE crisis, their reports thus highlighting misgivings of consumers the products of technology, i.e. the safety of the products. As the main stakeholders were regulators, industry and consumers, the debate around public confidence focused on the consumer's perspective of the market rather than society's appraisal of the development and application of new technology. Indeed, the general public was regarded as the consumer of the by-products of ST and the other actors as stakeholders who were managing it badly.

The following quotation from a BBC Online News item of 26 October 2000 – just after the publication of the Phillips Report (the BSE Inquiry) – shows how the public was positioned in this discourse:

> "Speaking after its publication, Lord Phillips went further, declaring: "We do think, and have found, that there was what you might call a cover up in the first six months." It is quite possible that some of the officials involved will face disciplinary action in the future. And it is certain that public confidence in Whitehall to protect consumers' interests has been fatally damaged."[10]

In 2000, the Department of Trade and Industry (DTI) published a report entitled *Excellence and Opportunity: A Science and Innovation Policy for the 21st Century*. As its title suggests, it was intended to promote ST for innovation in the UK. The order of its headings indicates the narrative of the argument. It begins with 'a science policy for the 21st century', which concludes with the assertion that 'public satisfaction' is a prerequisite to the success of the innovation process. It then describes the virtue of science under the heading 'excellence in science', going on to advocate maximisation of opportunities to exploit the benefits of innovation. The final section addresses the need for 'confident consumers', emphasising the role of the government in achieving consumer confidence with regard to the safety of ST innovation and transforming it:

> "[…] into products and services that consumers want. Public satisfaction feeds the cycle because public support underpins investment in the basic science that fuels the innovation process." (Executive Summary, p. 2)

The House of Lords Select Committee on Science and Technology report *Science and Society* (2000) implies that public confidence means confidence in scientific advice to government in the context of the BSE crisis." Consideration of the nature of confidence then addresses the discourse on society's confidence in science:

> "Society's relationship with science is in a critical phase. Science today is exciting, and full of opportunities. Yet public confidence in scientific advice to Government has been rocked by BSE; and many people are uneasy about the rapid advance of areas such as biotechnology and IT - even though for everyday purposes they take science and technology for granted. This crisis of confidence is of great importance both to British society and to British science." (Chapter 1)

In the following chapter of the report, the public's negative attitude to science is diagnosed as a lack of trust in the purpose of its application, by the government and industry in particular:

> "Survey data reveal, however, negative responses to science associated with Government or industry, and to science whose purpose is not obviously beneficial.

[10] Available from (http://news.bbc.co.uk/1/hi/uk_politics/992883.stm)

> These negative responses are expressed as lack of trust." (Chapter 2)

On the other hand, in the EC White Paper for Governance (2001), the term 'confidence' is articulated clearly as "confidence in the end result and in the institutions which deliver policies" (p. 10) in the description of its five principles (openness, participation, accountability, effectiveness and coherence).

HM Treasury report *Science & Innovation Investment Framework 2004–2014* (2004) also discusses public confidence in respect of its rationale for public dialogue. However, it adopts different interpretations of the term within its own report. It is interesting to note how the narrative under the heading 'Public confidence in and engagement with science and technology' is developed in the summary. There are three paragraphs under this heading: the first one (1.36) begins by advocating public confidence in terms of a societal ethical and regulatory framework within which to push forwards with new technology; the second paragraph (1.37) discusses how much money the government plans to spend on public engagement in order to improve confidence in new areas of ST policy; and the last paragraph (1.38) concludes by warning animal rights extremists of the government's commitment to tackling them (p. 14).

For his part, Blair's reference in his speech of a loss of trust and confidence (*Science Matters* 2002) refers to a deterioration of faith in the general virtues and benefits of science, claiming that such confidence should be restored through public engagement:

> "We need, therefore, a robust, engaging dialogue with the public. We need to re-establish trust and confidence in the way that science can demonstrate new opportunities, and offer new solutions […] But it's no exaggeration to say that in some areas we're at a crossroads. We could choose a path of timidity in the face of the unknown. Or we could choose to be a nation at ease with radical knowledge, not fearful of the future, a culture that values a pragmatic, evidence-based approach to new opportunities. The choice is clear. We should make it confidently."

Public confidence in the capability of science lies in the question, "To what extent can science benefit or harm us?" On the other hand, the question of public confidence in the capability of ST governance institutions relates to whether they are able and willing to manage science well for us. These are completely different matters. Uncertainty in risk governance implies that there is insufficient capability to control science due to uncertainty

in scientific knowledge. It is not that we might make a mistake, even though there is a definite answer, but that we do not know how to reach the right answer or whether an answer even exists.

However, these two separate discussions were employed strategically to justify each stakeholder's argument, as exemplified above. Blair's speech (*Science Matters* 2002) was also another such instance. He lays the blame for the public's loss of confidence around the BSE case with the Conservative government that was in charge of managing science when the crisis arose. Accordingly, he argues that the present crisis is due to the mismanagement of the latter but that he can handle it better. The narrative of 'bad management of good science' thus proves useful as a means by which a successor can accuse a predecessor of poor government:

> "Mr Brown [Gordon Brown, Chancellor of the Exchequer in the Blair Government from 1997 to 2007] is well aware that any attempt (to) use the report to make political capital out of the BSE disaster, which has seen the loss of dozens of lives, would dramatically backfire… But he also knows he does not have to do so just yet. The disaster happened during Tory governments and Labour is untouched by it […] The media coverage of the Phillips' report will do his work for him by reminding voters of the Tories' role in the affair." (BBC Online News 26 October 2000)[11]

This opening chapter has discussed the context of the deliberative turn in UK ST governance in the 1990s. In particular, the chapter examines the elements that brought about such a change: catalysts that comprised the several policy failures in various areas of ST governance, and the societal demand for a democratic policy making process engaged with wider sections of society. It also discusses three different perspectives underlying rationales claimed for the need of the change with a few examples of proposal suggested by the central actors in UK ST policy making circle. With this discussion, it particularly draws attention to the various key issues associated with the instrumental perspective, which supports public engagement in ST governance much implicitly, comparing with the other two. In each case, attention has been given to the implications of the different rationales for public engagement in ST governance. Just as different stakeholders' perspectives embody often radically contrasting assumptions, so do large implications arise for the design of public engagement. The consequences have been widely reflected in the development and delivery of various deliberative mechanisms for ST governance in the UK

[11] Available from : (http://news.bbc.co.uk/1/hi/uk_politics/992883.stm)

such as the example case of GM Dialogue and CoRWM to be examined in this thesis later. Accordingly, understanding of underlying values, assumptions, interests, knowledge, and ontologies in respect of diverse rationales will facilitate appreciation of the context of the development of public deliberation mechanisms that have been operated in actual ST policy making in the UK.

1.4 Thesis Structure

This chapter begins with presenting the overarching research question, and briefing the key concepts, which give a broad picture of what this study is about. It then situates this research in a specific setting – a deliberative turn in UK ST policy making arena in the period from the late 1990's to the mid 2000's. In so doing, it addresses the issues around the driving factors of such change in the mode of ST governance. The discussion in particular, draws attentions to the underlying assumptions and presuppositions of the rationales that were arranged by the governmental institutions in that period.

In Chapter 2, which addresses theoretical considerations, I examine the key concepts of the two theories that underpin this thesis: deliberative democracy and reflexive governance. Consideration of these concepts provides the study with its overarching research question: What are the implications of reflexivity in the understanding of the division of labour in macro risk deliberations? Examination of the established perspective on deliberative democracy, i.e. micro-deliberative democracy, reveals that its limitation lies in the fact that it prioritises deliberativeness over the other essential quality of such democracy, that of inclusiveness, thus leaving it open to accusation of exclusivity.

The discussion then moves on to the alternative approach of macro-deliberative democracy. The macro-deliberative approach attempts to overcome the tension between inclusion and deliberation by introducing the notion of division of labour, allocating different issues to a variety of participants for discussion in diverse ways through micro deliberations aimed at securing both inclusiveness and deliberativeness. However, close examination of this approach raises the question of whether and how such division of labour can overcome the further tension between division and inclusion, and secure both qualities of inclusiveness and deliberativeness.

The second part of the theoretical discussion examines the notion of reflexivity in governance. It introduces the current literature on reflexivity in the context of ST governance, and elaborates on the concept of reflexivity and its role in ST governance. For the purposes of analysis, the two dimensions of reflexivity, i.e. outcome and process, are treated separately: with regard to outcome, reflexivity multiplies the elements of the ST system; and in terms of process, reflexivity facilitates the evolution of the ST system through recursive, endogenous generation to a reconstitution of its elements.

The theoretical consideration of the implications of reflexivity in ST governance raises the further question of the role of the nature of reflexivity in understanding macro deliberation in ST risk policy making. The aforementioned overarching research question was developed by combining these two questions arising from theoretical discussion on deliberative democracy and reflexive governance.

In Chapter 3, I delineate the ways in which this study was designed and conducted. I elaborate the process of developing the research question, my rationale for choosing the two cases, and the methods I employed for data collection and analysis.

This is followed by Chapter 4, which examines GM Dialogue, and Chapter 5, which addresses the deliberations of CoRWM. These two chapters present this study's empirical analysis of each case respectively. GM Dialogue and CoRWM represent the empirical findings of the study, which are subsequently utilised in my analysis of the ways in which macro-deliberative mechanisms operate. The results of the analysis of both cases are examined according to the same criteria in each chapter. This is in order to emphasise that they were chosen as equally valid examples of macro deliberation in technological risk policy making, although this does not mean the two cases were in any way identical.

The UK government Department for Environment, Food and Rural Affairs (DEFRA) was responsible for these two macro deliberation programmes for technological risk policies, which can generally be characterised as manifesting uncertainty and controversy. Two specific risk issues that Defra was obliged to address were the commercialisation of GM crops and the management of radioactive waste. Defra faced similar challenges in dealing with each policy issue, such as moratorium and serious public distrust, as well as its strong policy orientation towards the development of both GM technology and nuclear

technology.

Each of these empirical chapters begins by discussing its respective case background, which establishes the context in which GM Dialogue and CoRWM were established. It then analyses the ways in which the various divisions of labour in each case have taken place. The results are presented under the themes 'inclusion' and 'deliberation'; considering that division of labour is the means employed by the macro-deliberative approaches to maximise the two essential qualities of inclusiveness and deliberativeness. Therefore, in order to examine the macro-deliberative mechanism, this study gives attention to and analyses the key concept of macro deliberation, i.e. division of labour. It critically observes how inclusion and deliberation have proceeded in order to achieve the qualities of inclusiveness and deliberativeness as macro-deliberative democracy theorists assume.

Firstly, the results of my observations under the theme of inclusion in each case show how the whole programme was divided by (or composed of) different actors, their tasks and various micro-deliberative methods, and the ways in which such division in terms of actors, tasks and deliberative methods was incorporated into the overall programme. Secondly, discussion under the theme of deliberation in each empirical chapter analyses how the decision making process proceeded with regard to extent of deliberativeness. In so doing, chapters 4 and 5 raise various caveats to the assumed characteristics of deliberative democracy theory. In examining the issues and characteristics that emerged throughout my analysis of division of labour, these empirical chapters demonstrate the significant influence of reflexivity in these two macro risk deliberation practices.

Chapter 6 summarises the results of my empirical analysis of the two cases, which had both differences and similarities. The big picture of these public engagements took the form of macro deliberations that manifested various divisions of labour with regard to actors, tasks and methods. In addition, although the two programmes addressed different technologies, they were both related to technological risk that involved a great deal of uncertainty, and controversial values and interests. Moreover the context in which each of the two public deliberation exercises was established was similar in as far as it reflected the government's position. Two programmes were conducted consecutively within a single term of office on the part of Blair. That on public deliberation over GM crops began in 2001, the actual Dialogue being held in summer 2003. Shortly after the completion of GM

Dialogue, CoRWM was set up in 2003, submitting its final report to the government in July 2006.

On the other hand, the two programmes were set up for different purposes. GM Dialogue was mandated to review the current diverse perspectives of UK society on GM crops, while CoRWM was tasked with offering policy options directly to the government. The nature of the risk each was faced with was also different: GM Dialogue had to answer the question of whether UK land should be sown with GM crops or not, whilst CoRWM was restricted by the existing legacy of nuclear waste management. Accordingly, practice around division of labour varied, which meant that the structure of each programme different, as well as the policy influence of the results.

Differences between these two public deliberation programmes notwithstanding, my analysis of these examples of macro deliberation asks whether such mechanisms can operate according to the key concept of division of labour as an alternative to micro-deliberative decision making. In other words, the close examination of division of labour in these two case studies reveals that the discursive structure and plural elements of macro deliberation facilitate reflexivity as well as reflexivity helps division of labour achieve the qualities of inclusiveness and deliberativeness. However, this suggests that such achievement of inclusiveness and deliberativeness differs from that characterised in established deliberative democracy theory.

Final chapter 7 concludes with the answer to the research question of this study directly – implications of reflexivity in the understanding of the division of labour in macro risk deliberations. In demonstrating the role of reflexivity in macro deliberation exercises and the ways in which divisions of labour of macro deliberation operate in reflexive process, the second section of this concluding chapter give suggestions on the conditions which can facilitate more reflexive deliberation. It is followed by drawing the broad discussion regarding the meaning of the deliberative turn for the decision making to ST policy making. This chapter ends with suggestions for further research.

CHAPTER 2

THEORETICAL CONSIDERATION

2.1 Deliberative Democracy

The notion of deliberative democracy has been prominent in discussions surrounding governance over the last two decades, in particular in Western society. This trend has been associated with societal pressure for improved quality in participation, from diverse social voices in policy-making. Seeing those who might be influenced by the policy as being entitled to make substantive input into the policy, this form of democracy aims for 'higher quality' involvement of the general public and stakeholders in the policy-making process. The term 'deliberation' generally requires a more sophisticated definition than the looser idea of 'participation', which usually refers to greater inclusiveness. A truly deliberative process demands application of rigorous normative criteria concerning the style, scope and structure of dialogue that are actually undertaken.

A wide range of concepts and definitions of deliberation has been developed. Though expressed in contrasting terminologies, there exist many conjunctions between concepts and distinctions. One such distinction is between different imperatives or rationales for deliberation (Fiorino 1990; Stirling 2005; 2008). As established in the previous chapter, a 'democratically normative' rationale is oriented towards aims of 'democratic emancipation, equity, equality and social justice', while the 'substantive' imperative focuses on whatever is held to constitute the 'quality' of the decision's outcomes and a third 'instrumental' view explicates the perspective that deliberation serves a means for achieving specific ends (Stirling 2005). Despite existence of this disjunction between these different rationales for deliberation, an important conjunction is found in its primary concepts.

2.1.1 Concepts

Underlying the positions articulated by different deliberative democracy theorists, the essential qualities of deliberative democracy theory all consist in various forms of deliberativeness and inclusiveness (Elster 1998[12]; Bloomfield et al. 2001; Hendriks 2004).

[12] Elster gives his account for this, using his the terminology - *democratic part* for inclusiveness and *deliberative part* for deliberativeness - in his explanation (1998, pp. 8-9)

2.1.1.1 Inclusiveness

Phrases of public participation, public engagement, public consultation, and public deliberation in the context of political decision making, connote a certain degree of public's partaking in decision making process, despite their various ends and means in the process. With these different terms and conditions, people, agendas, and methods are included in the collective political decision making (Bloomfield et al. 2001).

Inclusiveness is one of the primary qualities focused upon by deliberative democracy theory. Public deliberation in deliberative democracy theory should be inclusive so as to engage a wide spectrum of people as possible and their various values (and interests) in a deep discussion. The inclusion of many people's values (and interests) as possible is democratically valuable for a legitimate decision making, as voices can be heard from all parties (in particular minority) not just from the elites or experts. Elster (1998 pp. 8-9) points out this 'democratic part' as one essential element constituting the notion of deliberative democracy (along with 'deliberative part'). He argues that the concept of deliberative democracy implies a collective decision making, which should involve a direct or indirect participation of people affected by decision. Inclusion of wider sections of society in a decision making process is also argued to have a substantive benefit, as diverse ideas make decisions robust (Bloomfield et al. 2001; Hendriks 2004). For the instrumental purpose, inclusion of contending parties in a decision making process can deliver policy makers benefits of increasing the policy acceptance or sharing the blame.

2.1.1.2 Deliberativeness

Public deliberation goes beyond simple acts of democratic participation, such as voting among given options: instead, it involves a deep discussion among participants. Ideally, public deliberation in deliberative democracy theory should consist of forms of reasoning using publicly defendable arguments (Elster 1998; Rawls in Dryzek 2000). In order to achieve this, the process should not be susceptible to bias made from any particular political interest or power (Cohen 1998). This notion is deeply rooted in Habermas' theory of communicative action (Fraser 1990; Warren 1993; Dryzek 2000; Bloomfield et al. 2001) which holds faith in the possibility of meaningful approximations to such ideal communication. Therefore, established deliberative democracy theorists, influenced by Habermas' notion of the public sphere, emphasise a form of distortion-free political dialogue (Dryzek 2000). Deliberative democracy theorists assert the potential of public

reasoning for political decision-making (Bohman 1996; Cohen 1997, 1998; Bregman 2000; Luskin and Fishkin 2002; Levine et al. 2005), which should not be a form of aggregation or competition of preferences and interests (Pellizzoni 2001; Hendriks 2004). James Bohman (1996), for example, defines deliberation as a 'dialogical joint activity' emphasising 'public reasoning', which makes decisions more convincing and epistemic through the 'open and free public dialogue' of all citizens.

2.1.2 Potential for Governance of Technological Risks

Both academics and practitioners in the governance of science and technology have explored diverse dimensions of technological risk assessment and management over the last three decades. There still remains, however, a vast range of dissension, owing to the 'contentious and uncertain' characteristics of risk issues (Chilvers 2007). This challenge has shifted risk debate from a quantitative analytic style to that of a more participatory dialogue between diverse members of society. A report published by the United States National Academy of Sciences in 1996 called for the combining of these approaches in an 'analytic-deliberative' mode of appraisal (Stern and Fineberg 1996). This new approach towards the governance of technological risks, urged the policy-making process to include the public in governance of technological risk with a strategy comprised both of assessment and dialogue. The goal was to develop mutual trust between the public and those who dealing in risk management, and to enhance risk management practices with direct public input (Renn 1998). In this light, many frameworks of governance of technological risks have encouraged public deliberative engagement (Renn and Wiedemann 1995; Wynne 2002). As a result, over the last two or three decades, various forms of practice of public deliberative engagement have been exercised in the governance of technological risk, such as citizens' juries, deliberative polls, consensus conferences, public forums and so on (Wynne 2002; Jasanoff 2003; Renn 2004; Irwin 2006; Renn and Roco 2006; Chilvers 2007; Levidow 2007).

2.1.2.1 Increasing Mutual Understanding in Conflicts over Risk Issues

Those who maintain the qualities of public deliberation for governance of technological risks argue that participants involved in the decision-making process should may have observed how the decision evolved. In the course of discussion, participants are exposed to the possibility of being contested, and are therefore challenged to weigh their own, and

others', reasons rationally in order to arrive at a collective decision (Bohman 1996). Even if they do not agree fully with the content of the decision, they may understand the reasons behind the decision, or at least be more tolerant towards the decision. This would be helpful particularly in the technological risk related policy-making context, as risk issues are often controversial due to their uncertainty and stakeholders' divergent interests. Renn et al. (1995) also points out that 'the public' is not a single homogeneous group; rather, it is a heterogeneous group of individuals who have different interests. In the same light, Gutmann and Thompson stress that the outcome of deliberation should be "a mutual respect and a modus vivendi" rather than the consensus of common interest of all (Dryzek 2000, p. 17). This is the case, in particular, when incumbent knowledge for judgment is not sufficient to convince all parties to agree with a specific decision, and the knowledge and interests of different parties are opposed to one another. Considering these elements, it is believed by those dealing with technological risk issues that increasing mutual understanding through public deliberation could play an important role in reducing conflict.

2.1.2.2 Robust Decisions Responding to Uncertainty of Risk Issues

In addition to enhancing mutual understanding in conflict situations, the deliberative participation of diverse members of society has a substantive value in terms of responding to the uncertainty nature of risk issues. Plural values from various actors could strengthen the robustness in risk decisions, the consequences of which are often unpredictable (Bohman 1996; Dryzek 2000; Shulman et al. 2003).

Many policy issues, in particular technological risk-embedded ones, cause substantial controversy over the results and the procedure of decision-making, as the values behind decision-making are not uniform and depend on whose criteria and framework are employed (Wynne 2002; Jasanoff 2003). Due to the issue of increased uncertainty of technological risk, scientific knowledge in such issue related policy-making loses its credibility with the public (Jasanoff 2003; Van Zwanenberg and Millstone 2005). Even within the scientific community, there has been increasing dissent about how to assess the issue. Therefore, science does not appear to have the same credit on policy-making process for technological risks that it once enjoyed.

In this situation, plural values from the wider sector of society would help to create various

scenarios for different contexts. This preparation could help policy to be more resilient in the face of what remain unpredictable consequences of risk decisions. Therefore, not only in the sense of legitimate procedure, but also in the sense of resources (Steele 2001) for better decisions, plurality has a significant value in policy-making for technological risks (Wynne 2002; Jasanoff 2003; Levidow 2007; Stirling 2007).

2.1.3 Tension between Inclusion and Deliberation in Institutionalising Deliberative Democracy

Many practitioners and theorists of the governance of science and technology have made efforts to institutionalise the qualities of deliberative democracy theory by exercising and evaluating various forms of deliberation (Stirling 2005; Chilvers 2007). Their efforts to produce innovative designs of deliberative practices have yet to overcome the challenge of the inherent tension between deliberation and inclusion. Due to the scale issue, it is inevitable to have to compromise between two qualities of public deliberation, namely deliberativeness and inclusiveness. Simply speaking, the problem is that it is very difficult for a large number of people to have a high quality discussion.

As the notion of plurality is at the centre of public deliberation, such approach aims to engage many people with their different values in public reasoning in an equal and free manner. In practice, however, the greater number of people that are brought together, the more difficult it becomes to undertake equally accessible, clearly reasoned debate (Bloomfield et al. 2001; Fishkin and Laslett 2003; Parkinson 2006).

2.1.4 Micro-Deliberative Democracy

2.1.4.1 Focusing on Deliberativeness

Having recognised this intrinsic challenge to the institutionalisation of the qualities of deliberative democracy, established deliberative democracy theory prioritises deliberativeness over inclusiveness. Hendriks (2004) categorises this approach as micro-deliberative democracy with a comparison to an alternative approach, namely macro-deliberative democracy. This explicit distinction between micro and macro approaches has emerged in the work of three scholars (Keane 2000; Hendriks 2004; Parkinson 2006).

Having been based on the common elements across differently articulated concepts[13], micro-deliberation could be characterised as a form of collective decision making activity, of which central foci are democratic conditions for communicative decisions making (Bohman 1996; Cohen 1997; Dryzek 2000). This more established, prevalent understanding of deliberative democracy pays greater attention to 'normative requirements and constraints on deliberation' (Bohman 1996, p.16). Under this stance, public deliberation can be (arguably) depicted as a political journey in a particular part of the public realm, searching for the common good through equal and free dialogue. This definition of micro-deliberation implies its underlying assumption that there is a common good and that participants have the willingness and competence to generate equal and independent reasoning to achieve such dialogue.

These differently articulated definitions and their underlying assumptions suggest the democratic communicative activity is still one of the most essential elements for determining deliberation (Fraser 1992; Bohman 1996; Elster 1998; Dryzek 2000). In this light, deliberation should be protected from any kind of distortion or coercion, of such kind as was created by 'the exercise of power, manipulation, indoctrination, propaganda, deception etc.' (Dryzek 2000, p. 2). In brief, its condition can be met only when participants are: firstly, competent in deploying rational argumentation in public and secondly, willing to try cooperatively to identify the common good. Pellizzoni (2001) argues that although deliberative democracy theorists acknowledge that modern society is a pluralistic place in which political preferences conflict, they also believe that a 'free and open dialogue' (Bohman 1996) oriented towards the common good (Cohen 1997; Elster 1998) can resolve the conflict (Steele 2001).

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[13] Many deliberative democracy theorists position themselves distinctively from others by emphasising and/or rejecting specific aspects of the notion of deliberative democracy. For example, Bohman (1996) differentiates himself from the proponents of 'ideal procedure', stressing the concept of 'public reasoning'- open and free exchanging of public reasons. Dryzek argues his position is more tolerant to the forms of deliberation encompassing 'argument, rhetoric, humour, emotion, testimony or storytelling, and gossip' than the restricted terms to deliberation, i.e. only a form of public arguments of other deliberative democrats. The only condition, which he stresses for deliberation is 'the requirement that communication induce reflection upon preferences in non-coercive fashion'. (2000, pp.1-2)

As micro-deliberative democracy theory focuses on the quality of deliberative communication, it requires rigorous pre-requisites for participants, and a tightly structured procedure to be controlled for participants to deliver the desirable deliberative communication. As a result, the theoretically envisaged micro-deliberation can become far removed from real deliberative situations and this rigidly constrained form of micro-deliberation has to compromise with the principle of inclusiveness (Young 1997; Hendriks 2004). Accordingly, micro-deliberation appears, in fact, to be exclusive in practice.

2.1.4.2 Criticism: Being Exclusive

Conditions based on the unrealistic underlying assumptions of micro-deliberative democracy theory call for caution and raise the question of whether inclusiveness can be realised in practice.

Difficulty in identifying the common reason for the common good through reasoning

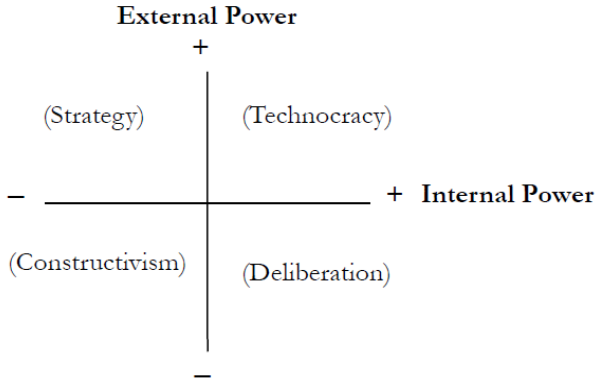
It would be true to say that there must be a final decision at the end of a deliberation, even in the case of an irresolvable disagreement amongst participants. However, there might not be a common good or common reason, particularly, when a deliberation practice has to deal with uncertain, ambiguous or incommensurable (Pellizzoni 2001) technological risk issues. 'Plurality' is situated at the core of the notion of deliberative democracy, as established in the previous section. The eclectic information and views of different participants in deliberation may enhance the level of robustness in decisions (Bohman 1996; Dryzek 2000; Shulman et al. 2003). On the other hand, they may also increase the level of disagreement amongst participants, but what if the level of difference is such that it is 'intractable'?, asks Pellizzoni (2001). Micro-deliberative democracy theorists acknowledge the existence of plural reasons in deliberation. However, they also believe in the function of "the best argument" (ibid.) to promote the common good with the common reason. In other words, they assert that the rational reasoning of many participants, with their diverse stakes and interests, would be able to identify a common reason. However, Pellizzoni argues that the aim of deliberation should be an agreement on practice rather than a common reason: "not to define principles, concepts and broad goals but to devise concrete solutions for concrete and circumscribed problems (2001, p.79)". In particular, the increasing uncertainty of technological risk issues in science and

technology policy-making makes it harder to expect rational argument to find a common reason. There may be very limited space for rational argument for the common good and the common reason in a particular, technological risk related policy-making context.

Difficulty of politically free and equal reasoning

Another contentious premise of micro-deliberative democracy theory is its belief in politically free and equal reasoning. In real practice it is difficult to preserve a deliberative process as rational reasoning, from any type of distortion, manipulation or strategic persuasion (Pellizzoni 2001; Eriksen and Weigard 2003). Pellizzoni (2001) explains that there are two types of power associated with communication: one is external power over communication (who speaks) and the other is internal power in communication (how they speak and what they say). He analyses the relationship between power in communication and democracy with a comparison of strategy, technocracy, constructivism and deliberation. Pellizzoni's quadrant of analysis over 'power in communication and democracy' (Figure 2.1) is based on two axes of internal and external power in communication. As his analysis shows, deliberation sits on the quadrant, which assumes only internal power in communication, i.e. reasoning. There, the assumption is a belief in the capability and willingness of participants to engage in argumentative reasoning.

Figure 2.1 Power in Communication and Democracy



(Source: Pellizzoni 2001, p. 63)

It is difficult, however, to detach external power from internal power in communication. What a speaker says and how she/he says it cannot be separated from the speaker's social, political and economic background, which functions as the external power over his/her communication. External power which inheres in that the speaker himself/herself, affects communication. In practice, securing communication completely immunised from external

power is impossible. In particular, as the technological risk related policy-making context is very much associated with participants' different stakes, it would be dangerous, or at best naïve, to believe that communication is ever free from external power. The idea that communication could be free of its political context could, in fact, be strategically abused in order to legitimise external power (Pellizzoni 2001). It has been established that the principles of the deliberativeness–focused, micro-deliberative approach, therefore, are far removed from the real deliberative situation. The micro-deliberative approach becomes necessarily exclusive if the process is to meet these conditions. It is for this reason that critiques of micro-deliberative democracy raise the question of exclusiveness.

2.1.5 Macro-Deliberative Democracy

2.1.5.1 Trying to Secure both Qualities of Deliberativeness and Inclusiveness by 'Division of Labour'

Some deliberative democracy theorists address institutionalisation in a different way. What is categorised as macro-deliberative democracy theory (Hendriks 2004) tries to overcome the tension between deliberation and inclusion by employing a 'division of labour'. Despite various ways in which the idea of a division of labour is conceived by different theorists, an important degree of the division of labour is commonly involved in those different forms of macro approach. Macro-deliberative democracy theory applies the division of labour across different actors, tasks and methods of deliberation. The division of labour allows macro-deliberation to include more people in different roles, and thus it may secure the twin qualities of deliberativeness and inclusiveness. In order to do so, the deliberation expands its boundary and lowers the bar for the conditions of the deliberative process. For example, it is not necessary for all participants to have a simultaneous deliberative dialogue in one place; rather, participants play different roles with diverse deliberative methods for various issues at different stages of the deliberation process. Therefore, this approach attempts to make it possible to engage a large number of participants with different roles in a deliberation process.

Hendriks (2004) distinguishes between theories of micro- and macro-deliberative democracy according to *scale* and *formality*. She demonstrates that the theory of micro-deliberative democracy focuses on ideal conditions of the deliberative procedure, while the theory of macro-deliberative democracy pays less attention to strict communicative norms

but wider 'open public discourse'(p. 37). On the other hand, Keane (2000) categorises the public sphere into three levels according to their *heterogeneity* and *variable size*, namely: *micro-public spheres*, where multiple disputants interact at the sub-nation state level, such as the various local spaces in which citizens are involved; *meso-public spheres*, where millions of people interact at the nation state level, including neighbouring countries, which are mediated by news media, such as newspapers or broadcasting; and *macro-public spheres,* where hundreds of millions of people engage in disputes at a global or regional level.

Parkinson (2006) elaborates on these scale issues as the attributes which distinguish the micro and macro approaches. One clear distinctive feature of micro-deliberative democracy theory is that it is applicable only to a small scale of deliberation, where deliberation occurs in a small site with many conditions of public reasoning procedure in place. He argues that many scholars are concerned with this kind of small site deliberation with different modes of micro–deliberation, such as "citizens' juries' (Stewart, Kendall and Coote 1994; Smith and Wales 2000), deliberative polls (Fishkin 1997), consensus conferences (Joss and Durant 1995) and parliaments (Bessette 1994)" (ibid., p. 5). On the other hand, Parkinson's alternative approach, macro-deliberation, takes place in contexts which cross space and time and where participants are engaged in deliberation with many different "threads, which change and interact over time" (ibid., p. 6).

Therefore, macro-deliberative democracy theorists also believe in the existence of multiple forms of deliberation for public discussion. Different deliberations have different actors, issues and communication methods. Acknowledging these multiple deliberations is an attempt to avoid the problem of exclusiveness for public discussion; that is to say, the idea that the tightly-structured single public sphere can be exclusive to the rest of the members of society.

Parkinson (2006) argues that the legitimacy problem of micro-deliberative democracy encourages a move towards a macro-deliberative democracy approach. Macro-deliberative democracy theory has more flexible conditions for procedure and so it can embrace multiple deliberative moments in a wider arena of deliberation. Thus, it is not necessary for participants to engage in debate simultaneously. Instead, this wider picture of deliberation allows more people in multiple deliberations across multiple places and times. This approach assumes that these multiple deliberative moments are linked and that they can work together as one deliberation.

In the same light, Pellizzoni (2001) addresses the permeability between private and public spheres. He argues that those issues that people discuss in their private lives can be transferred to state level discussion. Maintaining this permeability between private and public spheres, he supports a Deweyan idea- "fostering an associative life as open as possible to what lies beyond the functional or spatial borders of each deliberative community" (Pellizzoni 2003, p. 349). In this sense, he also sees the public sphere as a larger form of public discussion, which consists of multiple deliberations. Here, the public sphere is understood to be a system consisting of "different, partially overlapping and potentially inclusive circles" (ibid., p. 348).

Fraser (1990, 1992) posited a view of plural public spheres by criticising Habermas' earlier work of the single public sphere's ignorance of *women, the proletariat and popular culture*. She argues that the public sphere should include private interests and issues rather than just public reasons. Benhabib (1996) also contends that the traditional view on public discourse still leaves women's interests exclusively in the private sphere.

Although Habermas' (earlier) work of *ideal communication* has provided the basis for established (micro approach) deliberative democracy theory (Bloomfield et al. 2001), he also later explored the idea of multiple deliberations within the public sphere. Responding to criticisms of his idea of the single public sphere, Habermas' later work (the two-track model in *Between Facts and Norms,* 1996) recognised two parts to the public sphere: the *informal zone* as a place where public opinion is constructed and the *formal zone* as a sphere where political decisions are made (Schneider 1997; Cohen 1999).

In addition, due to communication technology, civil society nowadays has different modes and channels by which to discuss political issues. It is, therefore, a significantly different context to that of the European bourgeois coffeehouses of the 18th century, which provided the model for the idea of the public sphere. Consequently, diverse methods and styles of communication exist and thus should be considered for public deliberation. In brief, the loosened definition and the broadened boundary of deliberation under the macro-deliberative democracy approach, allow more people, issues and forms of communication to be tabled. This approach holds the premise that these multiple deliberative moments are transferred and integrated into a whole *deliberative system*, as Mansbridge explains:

> "The venues for deliberation fall along a spectrum from the representative assembly (Bessette 1994), to the public assembly producing a binding decision (Cohen 1989, Gutmann and Thompson), to the "public sphere" (Habermas, [1962] 1989), to the most informal venues of everyday talk." (Mansbridge in Macedo 1999, p. 227)

As macro-deliberative democracy theorists maintain the possibility of the integration of multiple micro-deliberations into a single macro-deliberation, they hold the potential of a 'mix and match' method of the elements of deliberation depending on the context. That is to say, the whole macro-deliberation process is composed by arranging different actors, tasks and methods. Here we see the concept of the division of labour, which is employed by macro-deliberative democracy theorists, in order to achieve the twin qualities of deliberative democracy, namely deliberativeness and inclusiveness.

Of course, the idea of a division of labour has a longer historical lineage. Adam Smith (1776) saw that a division of labour would improve the productivity and effectiveness of labour. Particularly, when applied to a larger scale of business, Smith argued that much more division of work had been seen in *great manufactures,* obviously, more so than in *trifling ones*. Macro-deliberative democracy theorists have shed the same light on the division of labour in political practices as Smith did with reference to the *general business of society*.

2.1.5.2 Divergent Ontologies over Division of Labour of Public Deliberation among Macro-Deliberative Democracy Theorists

Although there is a shared acknowledgement of the function of the division of labour in macro-deliberation, macro-deliberative democracy theorists see deliberation as a different kind of 'labour'. For example, some see it as a decision-making process, or a social learning exercise, or an institution. Therefore, they have different views as to how to divide deliberation: who should be involved in what task and in which way. For example, Habermas' distinction locates between two parts of the public sphere (1996): the *informal public sphere* builds public opinion and the *formal public sphere* makes a political decision. On the other hand, Pellizzoni differentiates the private sphere and the public sphere and emphasises the permeability between them. He addresses the importance of "the experience of cooperation in the division of labour" amongst participants in deliberation (2003, p. 348). Another approach towards the division of labour of public deliberation is

Saward's (2003) *reflexive procedural* method. He argues that a democratic practice is constituted by different *devices* and *principles*: "we need systematically to stand back from existing models precisely in order to manipulate and combine their elements in democratically promising, tailored ways" (ibid., pp. 167-8). He lists parliament, public agencies, public hearings, debates, elections, majority rules, systems of representation, deliberative polls, citizens' juries and so forth as examples of the device (ibid., p. 167*)*. These devices are to be arranged in a single mode, or a combination mode, within and across the different stages of decision-making. Parkinson (2006), on the other hand, elaborates the deliberation process as decision-making stages, namely – *define, discuss, decide* and *implement*[14]. Each of these four stages has its own role in the deliberation process. Furthermore, each stage has multiple actors and channels; even within one stage there are different actors and channels working together. Also, depending on the stage, actors and channels have different roles to play; no matter how different their respective roles and power may be, all participants are involved in a single, whole deliberation.

One of the recent discussions (Conference *Deliberative society* at the University of York in June 2009) among eminent scholars in this area also shows these diverse views over deliberation and the division of labour. Well-known deliberative theorists there (e.g. Bohman, Christiano, Dryzek, Mansbridges, Parkinson, Warren etc.) discussed the question of what the components of the big picture of deliberation and society are. Different conceptions of the division of labour were both implicit and explicit in this discussion. For example, Thomas Christiano (University of Arizona) proposed an explicit division of labour between experts and citizens on the basis of their different knowledge. Others, however, implied that the division of labour is, in fact, applicable to different institutions. In addition, among the institutional views presented, different scholars understood 'institution' differently. For instance, some discussed it as a micro-deliberative practice, such as the citizens' jury or a deliberative poll whilst others took the institution to mean the agents of society, like the legislation system, universities, the media and so on. John Parkinson, of the University of York, proposed an institutional view that 'macro-deliberation' is an institution associated with a specific problem, which is then developed to solve the problem, after which it can then disappear.

No matter how conceived, macro-deliberative democracy theory has common elements

[14] Parkinson adapted this category from Catt, H. (1999) *Democracy in Practice*, London: Routl edge.

that allow it to be distinguished from micro-deliberative democracy theory: macro-deliberation deals with issues of extensive scope and scale (for example, at an international, national or regional level). It is constituted by smaller, nested deliberative activities and it is involved in the explicit division of labour across actors, tasks and methods, believing in the permeability amongst multiple deliberations.

2.1.5.3 Tension between Inclusion and Division: the 'Paradox of Plurality' in the Division of Labour

Adopting a macro level approach to deliberative democracy theory as the alternative approach to micro-deliberative democracy theory however, involves facing a different challenge for its institutionalisation. This is the tension between division and inclusion since, in order to divide participants into different roles in deliberation, it is necessary for certain participants to be excluded from certain roles and issues. Thus, the division of labour raises the question of exclusiveness again in this alternative approach, which generates, what this thesis calls, a 'paradox of plurality'.

Plurality, as elaborated upon in the previous section, is the core concept of deliberative democracy theory. Plurality in deliberative democracy specifically represents two sides of the same coin as 'challenge' and 'essence'. Regarding the implementation issues of deliberation, plurality is a challenge, as it is practically hard for many people with plural values (and interests) to explore them in depth. On the other hand, with regard to the essential qualities of deliberation - inclusiveness and deliberativeness, plurality is an essential element to be achieved. However, due to the inherent tension between deliberation and inclusion, micro-deliberative democracy theory puts more emphasis on deliberativeness than inclusiveness, prioritising plurality in depth of values. On the other hand, macro-deliberative democracy theory tries to enhance plurality actively in order to overcome the dilemma between deliberation and inclusion. It expands the boundary of deliberation with the aid of the division of labour, so as to secure both qualities of deliberativeness and inclusiveness. Division of labour in macro-deliberative democracy theory is a kind of means by which to enable the deliberation to include more people and simultaneously to remain in quality discussion for the depth of values.

However, the division of labour in macro-deliberative theory compounds a different exclusion to micro-deliberative democracy theory. Micro-deliberative democracy theory

focuses on the depth of values of limited participants over certain issues through quality discussion. Its condition, therefore, excludes the majority of people from providing input into the issues and thus restricts its scope and scale. On the other hand, the division of labour in macro-deliberative democracy theory allows more participants and more issues into the deliberation. Its condition, however, limits certain people's values only to certain issues again, although the number of participants and issues covered in the whole deliberation may be greater. Therefore, it appears that in order to afford greater attention to a plurality of people and issues, it is paradoxically necessary for each value to be articulated in a less inclusive (pluralistic) way. This poses a question of representativeness, as it raises the question of who should deliberate over which issue. In this sense, Gutmann and Thompson disagree with the idea of division of labour, arguing that "deliberative labour should not be divided so that representatives give reasons while citizens merely receive them." (in Parkinson 2006, p. 166).

It can be seen, again, that this macro-deliberative democracy approach becomes a subject that needs to be re-examined. Once plurality is raised as a concern, the question of legitimacy in the micro-deliberative democracy approach becomes apparent; plurality can cause micro-deliberation to compromise inclusiveness. However, in the alternative approach, (i.e. macro-deliberative democracy theory), plurality becomes a solution by which to resolve the tension between inclusion and deliberation by expanding the boundary of deliberation and believing in the function of the division of labour. This, however, compounds a different tension between division and inclusion and thus also raises the same question of exclusion. Therefore, a critical discussion of deliberative democracy theory raises the question:

> Whether and how divisions of labour would be useful to maximise the two qualities of inclusiveness and deliberativeness in macro risk deliberation exercises?

In addition to these discussions on deliberative democracy, there is another theoretical strand, which constitutes the analytical framework of this thesis, namely reflexive governance, which will be discussed in the next section of this chapter.

2.2 Reflexive Governance

Giddens' (1990) and Beck's (1992) sociological works make seminal contributions to the literature on reflexive governance, highlighting and explaining the importance of reflexivity in modern society (Stirling 2006). There have also been efforts by scholars, such as Wynne (2002), Grin (2006), Stirling (2006), Voss and Kemp (2006), and Stirling and Smith (2007), to encourage the attributes of reflexivity in particular areas of environment governance and sustainable development. These scholars, in particular have an interest in the relationship between science and technology and society. Their arguments regarding reflexive governance either constitute a claim to the intrinsic nature of reflexivity and its role in the governance of ST, or a normative assertion of the desirability of a more reflexive direction of ST governance. At the same time, however, scholars with instrumentalist perspectives have ignored the existence or tried to reduce the degree of reflexivity. Wynne (2002) observes this tendency in studies of reflexivity:

> "The substantial work in SSK-inspired sociology and politics of technology (e.g. Bijker et al., 1987; Feenberg, 1999; Latour, 1992; MacKenzie, 1989; MacKenzie and Wajcman, 1999; Rip et al., 1995; Winner, 1986) has emphasized the importance of understanding the contingency of social and technical constitutions of technologies, as a matter of (an enlarged agenda for) democratic technology policy and design, on the basis of more upstream, socially-inclusive, more continuing and more open-ended processes of human negotiation. Explicitly or implicitly, innovation, design and their driving interests would be matters for democratic deliberation, not merely impacts. However, although they are increasingly the exclusive focus of attention, they remain a limited back-end agenda." (Wynne 2002, p. 464)

This part of my thesis explores the intrinsic nature of reflexivity with regard to ST governance issues. To do so, I elaborate on the *process* and *outcome* dimensions of reflexivity by exploring its attributes in relation to the elements of ST governance.

2.2.1 Reflexive Modernisation and Governance

The origin of the discussion on reflexive governance is rooted in the notion of 'reflexive modernisation' (Beck et al. 1994). Beck (1993, 1994 in Voss et al., 2006) asserts that one of the most significant features of the modernisation phenomenon is *self-confrontation*. Rationality-oriented modernity – *first modernity*, as Beck (2003) terms it – faces the problems (side effects and risks) that modernisation creates as it progresses, such as technological risks and illegitimate decision-making processes. This is so-called *self-confrontation*. Beck

(2006) employs this distinctive feature of modernisation as an analogical term for reflexive modernisation. However, reflexive modernity – *second modernity*, as coined by Beck (2003) – also occurs in the process of solving these problems. In other words, the "reorientation of modernisation" towards second modernity occurs through a kind of self re-structuring process as reflexive modernisation transforms its institutions in order to rectify the problems it has created (Grin 2006, p. 60).

> "As the twentieth century gives way to the twenty-first century, this dynamic, which is turning back reflexively – in the sense of a kind of 'self-confrontation' – upon itself, is now dissolving the familiar formulae of simple modernity [first modernity]." (Beck 2006, p. 32)

Discussion around the notion of governance reflects a similar understanding of modern society to that of the notion of reflexive modernisation. Grin (2006, p. 57) agrees with Pierre and Peters' (2000, p. 1) articulation of the central account of governance as "shaping the market and society [and science][15] into a desired form." In this light, he explains one of the reasons that reflexive modernisation matters for governance as follows: "Both, as concepts, explicitly consider the institutions of state, market, science and society and their relations (and the ways in which they are conceived) not as givens, but as objects of more or less considerable scrutiny and change" (Grin 2006, p. 57). These two concepts of reflexive modernisation and governance each represent efforts to grasp the complex, distributed, emergent characteristics of modern society. In particular, they both pay attention to the processes constituting the endogenous transformative potential of society.

The rise of the notion of governance from the late 20th century embodies a crucially contrasting meaning to the notion of government (Voss 2007). The term 'government' encourages a view under which the governing of resources and rules in a social system is the business of a discrete social actor functioning as a 'subject' of 'decision-making'. Under this view, it is 'the government' that sets and administrates the resources and rules, which shape a system. In this perspective, therefore, the government is the subject and the system is the object, which needs to be managed by government. This is the conventional approach in the context of ST policy-making – seeing government as the subject and ST as the object to be managed by the government.

[15] Grin (2006) adds science to Pierre and Peters' (2000) articulation.

On the other hand, the notion of governance pays attention to the mode by which a system is constituted. Dynamic[16] relations of constituents of the system are the subjects that set and administrate its resources and rules. By this logic, the system is understood not merely as the object to be dealt with by government, but is itself also a subject that, through governance, shapes itself. This is similar to the understanding of ST development in the discussion of the socio-technical system. The socio-technical systemic approach regards the process of the development of ST in terms of interaction between ST and other societal agents. In this perspective, the socio-technical system is the subject that manages ST as well as the object that is simultaneously managed by social agents.

Yet, the focus of the differentiation of subject and object does not rely on drawing our attention to the dichotomy between them; rather, the point is the opposite in showing the close relationship between subject and object in this context. In other words, such a percept emphasises the unique nature of 'duality' in governance. Giddens (1984) articulates this as paradoxically the 'absence of the subject' in his notion of structuration:

> "Structure, as recursively organized sets of rules and resources, is out of time and space, save in its instantiations and co-ordination as memory traces, and is marked by an 'absence of the subject'. The social systems in which structure is recursively implicated, on the contrary, comprise the situated activities of human agents, reproduced across time and space. Analysing the structuration of social systems means studying the modes in which such systems, grounded in the knowledgeable activities of situated actors who draw upon rules and resources in the diversity of action contexts, are produced and reproduced in interaction. Crucial to the idea of structuration is the theorem of the duality of structure, which is logically implied in the arguments above. The constitution of agents and structures are not two interdependently given sets of phenomena, a dualism, but represent a duality. According to the notion of the duality of structure, the structural properties of social systems are both medium and outcome of the practices they recursively organize."
> (Giddens, 1986/1984:25 in Voss 2007, p. 27)

Giddens (1984) accounts for the duality in the structuration of the social system as a playing of the role of the subject and, simultaneously, the role of the object. That is to say,

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[16]In this thesis, I employ the term 'dynamic' to describe a key aspect of reflexivity – both theoretical and empirical. The meaning here is that given by the Oxford English Dictionary: "(of a process or system) characterized by constant change, activity, or progress: a dynamic economy" *(http://oxforddictionaries.com/us/definition/american_english/dynamic?q=dynamic)*. Accordingly, placing this particular adjective in front of terms such as 'relations' or 'interaction' in this thesis highlights the way of interactions and nature of relationships among elements (and participants) as 'changing, active, influential, powerful, non-static, etc.'

the double sides of the dual nature of the social system represent, on the one hand, the subject, which constitutes the structure, and, on the other, the object, which is the being that is constituted. In Giddens' (ibid.) terminology, the structuration of the social system implies its dualistic relationship to practices as both medium and outcome. Practices are shaped according to structure, and structure is the result of practices (Sewell 1992). Sewell (ibid.) notes that according to this view, human agency and structure are "far from being opposed, in fact presuppose each other" (p. 4).

2.2.2 Duality of Process and Outcome in Reflexive Governance

I find Giddens' (1984) duality of medium and outcome useful to the understanding of the nature of the reflexivity of governance. Accordingly, this duality is also employed as a fundamental pillar of the analytical framework of the present thesis, which aims to facilitate an understanding of the implications of reflexivity in ST governance. However, I use a different term for this duality, namely, 'process and outcome', rather than Giddens' (ibid.) 'medium and outcome'. I make this distinction because the term 'medium' implies that the property of structuration may be restricted to the means the social system employs to deliver output. This directs our attention to the external, enforcing power and its output of social systems. Therefore, rather than 'medium', I suggest the term 'process' to shift our attention to the bigger picture embracing the way in which output is constructed with a wider aspect; although both 'medium' and 'process' present the 'enabling' (Swell 1992) feature of structuration. Process also clearly implies a counterpart to the 'outcome' of duality. Therefore, the duality of process and outcome stresses the endogenous property of structuration, and the dual relationship as subject and object of reflexivity. Analysis, based on such a framework of duality of process and outcome pays attention both to the way in which the constituents of the ST system interact, and to the outcome of such interaction.

Going back to the concept of governance, an important contrast between 'governance' and 'government' is that the former stresses the dynamic relations between the constituents – including non-state actors – of the system. According to this perspective, in the context of ST governance, any understanding of the development of ST relies on a better grasp of the ways in which societal agents (including the incumbent ST) interact with each other. This represents the dimension of *process*. Rhodes (1997 in Voss 2007) articulates governance as "a change in the meaning of government, referring to a *new* process of

governing" (p. 21).

With similar insight, Grin (2006) argues that there has been increasing interest in governance, which regards issues raised as about "the transformation of the ways in which government and societal and market actors are dealing with each other" (p. 60). Grin (ibid.) goes on to give examples of 'network management' (Kickert et al. 1997), 'public participation' (Newman 2001), and 'promoting self-organisation' (Rhodes 1997) as elaboration of such a concept of governance (Grin 2006, p. 60).

Paradoxically, according to this explanation, the concept of governance also implies *the outcome* of governing. Governance is the resultant pattern, which is shaped by the interactions of the system's constituents; it is the dimension of outcome. Certain dynamic and complex relations between society's agents themselves (including the incumbent ST) are the constituents, which shape the ST system. Development of new ST does not take place solely in the laboratory, but through the dynamic interactions of society's agents, such as in their testing, adaptation and application of new ST. The above-mentioned examples of network management, public participation, and promoting self-organisation thus imply not only the *process* of governing but also a certain *outcome* of governing.

Therefore, accounts of governance embrace aspects of both the *process* (the ways in which the system's constituents interact) and of the *outcome* (the resultant pattern of interactions of the system's constituents) of governing. This feature of duality centres on the concept of governance. Voss (2007) also finds this duality in Ortmann et al.'s (2000) work on organisation:

> "When we say 'organisation' we operate with a fundamental ambiguity. We could refer to the process of organising or to its outcome, the 'being organised' of social interaction and hence a system or organised agency" (in my [Voss] own translation p. 26)

Here, Ortmann et al.'s (2000) 'ambiguity' between the process and outcome with regard to the understanding of *organisation* corresponds with Giddens' (1990) duality of *structuration.*

As established thus far, this property of duality in reflexivity is already embedded in the concept of governance. Researchers must have built the notion of reflexive governance on this nature of reflexivity in governance and then tried to highlight the reflexive feature

more explicitly with respect to governance issues. Some strands of the debate on reflexive governance – especially in the area of sustainable development – present their normative direction more explicitly. They do not just discuss it as a phenomenon but also address the need for a more reflexive approach as an effective way to respond to the new environment of ST development. In so doing, the duality of process and outcome in particular is often presented in a normative way with the claim that the two dimensions should be combined in an approach to governance issues.

Voss' work *Designs on Governance* (2007) is based on Giddens' notion of duality of medium and outcome. Voss (2007) expands it to explain the relationship between 'design' and 'dynamics' in governance, arguing that policy instruments have been understood either as the design or the outcome of governing in studies of policy. He contends that the 'design perspective' in policy studies is based on the concept of the 'central control of government', which is a conventional, instrumentalist approach to policy; while the 'dynamics perspective' pays attention to 'emerging and self-organising social order', which is a systemic approach to policy (Voss 2007). Voss (ibid.) goes on to claim that the perspectives of design and dynamics both have shortcomings in their grasp of policy as each ignores the other concept. Thus, as neither perspective alone can explain governance issues, he suggests that both should be taken into consideration and integrated into a single overarching understanding of policy (ibid.).

Smith and Stirling's (2007) work on the governance of the socio-technical system also seems to possess a similar insight to the duality of medium and outcome as Giddens' (1984) notion of structuration. Smith and Stirling (2007) analyse the duality feature of the socio-technical system, finding that there are two distinct approaches to its understanding. The first is the managerial approach whereby the socio-technical system may be objectified, and through which it is regarded as an issue of 'governance on the outside'; and the second is the reflexive approach whereby the co-constitution of the socio-technical system may be understood, and through which it is regarded as an issue of 'governance on the inside' (ibid.). Smith and Stirling (ibid.) address the need to move from two separate approaches to a combined one, arguing that a unification of these contrasting perspectives will improve the development of policy.

These arguments in favour of the need for an integrated approach to the two dimensions –

process and outcome – of governance reflect its singular property, namely, its duality. Accordingly, normative discussions around the notion of 'reflexive governance' are presumably attempts to draw our greater attention away from the conventional, managerial approach towards the role of reflexivity in order to promote a better understanding of governance issues.

2.2.3 Dimensions of Process and Outcome of Reflexivity

The conclusion of the previous section notwithstanding, the discussion in this section pays separate attention to the two dimensions – yet single property – of reflexivity. This is a working operation that seeks to understand the concept of reflexivity and its implications in ST governance.

Primary understanding of the property of reflexivity may be aided by observing the recursive process of a subject's reflection (Spirals in the Figure 2.2.). Reflexivity arises during the continuing process of the subject's reflection on (response to) the environment. Figure 2.2 depicts this process. When a subject (S) responds to the environment (E), it reflects (L) on other subjects (*objects* from its perspective) and its condition, and projects a response/representation (R -such as meaning or relationship) onto the environment. Consequently, subjects re-construct their own environment, which conditions their next representation. This process suggests a contingency in terms of the way in which subjects' representations return to influence the subjects themselves by re-structuring their own environment. Reflexivity is the property raised through this recursive process of reflection, which is reflective, endogenous, self-contingent, and self-influential. Plural processes are set in motion – the middle one (S1) alone being highlighted to show the details of the process (Figure 2.2).

Stirling's (2006) 'recursive loop' emphasises this quality of contingency in reflexivity, which represents the iterative and interactive relational process between a subject's 'representation' and its 'intervention':

> "We face a recursive loop, in which it is recognized that representations are contingent on a multiplicity of subjective perspectives, and that these subjective perspectives are themselves reconstituted by processes of representation. As a result, any associated interventions are also simultaneously contingent on and help condition a series of divergent but equally valid potential subjective

representations." (Stirling 2006, p. 230)

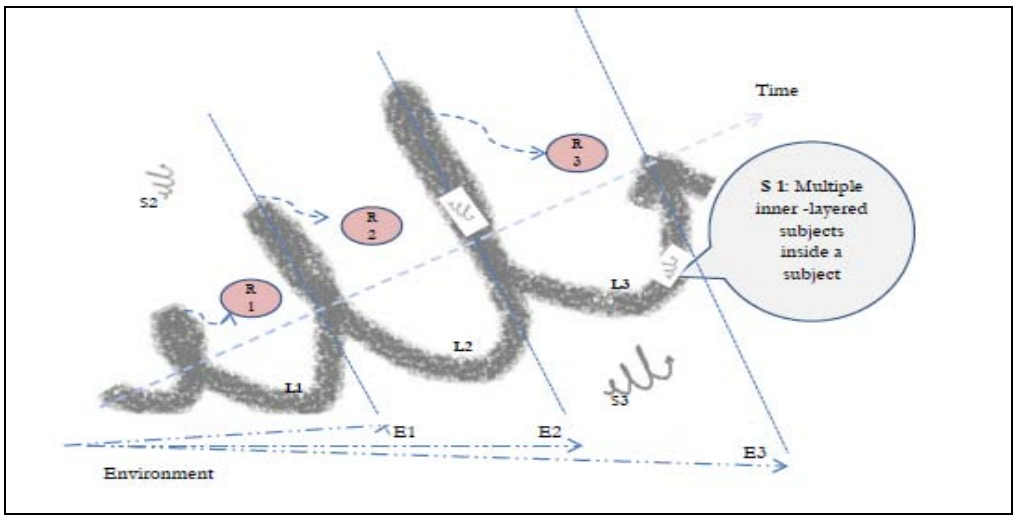
Stirling's (2006) understanding of reflexivity relies on the notion that "attention simultaneously encompasses and helps constitute both subject and object" (p. 228); that is to say, the subject's representation of the object returns to the former by reconditioning it.

At this point, one of the salient features of understanding reflexivity should be addressed: no self-evident boundaries (identities) exist between different subjects. This represents an ontology issue, which implies there are differently drawn boundaries for each subject and loop. Referring to the illustration below (Figure 2.2), there are plural subjects in the environment, and plural moments when a new turn of the loop develops; and there are inner layers within each subject and thus within each loop.

Thus, the governance system consists of differently layered governing domains, and changes (through generating responses) take place across different moments and domains.

Through this account of reflexivity, the ST governance system may be explained as the whole environment in which such multiple subjects exist and inter-reflect(S1, S2, S3, etc.), and, as in the example of S1, one that comprises multiple subjects that also contain smaller subjects embedded inside them. Therefore, the development of the ST system can be understood in terms of systemic change through representation of its own operation, that is, a recursive process whereby the system generates and re-configures its resources and rules over time.

Figure 2.2 Reflexivity in the Recursive Reflections of Subjects



S — A spiral refers to a subject's (object's) recursive process of reflecting on the environment. Subjects are objects to each other. There are multiple spirals (1, 2 and 3) in the environment. Each spiral contains multiple nested subjects inside it.

L — Loops (1, 2 and 3) each comprise one of a set of reflections of subjects

R — Responses (1, 2 and 3) are the results of subjects' reflections on the environment.

E — Environment (1, 2 and 3) is the space where a subject reflects on other subjects (objects) and its condition, and generates its response to, thus construction of itself. Environment includes other plural subjects that are also objects to one another. Therefore, there are plural spirals in the environment.

2.2.3.1 Dimension of Process: Recursive Re-configuration of Resources and Rules of the ST system over Time

Applying the above concept of reflexivity to understand ST governance, agents of the ST system are the embedded subjects/objects, such as the market, science, policy discourse, various organisational institutions, and so on. Their interactions produce representations, such as new scientific knowledge, discourse, a regulatory framework, etc. These newly produced representations therefore become new constituents of the ST system and re-shape its incumbent structure. This recursive re-constitution process of the system continuously re-shapes its own structure; therefore, the system evolves through a process of self-re-configuration. Wynne (2007) terms this the "reflexive process of subject–object co-construction," which is involved in the 'essential contingency.' (p. 462). Such a

contingency feature of the reflexive process in the ST system concerns the continual generation and re-configuration of resources and rules of the system, which eventually leads to evolutionary change of the system.

Particular attention to the dimension of the process of governance implies that we approach governance by observing the ways in which a pattern is being shaped. As the reflexive process is recursively perpetuated, any given outcome does not last forever. Rather, a certain constituted shape is temporarily formed at a certain moment of the process, at which it is immediately ready to change. The examples of a new policy network, bottom-up environment movements, an independent body for providing policy advice, and public engagement in ST policy-making are the results of agents' inter-reflections, which then construct a new context for developing new ST; therefore, they re-condition the ways in which agents govern the development of ST. This recursive process thus keeps re-shaping the system by replacing the old structure with a new one. Accordingly, a newly constituted pattern is stable for some time and is then re-arranged with a newly generated structure. Grin (2006) explains the 'transformation of institutions' with regard to this dimension of process "as the transformation of the ways in which government and societal and market actors are dealing with each other" (p. 60).

Voss' (2007) concept of 'designs on governance' elucidates the interaction between 'design' (intended implementation) and 'dynamics' (unintended development) in governance, holding that both design and dynamics are elements of structuration. According to this hypothesis, there are three different grades of structuration: an emerging grade, an establishing grade, and a changing grade, which are differentiated depending on the degree of influence of each element (of design and dynamics) on the other (ibid.). An expansion of Voss' (ibid.) hypothesis corresponds with the evolutionary reflexive process of the system. Such a differentiation of grades highlights the notion that there are different moments that together constitute a spectrum of change to the system.

Kemp and Loorbach (2006) also discuss this dimension in a similar way to Voss (2007), adopting the concept of 'transition management', and arguing that transition takes place in a "variation-selection-reproduction process at the societal level." Kemp and Loorbach (2006) go on to stress the complexity of the process of social change in terms of "outcomes of interaction between the individual actions and strategies of a large number

of actors" in multiple levels of governance:

> "Our society is always changing. Over the past decades, however, driven by transnational trends such as internationalization, informalization and individualization (Schnabel, 2000), the process of social change has become increasingly complex. Choices at a societal level are the outcomes of interaction between the individual actions and strategies of a large number of actors that have different perspectives and goals. Increasingly, policy-makers are for example forced to take into account the issues of societal actors and social partners in the process of policy-making (Mayntz, 1994: Kooiman, 1993). This happens at different levels in parallel, generating complex multi-level governance structure (Scharpf, 1994: Kohler-Koch, 1999)." (Kemp and Loorbach 2006, p. 103)

One example that demonstrates the perpetual change in policy practices is the technological risk governance framework. Many such frameworks (e.g. US-NRC 1996; IRGC 2006; WHO/FAO 2006; Safe Foods 2006; UK Cabinet Office report 2002) show iteration as one of their most important features, emphasising the significance of the flexibility to include feedback in the process. The aforementioned risk governance frameworks all constitute an iterative cyclical process. When new information or knowledge is recognised, it forms an input into the process, after which it re-examines issues in the light of this newly added input. Such a process is encouraged and designed to maintain a cyclical form, but the cycle is in fact a series of inter-linked loops, which reflects a spectrum of different moments of change in the whole process. The following quotation from Smith and Stirling (2007) also explains the perpetuation of change in reflexive governance over time:

> "However imperfect or provisional they may be, commitments will (of course) be formed. Whether consensual, majoritarian, elitist, or to meet sectional interests, pragmatic 'decisions' must be made (or at least be seen to be made). This analysis reminds reflexive governance theorists why any (managerial) 'implementation' will always be provisional and, indeed, why 'decisions' have to be put into a broader historical context." (Smith and Stirling 2007, p. 369)

In short, recursive, reflexive interactions between the constituents of the ST system continuously produce the resources and rules of the system; therefore, the system evolves through the perpetual re-configuration of its structure while it responds to its own representations.

2.2.3.2 Dimension of Outcome: Continuously Generated Resources and Rules of the ST System

Discussion on the outcome of governance implies that we consider a certain moment of the governing process. Agents of the ST system (such as organisational institutions, science, the market, discourse, etc.) interact and produce representations of the system, such as understandings, knowledges, stakes, relationships, and power structures within the system. Representations produced in this way change the condition of the agents such that they become new constitutional elements of the ST system. Subsequently, the agents are obliged to respond to the newly constructed system. In this way, their recursive reflexive process perpetually generates new sets of representations. Such are the resources and rules of the ST system.

Voss and Kemp (2006, pp. 6–7) cite 'constructive technology assessment', 'deliberative policy-making', 'trans-disciplinary research', 'foresight exercises', 'cooperative policy-making', 'transition management' and 'adaptive management' as examples of new reflexive approaches. Thus, by such means, the agents of the ST system generate, for example, conflict, uncertainty, and ambivalence on the one hand, and explore different perspectives on and alternatives to these problems on the other.

One important element in the understanding of the outcome of reflexivity is the ontology issue. As discussed in the introduction to this section, ontology is called into play with the drawing of a different boundary for each subject/object. Marsh and Furlong (2002) define ontology as a theory of 'being'; that is, it relates to the different ways in which an object can be seen to exist. Marsh and Furlong (ibid.) go on to explain how the ontological view of the researcher shows her/his "view about the nature of the world" (p. 18). Accordingly, as people have different ontological views, the boundaries of subjects/objects might not be viewed as the same for all: some boundaries are so explicit that they can be readily agreed upon, but others may be contentious. Thus, the boundaries of a social subject are not self-evident but are constituted contrastingly under different ontologies.

Therefore, acknowledging divergent ontological views allows us to conceptualise the co-existence of differing agent boundaries in the ST system. These multiple boundaries are not always physically mutually exclusive but may be regarded as distinct, each capable of

playing its particular role in and effecting its respective influence on the system. Thus, there are a greater number of agents that actually play substantive roles in and exert influence on the system (as determined by virtual boundaries drawn between agents under different ontologies as well as physically distinctive agents) than the number of those that physically distinctively exist.

In addition to these multiple individual agents, there are multiple layers of agents within each one – whether boundaries are explicit, implicit or partly overlapping. Therefore, in addition to individual agents' representations, plural groups and levels of agents also introduce their collective representations into the system. Thus, the ST system consists of different, layered governing domains. For example, the multi-level model in studies of the ST innovation system acknowledges different levels of the socio-technical system, namely, "macro–landscape, meso-regimes and micro-niches" (Kemp and Loorbach 2006, p. 108). Each level consists of different domains and agents interact with one another according to their different identities in each domain. Therefore, under this multi-level model, ST innovation takes place through agents' (individual and collective) interactions within and across multiple levels of the ST system (Kemp and Loorbach 2006).

Subjects' multiple identities (either individual or collective) and their multiple representations (e.g. relationships and meanings) are the resources and rules that shape the structure of the ST system. Multiple subjects bring their multiple representations into the system continuously through the reflexive process. The example of increasing interests and exercises in the use of networks in ST governance reflects recognition of these multiple agents for a better understanding of ST governance. Distributed, diverse, plural agents across multiple levels and groups within the system create diverse meanings and complex relationships through their interactions.

Observation of such reflexivity in the ST system has improved our understanding of the ST system from a linear approach to a complex net-shaped one. Smith and Stirling (2007) corroborate this notion thus:

> "Since successful socio-technical development emerges through complex networks of actors, artefacts and institutions, so governance will need to engage across many of the points and processes within those networks (Smith et al., 2005). Imposing normative goals of sustainability upon existing systems implies connecting and synchronizing changes among a formidable array of processes across many different

> points in the system. Governance must consequently fulfil distinct diagnostic, prognostic, prescriptive and co-ordination functions." (Smith and Stirling 2007, p. 353)

The notions of multi-level governance, network management, and the deliberative participation of various social actors recognise such co-existence of multiple agents and their multiple representations within the system. Accordingly, the multiple identities of agents and their multiple representations form the increased constituents of the ST system. Through their reflexive interactions, these elements subsequently multiply their relationships and meanings within the system. In this way, reflexive governance enables the ST system to explore multivalent perspectives in society (Wynne 2002; Jasanoff 2003; Stirling 2006; Voss and Kemp 2006; Smith and Stirling 2007).

2.3 Conclusion

As Lynch (2000) points out, although the literature discusses what reflexivity does to a certain extent, it is never clearly defined what it is. Rather, commentators discuss reflexivity from theoretical or methodological standpoints contrasting it with being 'unreflexive', as a "methodological virtue and source of superior insights, perspicacity or awareness" (p 26). This may be so because it is a fundamental property that can only reveal its meaning and possible role through the action of 'reflection'. Thus, understanding reflexivity depends on an appreciation of the ways in which reflections take place as well as their outcomes. This thesis suggests that such an essential human action is the starting point of understanding the elusive concept of reflexivity; at its simplest, reflexivity is the property that arises while a subject continuously reflects when interacting with 'objects' (other subjects).

However, when considering the implications of reflexivity, it is important to differentiate it from just 'being reflective'. Reflexivity implies continued reflection and thus the contingency aspect such that the result of reflection re-conditions its subsequent reflections. This element of contingency determines the nature of reflexivity (Lynch 2000; Wynne 2002; Stirling 2006), in addition to the state of being reflective. This percept accords with the notion of 'self' alluded to by many commentators on reflexivity; for example, in terms of 'self-awareness' (Giddens 1993), 'self-confrontation' (Beck 1994), and 'self-reflection' (Bohman 1996). Such a self-contingent feature indicates the significance of the dual relationship between process and outcome discussed previously.

The application of this notion of reflexivity is extended from the human interactive level to the systemic level. With the ontological boundaries of subject addressed in previous section, reflexivity also operates at the even higher level of the ST governing system. Reflexivity may operate at different levels (boundaries) of subject, for example, in an individual person's reflection; inter-personal reflection; inter-reflection between groups of people; and inter-reflection between organisations, institutions or systems. Accordingly, given the multi-layered boundaries of subject, the present thesis addresses a wide range of reflexivity instances, that is, from the points of view of the individual, various groups of actors, the technology regulatory system construction process, and, ultimately, the greater picture of the overall UK ST governing system. Here, the boundary of the subject begins at the personal level and expands to the collective level, namely, the agent that consists of layered interior groups of individuals. In terms of a multi-layered ST governance system and its constituent agents (individuals, groups and institutions), reflexivity is manifested as a property that appears from and determines the inter-reflection and response of such agents at different levels of the system.

In this way, reflexivity perhaps provides a useful methodological insight (Lynch 2000) through which to understand elements of complexity, connectivity, continuity and contingency; as well as, paradoxically, fragmentation, diversity and plurality. Such duality may also be useful to explain not only the conceptualisation of process and outcome of governance previously discussed, but also the scenes whereby opposite elements coexist, and are linked and contingent – such as vertical/horizontal, diachronic/synchronic, problems/solutions, cause/effect, individual/collective, and process/outcome – in the system.

Our tentative explanation of the inherent nature of reflexivity might then raise the question as to whether all forms of governance are automatically reflexive. It may be true that the intrinsic nature of reflexivity exists in any type of 'governance'. Indeed, Lynch (2000) argues that reflexivity is inherent being: "[...] an unavoidable feature of the way actions (including actions performed, and expressions written, by academic researchers) are performed, made sense of, and incorporated into social settings [...] it is impossible to be unreflexive" (p.26). Like Lynch's point and as established in the previous discussion, the duality of reflexivity is itself already embedded in the notion of governance. The question,

therefore, should not be about whether all governance is reflexive or not, but rather centre on the understanding which condition of governing makes governance more or less reflexive; and whether reflexivity should be promoted in governance.

The discussion should be thus focused on the relationship between the condition and the level of reflexivity. Accordingly, the questions can be further developed into an enquiry as to why this greater attention to reflexivity has arisen in recent debate, and the nature of the difference between the contemporary context and that which obtained previously in terms of such recognition of reflexivity in ST governance. For the present study, specifically, the question then is why reflexivity matters for the understanding of divisions of labour in macro risk deliberation exercises.

A singular precondition – at least according to my theoretical examination findings – necessary for a 'more' reflexive governance system is plurality in the elements of governance (multiple actors and their representations). Following on from this fundamental condition is greater discursive structure of the environment in which the actors play their roles. Such a context is contrary to a managerial, controlling, instrumental approach to governance in a tightly structured environment. Therefore, discursiveness creates more room for the actors themselves to play their roles. This perhaps helps to explain the reason why the debate on reflexive governance is more prevalent in the recent era of ST governance, which is characterised by a more complex setting, involving diverse perspectives.

Therefore, in the context of this thesis, a discussion of reflexivity is relevant to an understanding of divisions of labour in macro-deliberation. As established previously, macro-deliberation comprises extended forms of diverse deliberation, and contrasts with the individual examples of micro-deliberation, which is more concerned with a specific setting to address a particular issue involving a comparatively small number of actors. The relatively high level of diversity and plurality in elements of macro-deliberation may drive the promotion of reflexivity in ST governance. Multiple elements of macro-deliberation in an expanded and less structured environment also engage reflexivity, and these two elements may be contingent on each other. From this insight, it can be inferred that there are closely overlapping characteristics and connections between reflexive governance and macro-deliberation.

In short, having critically examined issues around the notion of deliberative democracy and reflexive governance, each part of the previous discussion has yielded its question, thus:

Deliberative Democracy – Whether and how would divisions of labour be useful to maximise the two qualities of inclusiveness and deliberativeness in macro-risk deliberation?

Reflexive Governance – Why does reflexivity matter in the understanding of divisions of labour in macro risk deliberation?

To conclude the discussion on these two strands of theory, namely, deliberative democracy and reflexive governance, this chapter ends with the research question for this thesis:

> What are the implications of reflexivity in the understanding of the division of labour in macro risk deliberation exercises?

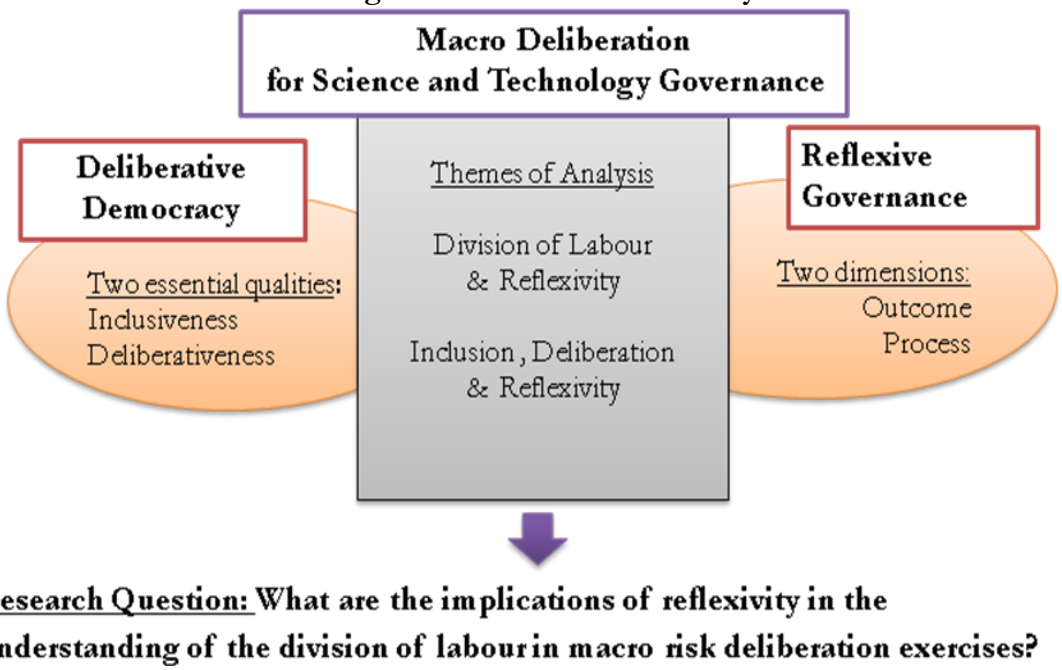
CHAPTER 3

RESEARCH DESIGN

3.1 Framework of Analysis

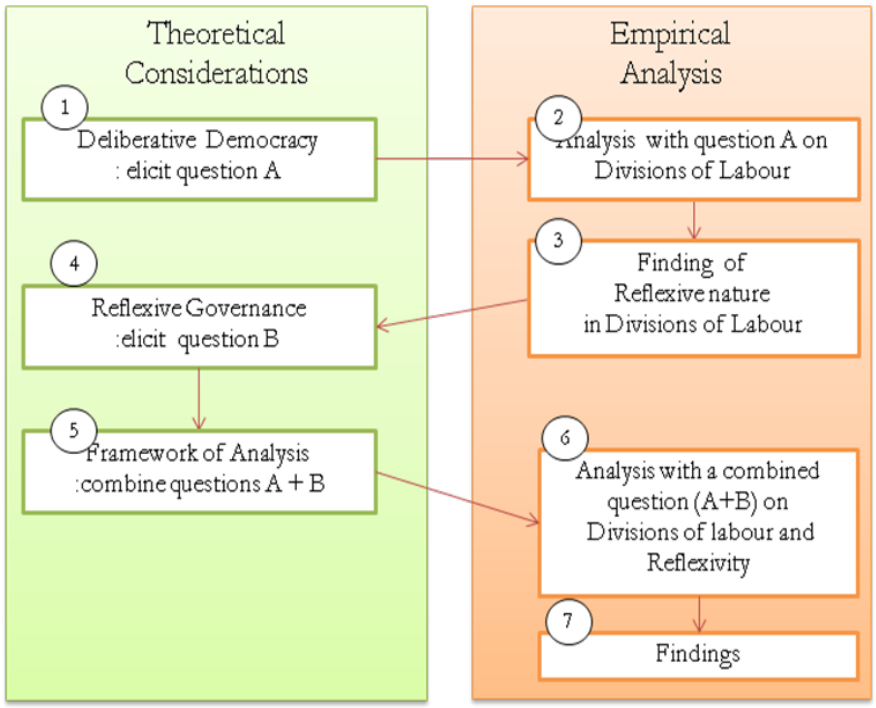
In Chapter 1, the discussion on discourses around the new mode of ST governance with public engagement drew our attention to the various stakeholders' broad approval on the growth of public engagement in ST governance in the UK, and yet their widely divergent rationales. Chapter 2 introduced and examined two theoretical considerations - namely, deliberative democracy and reflexive governance - around ST governance regarding development of new technologies and their risks. It was an intellectual process of both de-composition and re-composition of constituting conceptual elements of those two theoretical considerations. It provides me with the basis for building a framework of analysis, from which I derived themes of analysis and a leading question for this research. Figure 3.1 presents the framework of analysis built on the basis of the elicited concepts from theoretical considerations (two qualities of deliberative democracy, i.e. inclusiveness and deliberativeness; and two dimensions of reflexive governance, i.e. outcome and process). The map of this framework will navigate this research through the process with the research question.

Figure 3.1 Framework of Analysis



My research is conducted in a kind of explorative approach. This study does not have a set hypothesis to test from empirical evidence. Instead, it exposes empirical data to a question, which has been developed from two interim questions of 'how' and 'why' (detailed explanation follows in the next section) seeking the implications of reflexivity in macro risk deliberation process. Developing an analytical framework and drawing findings were accomplished through a series of interactions between theoretical considerations and examinations of empirical data. Figure 3.2 presents this research process, consisting of seven sequential steps.

Figure 3.2 Process of Research



Question A: Whether and how are divisions of labour useful to maximise the qualities of inclusiveness and deliberativeness in macro risk deliberation?
Question B: Why does reflexivity matter in the understanding of divisions of labour in macro risk deliberation?

The first step was to review the literature on deliberative democracy regarding its two core qualities, namely inclusiveness and deliberativeness. It observed the inherent tension between them and examined the possibility of the idea of a division of labour in an attempt to maximise both qualities as suggested in the macro-deliberative approach. A thorough critical examination of deliberative democracy theory generated question A: whether and how divisions of labour would be useful to maximise the two qualities of

inclusiveness and deliberativeness in macro risk deliberation exercises. The second step was to investigate empirical data with the research question A. Collecting and analysing data rather took place simultaneously, since the results of analysis had led the direction of where to dig out further for the next sets of data collection. The third step of this process was a critical phase, which confirmed one important finding of this study, namely reflexivity nature in divisions of labour in real risk deliberation exercises. During this phase, although I identified the inherent reflexivity in a real macro-deliberation process, it was not yet the stage of crystallising what exactly the nature of reflexivity is, nor its possible effects in the macro risk deliberation process. Nevertheless, the inherency of reflexivity was found and some unexpected characteristics of the two qualities of deliberative democracy (inclusiveness and deliberativeness) appeared to me. These findings raised in my mind a suspicion on the possible causality relationship between the reflexivity and the unique characteristics of divisions of labour, and inclusiveness and deliberativeness. Fourthly, therefore, I visited another theoretical consideration, i.e. reflexive governance. The work at this step focused on understanding the notion of reflexive governance and researching a clue to understand its possible effect on the divisions of labour in risk deliberation exercises. Accordingly, this stage of literature review provided me with another question B: why reflexivity matters in the understanding of the divisions of labour in macro risk deliberation. Raising this Question B was followed by Step 5, which developed and completed a kind of blueprint of analysis. Therefore, the framework of analysis (Figure 3.1) was built on the ground that not only derived from theories solely, but was the result of interactions between empirical analysis and theoretical discussions. Completion of building the framework enabled me to develop a final research question for this study, which was composed of the two interim questions - A and B: 'What are the implications of reflexivity in the understanding of divisions of labour in macro risk deliberation exercises?'. The next step 6 was the phase of re-examining the previous findings and further investigation, bearing in mind the final research question. Finally, Step 7 was able to synthesise all the analysis under the research question.

3.2 Methodology

3.2.1 Case Studies

This research adopts the case study approach to analyse two recent macro-deliberations in UK ST governance, namely the GM Dialogue on the commercialisation of genetically-

modified crops and the process overseen by the Committee on Radioactive Waste Management (CoRWM) on the management of radioactive waste. I have chosen the two different cases identified above, considering the following criteria: firstly, which elements correspond with the characteristics of macro-deliberation? In terms of the unprecedentedly large scale of both programmes, their wide scope of issues and methods, and, importantly, the divisions of labour adopted, to a certain degree, these two deliberation programmes for ST governance represent the core characteristics of macro-deliberation established previously in Chapter 2. Secondly, both cases were exercises as part of the regulation process of particularly technological risk-related policy, such as GM (genetically modified) technology and nuclear technology.

A case study approach is useful when the research is particularly about contemporary events and when a researcher cannot control the environment (Yin 2003). Yin suggests that if the research pursues the answers to "how" or "why" questions, case studies form a particularly useful research strategy. He (ibid.) explains that the case study shares many of the same techniques with the historian approach, and history study is also preferred in research with the questions "how" and "why". However, the case study approach can be more flexible regarding its methods for producing evidence, such as observing the events directly and interviewing the people who were involved in the events. My two cases, chosen for this study, were already completed a few years ago and thus, in the sense of a retrospective approach, this approach might share many techniques with the historian approach. However, having considered that my research subject is investigating the dynamic and complex relationships, interactions and tensions of actors in a real-life context, the case study approach will give a much deeper, more meaningful explanation on the 'how' and 'why' questions of my study.

The research sources for this study can be expanded from the written texts in documents to in-depth interviews, possibly revealing the vivid atmosphere surrounding the events and the respective personal experience. A case study approach is also useful in terms of its flexibility in research process to adjust its design on the way (Yin 2003). It is more flexible than other research methods since it can be changed according to the situation and the process, and can be mixed freely with quantitative and qualitative approaches (ibid.), thus seeks a triangulation. My research process is an exploration of the scenes around and within the events, regarding dynamic interactions of their elements. In order to capture the

profound picture of every nook and cranny of the scenes, and their implicitly inner-layered scenes, it is necessary for my research plan to be flexible enough to be amended in order to include any unexpected element of the story during the course of investigation.

3.2.2 Data Collection

The methods employed involve the systematic examination of published and unpublished documents (official reports, meeting minutes or transcripts, notes, emails, presentations and comments on websites, the press, and various critiques or evaluations), and 19 intensive semi-structured interviews (18 face-to-face interviews and one telephone interview). In addition, there were a few email communications during the data collection process, which provided me with some important information. These communications were not through interview nor used as verbatim in the text of the thesis. However, information from those communications was part of constructing knowledge about the context of the cases as well as design of interviews.

Given the subject of this study, direct simultaneous observation would give the analysis greater benefits regarding the possibility of capturing various and subtle happenings around and within the events. In this light, it might be the best strategy for this research of witnessing the way in which messages and occurrences are developed within the context, following the dynamics of change. However, due to the fact that my two cases were already completed, I am employing a retrospective approach: data collection for this research, therefore, relies on the archives of written texts already developed and the reflections of people who participated in the events.

3.2.3 Triangulation Technique

Analysis of data for this study particularly draws on the triangulation technique in order to build up a picture of the division of labour in macro-deliberation by collecting the points of view of various actors, evidenced from documents and interviews. Triangulation refers to the use of more than one method to characterise a single phenomenon (Byman 2003). In this research, it included not only triangulating interviews with documentary analysis, but also triangulation of different angles from various actors around the happenings. This research specifically explores the divergent views on the division of labour in macro-deliberation from various actors and how these different views are reflected in deliberation.

Therefore, the purpose of employing triangulation lies not in seeking the truth in terms of who is right or wrong; rather triangulation enables the elicitation from actors' contending perspectives to be more reliable and valid. With this purpose in mind, triangulation is carried out over divisions of labour: the different perspectives on the general structural form of the division of labour, the specific categories of actors' roles within the forms of division of labour, and the different instantiation of these roles by actors.

3.2.4 Documents

Published and non-published documents (as itemised above) were collected through personal contact, by request on the information via email communication, and from the electronic archives on various websites. This research did not have a specific period for collecting documents; instead, gathering and building textual corpus from various published and unpublished documents continued from the beginning of this research in order to improve my understanding of the cases. Determining the cases for this research has been based on the understanding of the nature and characteristics of the cases. Therefore, at the very initial stage of this research, I approached the mainly official documents (e.g. the official final reports of GM Nation?, two main reports of Science Review, the final report of the Economic Study for GM Dialogue and the final report of CoRWM) and also the evaluative critiques, of both cases. These documents were mostly accessible from their official websites or from the relevant government department's (DEFRA) electronic archives. Preliminary document analysis provided me with an understanding of the general overview of the cases. The specific challenge I faced at this stage, was that the main website of GM Nation? closed in the middle of my study. The last record date that I accessed the website remained as July in 2007. Sometime after that point, I realised the website of GM Nation? strand had completely closed down, while other parts of GM Dialogue for the Science Review strand and the Economic Study strand were still alive and accessible until sometime in 2010. Fortunately, I saved all introductory main pages of GM Nation?. However, I still did not have a fully saved back-up of all documents published on the website, such as various meeting minutes, transcripts and various reports on specific issues. Therefore, I contacted various people in DEFRA. What I was last told from DEFRA, however, was that they were planning to revive the data in the future[17].

[17] The original URL of GM Nation? strand (http://www.gmnation.org.uk) was accessed on 29 July 2007. This original website was closed down sometime in 2008 and a few years later, the

Therefore, I was unable to have access to all the documents that I needed, such as transcripts of public meetings, except for only a few main reports from the original website. However, I was eventually able to obtain most of the documents that I needed from various interviewees. Thanks to their cooperation, I could collect, not only published documents, but also unpublished personal records, such as emails, notes and other relevant internal documents.

A further stage of the analysis of documents involved exploring the details of the cases in order to understand the issues related to my research interest, via the minutes or transcripts of various meetings, interim reports of various sub-events, relevant auxiliary papers and evaluation reports of each case. This stage of the document analysis provided me with the basis for designing interviews. In particular, I discovered various tensions and struggles among the actors during this stage of analysis, which enabled me to construct the interview structure. I developed interview questions for semi-structured in-depth interviews and also the candidate list for the interviewees on the basis of the results of documentary analysis of this stage.

In addition to enabling me to draw an overall picture for each case and to build the structure and direction of interviews, the documentary analysis served the role of being a kind of base camp for me, where I could revisit and check the validity and credibility of what I heard from interviewees' recollections. In particular, given my primary research activity of analytic scanning and gathering, and presenting the diverse rationales underlying various divisions of labour, documentary analysis not only played the role of recapping or examining what interviewees said, but also served the purpose of interrogating and positioning different perspectives in the overall map of analysis.

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current website (Accessed on 25 November 2012) appeared with the same URL address above, but the contents are completely different.

The original URL of Science Review and the Economic Study (http://www.gmsciencedebate.org.uk) was accessed lastly on 25 April 2008 for this thesis. DEFRA has established a page, which had links for materials of GM Dialogue in 2008. This page is archived in the National Archive (Accessed on 6 December 2012). Many links in that page, for GM Nation?, and Economic Study are not working, and most parts of Science Review are working. (http://webarchive.nationalarchives.gov.uk/20081023141438/http://www.defra.gov.uk/environment/gm/crops/debate/index.htm)

3.2.5 Interviews

Although documentary analysis provided me with an idea of what might have been happening in the cases, the documentary records were not sufficient to give me a detailed picture of the subtle relationships, tensions, struggles and interactions between actors. One of the important sources for documentary analysis for this study was the meeting minutes, which were not verbatim transcripts but were the notes taken by secretariat at the meetings. Although these are able to show, overall, what issues were discussed and who said what, the texts presented in the minutes were the result of some level of intervention of the writers (secretariat) of their hearings. Therefore, strictly speaking, those documents are limited in delivering a real or full record of the happenings.

Actually, in several plenary meetings of CoRWM, there were discussions of how the minutes should be written. The conclusion was not very clear and left to the chair and secretariat (Plenary meeting minute, May 2004). There was a reviewing time for the Committee members of CoRWM to check the previous meeting minutes at the beginning of each of the subsequent preliminary meetings. Therefore, the minutes could have showed if there had been any dissent among the members. At least, in the case of 'significant disagreement' on the issues, it might have been recorded in a relatively more detailed manner in the minutes. Nevertheless, although the minutes recorded the fact that there were disputes or disagreements, they did not give a full description of how the ensuing conclusions were arrived at. In other words, they did not present 'the interim stories between' the arguments, such as the ways in which the final messages or decisions were made. In particular, at politically-uncomfortable moments of the professional meetings, to be publicised, it is not difficult to suspect that writers could have been tempted to adjust or translate the records in a subtle manner with their slight intervention. Especially in both the cases of GM Dialogue and CoRWM, secretaries of most organisers' meetings were civil servants and most of the main meeting minutes were published on websites.

Given these sensible considerations on the limitations of documentary analysis, and the subject of this research, which requires capturing the high level of political sensitivity, the intensive interview technique is helpful. It is useful not only to confirm what I find in documents, but also to seek the story behind the documents, in order to find missing

puzzles and to test what I find from the various documents. Bearing in mind that this study focuses on divergent views over the division of labour in macro-deliberation and their implications on the process, I included various actors for interviews, who had played various roles of designing, organising and deliberating during the course of each programme. However, the list of interviewees of this study is not exhaustive. It is not feasible on a practical basis to interview all participants and also conceptually inappropriate, for example, to have one single representative, or a few right representatives from the public, or from any stakeholder group, even among those who participated in the events. In addition, again as my specific research interest is divergent views among the actors, the purpose of interviewing was to demonstrate such divergent views, considering their implications on the deliberation process rather than to give a comprehensive account. Therefore, the aim of the interview was not to discover all the different idiosyncratic views of the participants but to show the existence of possible different perspectives and their contingency on the deliberation process.

Intensive semi-structured interviews are useful to supplement the shortcomings of the documentary analysis discussed above, such as by collecting participants' opinions and experiences on the events directly from their respective various points of view. As established above, documentary analysis helped me to design interviews. From various documents, such as meeting minutes, the press, published critiques, evaluation reports etc., I identified certain types of tensions and struggles among stakeholders outside the programmes as well as participants within the programmes. Some of these issues that emerged from documentary analysis were developed into four themes - Division of labour, Integration and relationship, Principles underlying design and implementation of the events and the whole programme, and Discrepancy - , which were the basis for developing the interview questions. These emerging issues also provided me with guidelines for composing the interviewee list (See APPENDIX I for the list of interviewees). Accordingly, interview questions consist of a few general questions for all interviewees and some specific questions for each interviewee respectively. Specific questions for each interviewee were elicited from the analysis of specific events or situations which the interviewees had directly experienced. Each set of questions was differently composed with combination of general and specific questions considering the events and issues, in which each interviewee was involved (See APPENDIX II for the interview questions).

The triangulation technique was employed in designing interviews. I tried to look at people,

who were involved across different events because they might have a better understanding of the different views and issues raised and constructed across these different events, and also the communications and interactions that took place between the events. Individuals involved in a single event were not able to give me this information. The one who organised two different events on the GM Nation? strand, for example, did not know that the results of their research were used for the other strands. Interviewing someone who was involved in many events could also reduce the number of interviews for cross-checking. As well as this cross-checking of different people, I also tried to check different identities of a single actor had played and its implications in the process. In this context, triangulation is a particularly useful strategy as it supplements the shortcomings of the interview method. Despite the benefits of interviews, such as increasing the opportunity of capturing a deep and more realistic flavour of the context for the research, the interview method in qualitative research has been questioned with regard to its objectivity and validity from the positivists' perspective. Especially in the case of my research, the challenges that I faced during the interviews, might support this question. One of the difficulties was that I could not obtain all the interviews of my initial interview design. As my cases were about the policy-making processes, many participants were in high positions in Government, universities or institutes. This was the case in particular for GM Dialogue. In addition, due to the long gap of time since GM Dialogue was completed, people had moved to new positions or been promoted, which made it even more difficult to access them. It is partly for this reason that my interviews were concluded with just 19 interviewees. However, again, my research aim is not to display all the idiosyncratic views but to show existing divergent views and their implications in the process that I could claim for the validity of my analysis, in particular with the aid of the triangulation technique established above. Here, findings with regard to the divergent notions that constitute reflexivity, do not depend on the cursory sketching of a large number of perspectives, but on the sensitive and detailed exploration of a few.

In the beginning of my interviews, I was surprised by the diversity in views among interviewees, who were at the same event. However, at the later stage of my interviews I was even more surprised by the similarity in the patterns and themes of the issues raised by the interviewees who were at different events. I stopped my interviews at this point, thinking that this would be an indication of having enough evidence to assure the validity of my analysis. Some quotes from interviews that I used in this thesis, were even based on

incorrect information by definition. However, I used them as they were (as the interviewees said), since that is the evidence of some kinds of discrepancies I wanted to display regarding my research subject. This way of displaying the material of interviewees' subjectivity without filtering would help to objectify my interview analysis process. Another important part of my interview process was that due to the political struggles and tensions and heavy involvement that participants had experienced during each case, interviewees were very keen to share their stories with me in order for them to be known. Therefore, I was able to obtain a very personal level of records and unpublished data.

3.2.6 Leading to Empirical Analysis

Before presenting empirical analysis in the following chapters (Chapters 4 and 5) I would like to clarify a few things about the research focus of this study and the ways of presenting my findings.

My empirical analysis explores the ways in which reflexivity is associated with the divisions of labour, and inclusiveness and deliberativeness of macro-risk deliberation. To anticipate a central finding, the two qualities of inclusiveness and deliberativeness appear in remarkably different ways to those which deliberative democracy theorists characterise through divisions of labour in real deliberation exercises. A primary aim of this part of the discussion is not to measure the degree of the above two qualities; rather, my empirical analysis proposes new thoughts on the two qualities of inclusiveness and deliberativeness of the established theories. Therefore, my conclusion will not be a verdict on the level of two qualities in macro-risk deliberation exercises but will shed light on the inherent reflexivity in macro-risk deliberation, and its implications in the divisions of labour, and the two qualities of inclusiveness and deliberativeness.

My analysis in the empirical chapters presents the findings in the same format for both cases of GM Dialogue and CoRWM in each chapter (Chapters 4 and 5). The primary arguments in the introductory and conclusive section on the Division of Labour, Inclusiveness and Deliberativeness in Chapters 4 and 5 are similar to each other. However, it does not necessarily suggest that GM Dialogue and CoRWM are identical cases in every aspect. Instead, it emphasises the focusing aspects of this research, and suggests that the findings on these aspects are coherent across both cases, to a certain level of generalisation.

As shown in my framework of analysis, the two main theories of this study are deliberative democracy and reflexive governance. The empirical findings were presented following the structure of the framework of analysis. As the structures of the next two chapters show, I display findings under the title of Divisions of Labour and its sub-titles of Inclusion and Deliberation in each chapter. This structure clearly represents the main concepts, which are derived from deliberative democracy. However, this structure does not render outwardly the other theoretical concept of this study, namely the notion of reflexivity. I made it thus deliberately for various reasons. Firstly, considering the nature of reflexivity as being non-static, endogenous, discursive and inherent, it would be recognised more effectively and appropriately through a series of experiences of reflexivity over various events and happenings rather than with an articulation of its definition at a specific issue or event. Therefore, I deliberately have omitted an explicit presentation of reflexivity in the structure of the empirical chapters, in order to suggest a way of better understanding of reflexivity during the following findings in various empirical parts. Secondly, due to the complex concept of reflexivity itself as well as the complicated scenes of the macro-risk deliberation process, introducing the concept of reflexivity directly with a certain level of definition may increase the level of complexity and hinder comprehensive understanding of reflexivity in the deliberation process. These are the reasons why I do not directly bring a conceptual explanation of reflexivity into the empirical chapters. Instead, an occasional reminder of the research question of this study will facilitate readers' comprehension of the nature and implication of reflexivity in the deliberation process.

CHAPTER 4

GM DIALOGUE

In this chapter, I will discuss how reflexivity appeared in and affected the deliberativeness and inclusiveness of GM Dialogue. I will do this by exploring the emergent and designed aspects of divisions of labour in GM Dialogue and their formative role in shaping the process. The first section of this chapter will explain how different rationales drove the birth of GM Dialogue. The second part will discuss the ways in which various forms of divisions of labour were made with different rationales of stakeholders, describing how differently the actual deliberativeness and inclusiveness appeared through these divisions of labour against the theory.

4.1 Context of the Birth of the Programme: Various Rationales behind GM Dialogue

GM Dialogue was a milestone event regarding its context, where the UK science and technology policy was on the trend towards 'public engagement' in the late 1990s. 'To have or not to have GM?' – with this question, the UK society had gone through a turbulent debate. A wide range of stakeholder groups were interested in and got involved directly and indirectly in GM Dialogue, from an individual citizen to the Prime Minister, from a local organic farmer and supermarket chains, to the multi-national biotechnology companies across the Atlantic, from several relevant departments in the government to various research institutes, NGOs and the media. Their relationships and argumentations were entangled with interest and power. As various reasons lay behind the trend toward the public engagement in science and technology regulation, the degree of diversity in expected roles attached to GM Dialogue in GM policy-making was high.

4.1.1 GM Crops Policy in De Facto Moratorium (1998-2003)

1996 was a big year in British policy history in general, and more specifically for science policy. All the truth and confusion regarding the Bovine Spongiform Encephalitis (BSE) event damaged public trust in science policy and the Government. In particular, as the BSE event was directly related to public health and safety, the degree of shock drew huge

attention and ignited a turbulent debate, not only on food policy but as far as the UK science policy-making process per se. Furthermore, 1996 was one of the milestones in the history of GM policy in the UK, as each type of GM soya bean and maize was imported from the US to the EU for the first time, to be sold at a commercial level alongside Non-GM foods (Levitt 2003; Horlick-Jones 2007). This event raised concerns and tension among stakeholders.

This tense situation drew a 'de facto' moratorium of GM crops in the UK. Initially, English Nature (the Government's statutory adviser on wildlife and the countryside) suggested a frozen period of commercial planting of some GM crops (herbicide tolerant crops and insect resistant crops) for further research and regulation in July 1998.

Environment Minister, Michael Meacher, presented his cautious approach to GM crops to the House of Lords Select Committee on 21 October 1998. In his statement he announced the industry's decisions on the temporary cessation of the planting of some GM crops: an agreement between the plant breeding industry and the Government, that releasing of the herbicide-tolerant GM crops would not proceed further until the results of farm-scale evaluations were known, and a voluntary decision on the part of the industry on non-introduction of insect-resistant GM crops for the next three years. He started the announcement by mentioning responses to "calls from groups such as English Nature for a moratorium on the commercial release of certain GM crops and to the great public anxiety" (House of Commons Library 1999, p. 13)[18]. However, he did not use the term 'moratorium' in describing the current decisions. Rather, his announcement sounded as if he was delivering the industry's relevant decisions. His delineation of the decisions was subtle and precise, which reflects exactly the sensitive context and process of the way in which those decisions were made:

> "Secondly in addition to the important work on revising the Directive, I have been considering how best to respond to calls from groups such as English Nature for a moratorium on the commercial release of certain GM crops and to the great public anxiety that surrounds this whole technology. […] I am very pleased to be able to announce this morning that we have reached agreement in principle with the plant breeding industry for a programme of managed development of herbicide tolerant GM crops whereby the first farm-scale plantings are strictly limited and monitored for ecological effects along with comparable plantings of conventional crops. […] The

[18] Christopher Barclay is the author of this research paper published by House of Commons Library in March 1999 (Research Paper 99/38).

> industry has also made the important commitment that no insect resistant GM crops will be introduced into the UK for the next three years." (Michael Meacher's statements to the House of Lords Select Committee on 21 October 1998, cited in House of Commons Library 1999, p. 13)

This was the only announcement at the official level from the government regarding a temporary cessation of commercial planting of some GM crops into the UK. It was not clear, and there were some rumours around, whether those industry's decisions on GM crops were the results of a secret-deal between the government and the industry, and whether there was a further secret agreement. There were just denials from the government over any government's agreement on the official moratorium or any deal between the government and the industry, on a few occasions. The following two quotes cited in House of Commons Library's paper (1999, pp. 15-16) depicts this confusing stance of the government:

> **"Shouldn't the Government introduce a moratorium on genetically-modified crops?**
> No. Those that argue for a moratorium do so because they feel that there is insufficient information on the environmental impact of genetically-modified crops. We agree that more needs to be learnt in this area, but we do not believe that a fixed period moratorium is the answer. The voluntary arrangements which the industry has agreed with us will allow us to monitor carefully larger scale cultivation of these crops. We will only move to full scale cultivation when we are satisfied that we have enough information about the environmental impacts to be able to make a sound decision." [The statement in the information pack for Parliament members on 18 February 1999]
>
> "My hon. Friend's question gives me the opportunity to lay another ghost to rest. It is not true that the Government have reached or are seeking any secret deal with the industries on genetically modified foods or crops." [Jack Cunningham, the Minister of Cabinet Office's reply in PQ on 17 March 1999]

Baroness Young, the chairman of English Nature wrote a letter as a confidential briefing to the Prime Minister in order to clarify their position on the matter in February 1999, following their unwelcoming statement, criticising the House of Lords' report, which supported GM crops. The letter was released after Jack Cunningham quoted from it in the House of Commons. Cunningham was the Minister of the Ministry of Agriculture, Fisheries and Food (MAFF)[19] in 1997 and became a Cabinet minister in 1998, being called a 'Cabinet enforcer' by the media (The Independent). Cunningham emphasised that

[19] The Ministry of Agriculture, Fisheries and Food (MAFF) was merged into the Department for Environment, Food and Rural Affairs (DEFRA) in 2002.

English Nature's call was for a ban on only some of the GM crops but not a moratorium for all GM crops, criticising the Opposition Party on the grounds of their incorrect interpretation of what English Nature called for and misleading the public. He was then criticised in return by the Shadow Minister for Agriculture, Fisheries and Food, Tim Yeo, stating that: "The Prime Minister should sack Jack Cunningham for deliberately misleading the House of Commons over the position of English Nature and a moratorium" (The Independent, 12 February 1999). The following quote from the BBC news gives a description of that situation:

> "[…] Dr Cunningham quoted a passage from the letter in which Baroness Young said: "We are not asking for a moratorium on commercial release of all genetically modified crops". But the letter goes on to say English Nature was "very concerned about the effects that introducing herbicide tolerant crops would have on biodiversity". It warns of the "disastrous" effects of previous attempts to make farming more intensive. Baroness Young says: "Our advice to government has been that herbicide tolerant crops and insect resistant crops, not all GM crops, should not be released commercially until research has been completed and assessed." In the letter, she welcomes the one-year voluntary ban announced by the crops industry but warns: "This will not give enough time for the research to be done, which we estimate will take at least three years." (BBC News, 7 April 1999)[20]

Likewise, there were arguments among stakeholders about whether a moratorium was needed or not. Having considered the tense situation at that time, the occurrence of this argument among stakeholders might not be surprising. In addition, perhaps, due to the confusingly ambiguous position of the government on the temporary cessation of commercial growing some GM crops, there were also rumours and investigations as to whether there would be an official moratorium or not (House of Commons Library 1999). Horlick-Jones et al. (2007, p. 5) used passive sentences carefully for this kind of vague status regarding the way in which the temporary cessation of planting of GM crops came into force, "the moratorium existed in the UK between 1998 and 2003. […] The moratorium was sustained by a voluntary agreement between government and industry". Toke and Marsh (2003, p. 236) also used the words, 'this meant', thus presenting this as their interpretation of the status rather than as a record of fact, "Over the course of the next year the government then negotiated with the GM crop lobby for a voluntary freeze […] This meant that no commercial planting of GM crops could take place until 2003". I found, as a researcher, that tracking the information around these relatively recent events was a kind of puzzle search, as resources for investigating the status of the temporary

[20] Available from BBC website: (http://news.bbc.co.uk/1/hi/uk_politics/277930.stm)

cessation were written in subtly different terms and expressions in their illustration of this situation.

My own investigation could conclude that 'a de facto' moratorium existed. In other words, there was no official moratorium declared by the government, but there was an announcement on the decisions made by the industry to pause commercial planting of GM crops. More precisely, it was an announcement on an agreement with the government on the temporary cessation of releasing herbicide-tolerant GM crops until the results of farm-scale evaluations, and a decision on the non-introduction of insect-resistant GM crops for the next three years. These decisions remained until 2003. The government denied that there was a moratorium. This is correct in the sense that the government, as the authority for regulation, did not make a statement for effectuating a formal moratorium for herbicide-tolerant and insect-resistant GM crops. Rather, there was an official announcement on the decisions of the industry. It is not clear whether the decisions were made purely voluntarily or through a secret collusion or by any pressure. However, those decisions clearly remained effectuated as a result of a process comprising a number of incremental developments.

I would argue that the incumbent government, more precisely the enforcers in the Cabinet, generated ambiguity in the official status of the cessation of planting GM crops. They had to respond to political pressure, and reached the situation where they were able to announce a voluntary ban from the industry. They would have found later that the de facto moratorium should be maintained, considering continuing political sensitivity. Therefore, they did not make any change in the status of the ban for further permission for releasing GM crops. Equally, however, they did not alter the ambiguous status of the moratorium later to that of the official, formal declaration. Their reluctant attitude in admitting of the moratorium, was clearly reflected in the absence of their ensuing action for the official moratorium. Therefore, the de facto moratorium was sustained with the government's reluctant and passive admission. The government might have thought this ambiguity would give them an incentive for the case when the industry would move to any legal action or the government would want to return to licensing GM crops later.

4.1.2 Government's Strong Drive towards Biotechnology

Government's enormous investment and interest in developing biotechnology may support the argument that the government might not have wanted to have any blockage like the official moratorium on commercial planting of GM crops. They might have thought of an incentive of this ambiguity for their later resuming licensing GM crops or perhaps even created this ambiguity deliberately. Certainly, the government at least did not make any effort to remove the ambiguity on the de facto status of the moratorium, in following time of Michael Meacher's announcement to House of Lords Select Committee on 21 October 1998.

The Prime Minister was a strong advocate of GM technology. He saw biotechnology as a kind of symbol and a key step towards the future of national wealth. In many occasions, he showed his firm support for biotechnology, and GM technology was often given as an example of his promotion of biotechnology in the UK:

> "Biotechnology is at the forefront of these developments. The biotech industry's market in Europe alone is expected to be worth $100 billion by 2005[…] And Britain leads Europe […] Britain is well placed to keep and extend its lead. (*Science Matters*, 2002)"

Blair argued the risk aspect is exaggerated by the media and it can be controlled. Blair's strong support was projected in the direction of the government's policy. There is evidence of the government's pro biotechnology position in various statements, reports and fiscal investment. The following quote is part of Jack Cunningham's statement in the House of Commons' Hansard Written Answers for 17 December 1998:

> "[Genetic modification] has the potential to offer enormous opportunities for improving the competitiveness of the economy and the quality of life in terms of health, agriculture, food and environmental protection." (Cited in Friends of the Earth 2007, p. 8)

According to The Thames Valley University's estimation, the UK Government spent ninety one million pounds on research funding of agricultural biotechnology between 1998 and 2000 (Friends of the Earth 2007). Table 4.1 shows how strong the support and investments were made to this sector by the government in the early 2000s. The Government's investment figures on biotechnology for agriculture reflect the government's

strong interest in development of agricultural biotechnology in the UK in overall, and yet the difference in the figures between the Department of Trade and Industry (DTI) and the Department for Environment, Food and Rural Affairs (DEFRA) shows that the DTI displayed a much stronger interest than DEFRA. It can be argued that economic benefits from business perspective were the main driving rationale for the direction of development of the agricultural biotechnology of the UK in that period more than any other aspects such as environment or rural affairs.

Table 4.1 UK Government Departmental Research Funding in Agricultural Biotechnology

(Units: Million Pounds)

Year	Total Funding (from available data)	Funding per Govt Department		Omissions and Additions
		DTI	DEFRA	
2006-07	49.3	39.3	10.0	Excludes possible funding through responsive grants form BBSRC
2005-06	50.3	37.7	12.6	Ditto.
2004-05	N/A	N/A	13.2	DEFRA figures only
2003-04	73.2	57.1	16.1	Includes all grants through BBSRC and DEFRA
2002-03	75.7	57.1	18.6	Ditto.
2001-02	72.7	55.1	17.6	Ditto.

(Source: Adapted from Friends of the Earth 2007, p. 9)

Friends of the Earth argues that the UK government's 'competitiveness-oriented' policy direction resulted in an increase of public funds into research for industry. They analyse the fact that political choice was driven by the assumption that "for science and innovation to become active contributors to the competitiveness of British economy in each and every sector, including agriculture" (2007, p. 5), referring to *the 1998 White Paper on Competitiveness*.

The House of Lords Select Committee presented their position on GM crops to the European Community on 15th December 1998. In their report[21], they showed their clearly favoured position towards GM technology. Their concluding paragraphs presented that GM technology had strong potentials in every aspect by listing the recipients as being 'agriculture, industry, consumers and even to the environment':

[21] The House of Lords Select Committee on the European Communities (1998), *EC Regulation of Genetic Modification in Agriculture*. Session 98-99, Second report.

> "172. Biotechnology in general and genetic modification in particular offer great potential benefits to agriculture, industry, consumers and even to the environment. We consider that GM technology may offer much to organic systems, for example through reduced inputs (paragraphs 65-72, 78)."
>
> (in Part 4 : SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS)

After House of Lords Select Committee's report on GM technology, the Advisory Committee on Releases to the Environment (ACRE) produced a report[22] in January 1999 claiming that there was no evidence that GM crops would endanger British wildlife. Having considered that ACRE was the statutory body to advise the government on biodiversity and environment, this report was seminal in supporting the government's position in favour of GM technology.

While the strong push from the UK government in one direction continued (Durant and Lindsey 2000, p. 9), other stakeholders, who were cautious or sceptical of GM technology, took various actions by representing various interest groups. One example of the fuel for this movement was the findings of Dr Arpad Pusztai's research. He was a researcher at the Rowett Institute (funded by the Government) and was forced to resign after his claim for the negative effects of GM potatoes on rats' immune system in August 1998. In February 1999, twenty international scientists sent a letter to the Guardian newspaper supporting the findings of Dr Arpad Pusztai (The Independent, 14 February 1999). Chefs and food writers joined the protest movement with their campaign of banning GM foods (Durant and Lindsey 2000, p. 9). Major supermarket chains (ASDA, Co-operative, Iceland, Marks and Spencer, Sainsbury's, and Waitrose) responded to this protest by introducing a complete ban of GM ingredients from their own brand products at their stores. Certain interests groups, such as the Soil Association and the Consumer Association, contributed to this discussion by announcing their position, and, of course, the green groups, such as Greenpeace, Friends of the Earth and GeneWatch, played a kind of leading role for the debate. The media coverage of that time reflects how turbulent the debate was. There was a 'media storm' (ibid., p. 8) over this issue in February 1999. The main newspapers and broadcasts covered the GM issue as their main topics. 'Frankenstein food' became the popular nickname for GM food on the media. From a retrospective viewpoint, the big role

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[22] Advisory Committee on Releases to the Environment (1999), *The Environmental risks of herbicide tolerant oilseed rape: a review of the PGS hybrid oilseed rape.*

that the media played regarding this debate was active agenda setting, as much as it was called 'campaigning journalism' (ibid., p. 14).

Therefore, despite the strong willingness on the part of the government to support and push towards the future of biotechnology, resistance from society - from the public, green groups and food supply chains - eventually garnered enough power to halt it. The government, perhaps, still might not have wanted to give up. This may be the reason why a de facto moratorium existed instead of a formal moratorium. The ambiguity in the status of the moratorium, also enabled the possibility of co-existence of the contrasting rhetoric around the same event simultaneously. In other words, 'there was no policy of (a) moratorium' as well as 'there existed a de facto moratorium', both of these arguments are not incorrect.

This turbulent period of discussion on GM policy brought some changes in the regulatory system for Genetically Modified Organisms (GMOs). As a result, the Agriculture and Environment Biotechnology Commission (AEBC) was established in June 2000 to advise the government on biotechnology as part of a review of bio-science in 1999.[23] Its remit in particular emphasised its consideration of 'ethical and social issues' as well as the science on the matters.

4.2 Divisions of Labour in GM Dialogue

In the context of the de facto moratorium status of commercialising GM crops in the UK, the idea of public engagement for GM policy-making was initiated by the AEBC. Margaret Beckett, the Secretary of State for the Department for Environment, Food and Rural Affairs (DEFRA) announced in July 2002 that GM Dialogue would be held to inform GM policy. The birth of GM Dialogue was the government's response to the societal call for the broad societal input to GM policy, and there were many different stakes, expectations, and their respective rationales surrounding this huge project. As well as these, within the programme of GM Dialogue, there were various rationales among participants for the nested smaller deliberation exercises. Participants exercised their power to realise their respective rationale, which generated dynamic interactions among themselves and outside

[23] Office of Science and Technology (1999), *The Advisory and Regulatory Framework for Biotechnology: Report from the Government's Review.*

of GM Dialogue. They responded to one another (including designers and organisers, and those outside) through their political, epistemic and ontological relations and resources. These dynamic interactions of participants consequently created their new relationships and stakes in the context. Subsequently, the participants had to produce new rationales with which to respond to this newly-structured context. Through this recursive process of generating and responding to a new environment, participants contested and performed their respective rationales over the divisions of labour and eventually, at the significant level, they shaped their own divisions of labour. Therefore, it was a process of endogenous divisions of labour, which resulted in continuous re-shaping of the structure of the programme to its conclusion.

This section will shed light on this reflexive nature in the elements and dynamics of GM Dialogue. Evidences for this were in various emergent and designed aspects of the divisions of labour, and their formative role in shaping the process. Recognition of reflexivity in the divisions of labour in the real macro-deliberation also displays the ways in which actual deliberation and inclusion appeared to be in contrast to those characterised in deliberative democracy theory.

4.2.1 Inclusiveness

My empirical case of GM Dialogue shows that the division of labour did not actually enhance inclusiveness in the way that macro-deliberative democracy theorists assumed. In the sense of the number of participants, the division of labour increased the extent of inclusiveness. The efforts were great to devise various divisions of labour for including a wide range of participation into deliberation process. However, apparently the systematic efforts for integrating the broad participants and their divergent representations (e.g. meanings and relationships) into the decision-making process were much less than those to divide up. Rather, through a reflexive process, participants' divergent representations were intermingled into the decision-making process as they inter-reflected upon and influenced one another. This endogenous, discursive way of inclusion appeared to be more feasible and effective in a real-world macro deliberation exercise.

Structure of GM Dialogue

After the AEBC suggested the idea of public debate, the government added two other strands, namely Science Review and the Economic Study as part of the whole programme of GM Dialogue. This framework of a composition with three distinctive strands of GM Dialogue was confirmed by the government in May 2002. This initial design had an overall remit as well as each strand having its own purpose separately. The overall official aim of GM Dialogue as a whole programme was to review the incumbent knowledge on GM from different perspectives. Individually, GM Nation? officially aimed to engage the public in GM issues and to inform GM policy with the output of the debate; the purpose of Science Review was examining the current state of scientific knowledge around GM; and the Economic Study was due to research prospecting possible costs and benefits of GM. The main sponsor of this whole programme was DEFRA and people from other government departments got involved, such as the Strategy Unit in the Prime Minister's cabinet office, Office of Science and Technology (OST) and other government-sponsored institutions, such as the Advisory Committee on Releases into the Environment (ACRE), the British Association for the Advancement of Science (BA), the Food Standards Agency (FSA) and the AEBC, as well as people from other government-funded institutions who participated as individuals.

Figure 4.1 illustrates the overall picture of three strands and their nested smaller events of GM Dialogue. It presents those who were involved in various events within GM Dialogue as overseeing committees, discussants of the main events and others (organisers, advisors, and specialists) under each strand of GM Dialogue. As this diagram explains, the whole macro deliberation programme of GM Dialogue was composed of three big strands, each with their own purpose; and each strand also consisted of diverse deliberative activities with their various ends and means. FSA was presented on the website of GM Dialogue as part of the whole programme of GM Dialogue. However, soon after the beginning of GM Dialogue, it announced that it would proceed with its own research and later published its separate report *Consumer Views of GM Food* and submitted it to the Secretary of State for Environment, Food and Rural Affairs on 17 July 2003.

GM Nation?: The government (DEFRA) appointed Professor Malcolm Grant as the chair of the independent steering board to organise a public debate. This project addresses its aim as being to "Promote an innovative, effective and deliberative programme of debate on

GM issues, framed by the public, against the background of the possible commercial production of GM crops in the UK and the options for possibly proceeding with this. […] provide meaningful information to Government about the nature and spectrum of the public's views, particularly at grass roots level, to inform decision-making."[24]

GM Science Review: Professor Sir David King, the Government's Chief Scientific Adviser led the Science Review strand and chaired the panel with the aid of Professor Howard Dalton (the Chief Scientific Adviser to the Secretary of State for the Environment, Food and Rural Affairs). The Science Review Panel was composed of natural and social scientists "to monitor the progress and credibility of the Science Review and, towards the end of the review, summarise the state of scientific knowledge, consensus and areas of uncertainty on each key issue."[25]

The Economics Study: A team from the Prime Minister's Strategy Unit undertook the Economic Study. This study aimed to analyse "the nature and distribution of costs and benefits that could arise under different scenarios for the commercialisation of GM crops in the UK."[26]

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[24] The original URL (http://www.gmnation.org.uk) was lastly accessed on 29 July 2007 for this thesis. This original website was closed down sometime in 2008 and after a few years, the current website (accessed on 25 November 2012) appeared with the same URL address, but the contents are completely different.

[25] The original URL (http://www.gmsciencedebate.org.uk) was accessed lastly on 25 April 2008. The original website is archived in the National archive website: (http://webarchive.nationalarchives.gov.uk/20081023141438/http://www.gmsciencedebate.org.uk/default.htm)

[26] Available from: (http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/strategy/work_areas/gm_crops.aspx) (accessed on 6 December 2012)

Figure 4.1 Three Strands of GM Dialogue

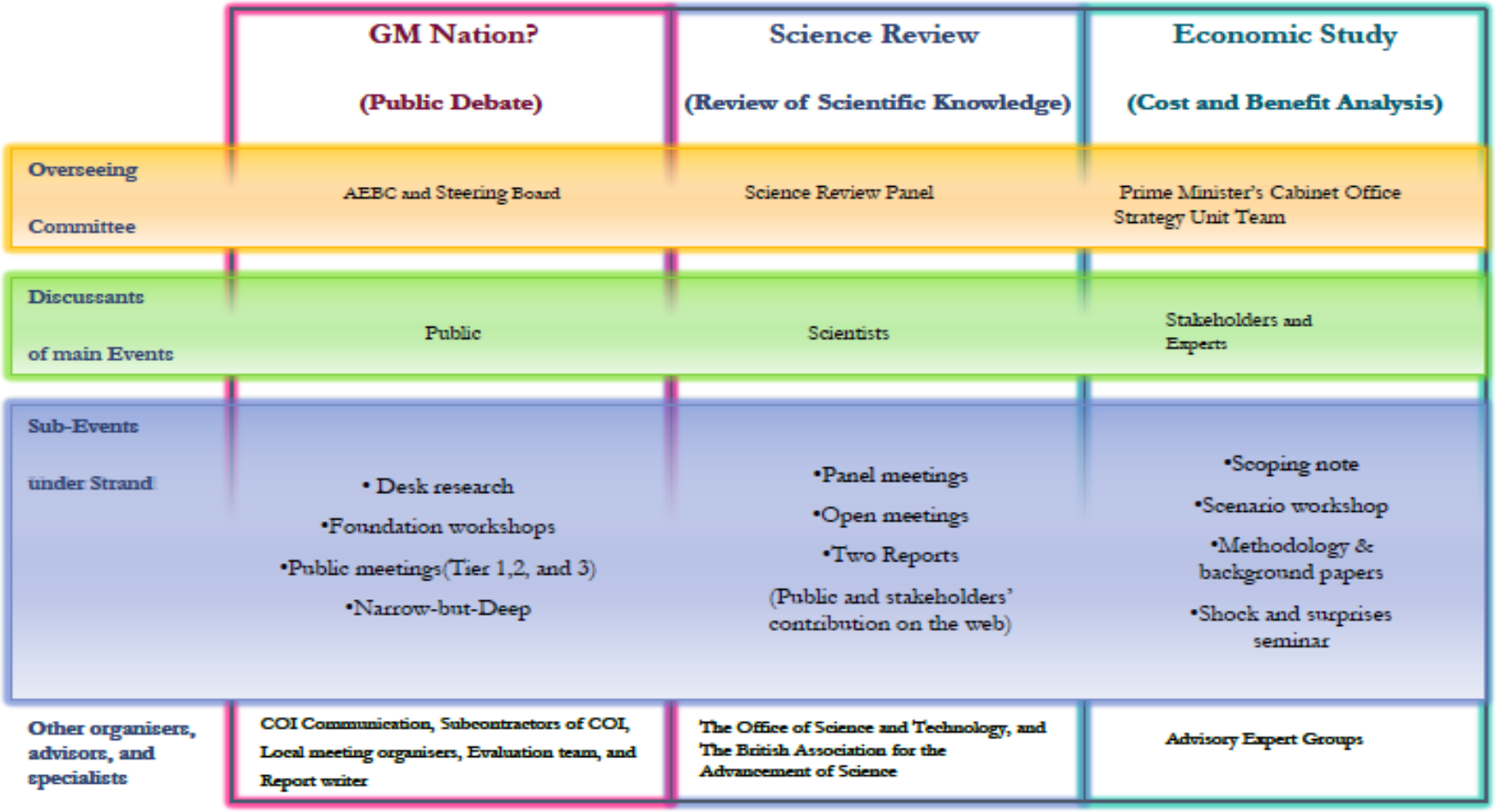

Table 4.2 Timeline of GM Dialogue

Year	2000	2001	2002							2003							2004	
Month	6	9	4	5	7	9	10	11	12	1	2	4	6	7	9	10	1	3
AEBC	Set up	Report 'Crops on Trial'	Advice to Gov.															
Gov.				Announce – public debate including two other strands	Response to AEBC's advice on 25th													Report on Public debate Response report to GM Dialogue
GM Nation?						1st Steering Board meeting on 13th COI was appointed		Foundation Workshops	Desk research		COI proposed 3-tier meeting		Public Meetings Narrow-but-Deep		Final report			
Science review									1st Panel meet on 10th	1st Open meeting on 23rd			All meeting finished	1st report		FSE Report –Royal Society	2nd report	
Eco. study							1st phase		2nd phase Scenario - Workshop			3rd phase Shocks and surprises-seminar		Report				

As Table 4.2 shows, three strands of the programme were taking place almost simultaneously. The original official rationale of the design of the three strands was to review different aspects from the point of view of the public, the scientists and the economists around the commercialisation of GM crops and to feed one another with the output of each strand[27]. I will discuss this issue in a later part of this chapter.

4.2.1.1 *GM Nation?*

GM Nation? is the title for the public debate strand. The AEBC initiated GM Dialogue from the idea of 'broader engagement of society', and it was formalised into GM Nation?. In this sense, the public debate was the core concept of the whole programme. The Central Office of Information (COI), a government in-house communication agency suggested this title. COI was commissioned by DEFRA to conduct a public debate with the steering board, an independent body, which were in charge of organising and managing the strand of public debate.

This strand of public debate - GM Nation? - had its sub- deliberation exercises. In other words, this one of the three strands of GM Dialogue itself was composed with its nested deliberation exercises. These varied in their purpose and method, such as the expert group meetings of the steering board, the Foundation Workshops with recruited citizens, three tiers of public meetings and focused group meetings named Narrow-but-Deep. As GM Nation? was the public debate strand with an aim of gathering the public's views to inform the policy, the core objective of each sub-exercise was along the same lines, yet with its own specific sub-purpose and particular method. These nested exercises were developed by the steering board and COI as they discussed. These steering board and COI were the groups of people who designed and organised the strand of GM Nation?. However, those who were not directly inside these groups, also tried to have their influence on the development of GM Nation?. Furthermore, those who were not directly involved in the designing and organising, as well as those who were inside the circle of designing and organising group, had their respective, often contrasting, views on divisions of labour. Therefore, as the programme developed, there were such complex interactions among

[27]This is stated in Government's response to the AEBC's advice 2002: (http://webarchive.nationalarchives.gov.uk/20081023141438/http://www.DEFRA.gov.uk/environment/gm/crops/debate/aebc-response.htm accessed on 27 August 2012)

those behind the explicitly performed and emerged divisions of labour.

The Agriculture and Environment Biotechnology Commission (AEBC)

As established in the previous section, the turbulent debate on GM in the UK in 1998 and 1999 made the Government set up a strategic advisory body, the AEBC, in June 2000. The remit of the AEBC was as follows:

> " to provide the UK Government and Devolved Administrations with independent, strategic advice on developments in biotechnology and their implications for agriculture and the environment. It looks at the broad picture taking ethical and social issues into account as well as the science."[28]

After the AEBC addressed the importance of public engagement in GM policy making in its report *Crops on Trial (2001)*, the government (DEFRA) requested the AEBC for further advice on this. The AEBC developed further details of public debate and submitted them to the government in April 2002. As the AEBC suggested the idea of public debate on GM to the government, one of their sub- groups developed the initial framework of GM Dialogue. The chair of the AEBC, Professor Malcolm Grant, was appointed as the chair of the steering board of GM Nation?. Therefore, he and a few members of the AEBC were the actual designers of the public debate strand, GM Nation?. Those who were involved in this initial setting up of the programme of GM Dialogue became the members of the steering board of the public debate strand. The rest of the steering board members, who were four out of eleven, were recruited from outside the AEBC. DEFRA suggested the early board members of COI to help them to manage the programme. There were concerns on this issue from both inside and outside of the early group of the steering board, since COI was an in-house communication agency for the Government. Having considered the important element of independence of the programme from the Government in that context, it could have ruined the credibility of the programme itself. However, despite the concerns raised, the early group of the steering board decided to have COI for the practical reasons of organising the programme, such as time and procurement.

COI worked closely with the early steering board members and influenced the

[28] Available from (http://webarchive.nationalarchives.gov.uk/20100419143351/http://www.aebc.gov.uk/)

development the programme a great deal. Even before the complete recruitment of the steering board, there was already a lot of discussion among these, on the principles of the whole programme of GM Dialogue and the relationship of the three strands, as well as GM Nation?. Therefore, the AEBC was the organisers, who most heavily influenced and constructed the structure of public debate and initiation of GM Dialogue. Many incidences of the AEBC meeting minutes contain the records of their discussions on GM Dialogue.

The AEBC had an ambiguous position in the regulatory system. It was a strategic advisory body, but did not have the statutory right to legislation. As established before, mostly the inside of the government had a quite obviously favoured position on bio- and GM technology. Although the government (DEFRA) set up the AEBC, this was due to social pressure. What the AEBC has done since its establishment has not quite met the government's expectations. It could be argued that the AEBC was strategically made by the government to evade that social pressure. The government might have thought the AEBC would be a kind of firewall to serve as a defence mechanism for protection against the pressure outside and expected that they could intervene as they wished. One of the main actors of the AEBC in GM Nation? recalled a few moments, when the government tried to intervene in the steering board. The AEBC was closed down completely in 2005.

The Steering Board

The steering board consisted of 11 members, seven of whom, including the chair, Professor Malcolm Grant, were members of the AEBC. Although the actual activities and membership of the steering board overlapped with the AEBC, the steering board was the official designer group of GM Nation?. They had a total of 16 meetings to discuss the procedural issues of GM Nation? in public. The first such public meeting was held on 13 September 2002 with its members and two secretariats from DEFRA, and the final meeting was held on 3 October 2003. These meetings in themselves were deliberative activities to discuss procedural issues, which were open to the public to be observed and all of the meeting minutes were posted on the official website.

Desk Research

COI and an independent researcher, John Kelly, started a preliminary desk research. The desk research aimed to inform COI and the steering board of the issues of public attitudes and technical matters of public engagement, and ultimately to 'inform the programme of debate (Sub-group meeting minute of the AEBC, 23 September 2002)'.

The Strategic Consultancy team of COI undertook a research on the designing issues of the public debate programme (*Desk research on strategic considerations for the debate*) and John Kelly conducted a research on the issues related to public views on GM (*Desk research on public attitudes to GM*). As this report says, it does not specify only the issue of commercialisation of certain GM crops, but also covers the general issues of public attitudes around GM covering crops, foods and commercialisation:

> "Attitudes to GM food are intertwined with attitudes to the commercialisation of GM crops, the great bulk of which are intended for the production of GM food. For this reason, and also because there are relatively few sources of information on public attitudes specific to the commercialisation of GM crops, the two subjects are largely treated as one in this report" (from *Introduction of Desk research on public attitudes to GM*).

Foundation Workshops

The Foundation Workshops were another preliminary research aiming to frame public debate. Corr Willbourn Research and Development (independent social research company) carried out the Foundation Workshops and reported the results. Nine workshops took place across the UK (Manchester, Ludlow, London, Reading, Belfast/Co.Down, Edinburgh, Bromsgrove, Ruthin and Norwich) in November 2002. One group had participants who were 'actively involved in the GM field' and the rest were groups comprised of the 'general public' who were not associated with any employment, research or campaigning of GM issues (Corr Willbourn 2002, p. 5). Each workshop had 18-20 participants and two facilitators. Participants discussed for about three hours. The general public groups were recruited from across four different age groups and six socio-economic bands,[29] and the 'actively involved' group was composed of nine anti-GM participants and

[29] "The standard socio-economic classification system used by the National Readership Survey (NRS)" (Corr Willbourn 2002, p. 7)

nine pro-GM participants. This deliberation exercise was designed on the basis of a clear definition of the general public as per the following:

> "It is also important to note that the general public sample comprised people who had no prior allegiance with, or connection to, GM. Hence they genuinely represented 'grass roots' opinions that have largely gone unheard or been ignored in the GM debate thus far." (Corr Willbourn 2002, p. 6)

The final report of GM Nation? states that the results of the Foundation Workshops were used for the debate feedback forms and the Narrow-but-Deep event. In addition, occasionally, the other two strands stated in their publication that they had considered the issues raised from the public debate strand. I think they meant that they had considered the results of the Foundation Workshops. Otherwise, there was not much evidence of the results of public debate events to feed the other two strands at the programme level. Although there were inter-linking efforts amongst individual actors, nothing but the results of the Foundation Workshops fed the other two strands at the explicit designing level.

Public Meetings

Three tiers of public meetings took place across the UK. Public meetings were open to anyone who wanted to attend, therefore, the participants were 'self-selected' (The final report of GM Nation?, p. 25).

Tier 1 – six national public meetings were organised by the steering board and COI (Birmingham - 3 June, Swansea - 5 June, Taunton - 7 June, Belfast - 9 June, Glasgow - 11 June and Harrogate - 13 June). Each meeting had a few hundred participants. They were divided into tables of over 10 people to discuss the issues. They chose a facilitator among themselves at each table and the topics were given by the chairman at the beginning of the discussion. As an example, the transcript of the Birmingham meeting gives us a description of the process. The chairman gave the topics (risk and benefit analysis, impact and implication GM crops in the UK) at the beginning of each three sessions (the chairman having divided the debate into three sessions), but people raised many different kinds of issues, which they wanted to discuss. There were 28 tables divided into groups to discuss and at the end of each session, they were given opportunities to present the results of their discussion by the order of table numbers.

Tier 2 – the meetings on tier 2 were organised by county councils or national organisations in co-operation with the steering board and COI. About 40 regional meetings were held. There was a little flexibility for the organisers to change the format. For example, organisers were free to have experts answering the questions:

> "[…] because in those meetings, there were no real experts. We gave them information. We allowed people to express their own views and respond to the information. But some local councils said 'we have a professor here'. Cambridge for example, had a couple of emeritus professors. And a couple of people were opposed to it. […] somebody from the Friends of the Earth […] So it was very much their choice, how they wanted to do that. We just supported them doing that. But when it was traditional theatre style public debate, it wasn't very satisfactory." (Interview with one from COI)

Tier 3 – voluntary organisers held their local meetings on their own. COI invited them to organise their own meetings by providing the 'stimulus materials' designed by the steering board and COI to aid the meetings. COI estimated that 629 local meetings were held. The following quote from the person from COI illustrates how freely the meetings reached out to the local and small communities. Therefore, the tier 3 meetings were not only a self-selected but also self-organised type of public discussion. COI did not even have the accurate number of meetings held due to this nature:

> "Often in tier 3, we would supply people with materials. We sent them copies of brochures[…] having offered, 'if you want to take a part, come to us, we will give things' […] so, for example, some umbrella organisations were approached, people like the Women's Institutes, that have lots and lots of branches. We said, 'Would you be interested? If you want to promote, get your people to come to us'. So, some of those did." (Interview with one from COI)

Summing up together all three meetings, the final report of GM Nation? states that the estimated number of participants was around 20,000. These three tiers of public meetings were the main event, which somehow represented the GM Nation? or even the whole programme of GM Dialogue, regarding its primary principle of national dialogue being open to everyone. Although the main principle of three tiers was the same, each tier had variances in their size, location, format and authority of organisation. The various means and rationales of three tiers were novel to the public engagement exercises of the UK's science policy history. In a sense of reaching out to the public across the whole nation, it seemed to have achieved its aim of getting "public's view at grass root's level" (The final report of GM Nation?). However, given the huge amount of investment with regard to the designing, organising and participating efforts, there was little evidence in the efforts to

make the most use of the outputs of those investments. In other words, there was little designing and organising efforts to integrate the results of variously designed deliberation exercises and extract the outputs from them to make them useful inputs for the decision. Instead, what organisers were happy with was that they reached this huge number of people and gave them a chance to voice their views. The following quote shows that the different designs of deliberation exercises with various rationales lost their value at the end since what they did at the end of the three tier meetings, was collecting survey results. The survey sheets were completed by the participants who came and discussed in person at differently designed meetings. The organisers hired a data processing company to deal with these survey results:

> "[…] the only thing we tried to make happen with those meetings was to give everybody who participated a chance to feedback individually. That was very important. In our thinking, it doesn't matter whether you came to a big regional event or a tier two event or tier three event. At the end of your time you were given for this debate, you have a form that you can fill in and put in the post and register your individual view." (Interview with one from COI)

Narrow–but–Deep

Ten focus groups' sequential (twice) meetings, called 'Narrow–but–Deep' were held in June and July 2003. Corr Wilbourn Research and Development conducted this series of reconvened discussions. The aim of this deliberation exercise was 'to get a detailed picture of the response to GM issues from a typical cross-section of the wider population (The final report of GM Nation?, p. 14)' for the purpose of testing the possibility of the silent majority. There were discussions among the steering board and COI as to whether there would be a majority who did not speak out on the issues. Therefore, the convened discussion had the participants who were not 'self-selected' but recruited by the designed criteria to select them and financial commissions to recruit them. 77 people participated in the discussion twice.

Each group of eight participants met twice with a facilitator. The method of this event had a similar approach to the Foundation Workshops. Four different age stages and two socio-economic bands were used for recruiting 'the general public'. 78 (first session) and 77 (second session) participants were recruited, who must have not worked, done a research nor campaigned on GM issues.

1st session: participants were introduced to the issues around GM and provided with the GM Nation? booklet and CD-Rom prepared by the steering board and COI. They discussed the issues on GM and were also asked to devise their own ways to engage with the GM issues and to carry out their own activities before the second meeting in two weeks' time.

2nd session: participants reported the results of their own activities related to GM issues during the previous two weeks, such as collecting information or exploring any other activities, and discussed the substantive issues on GM.

The steering board published its final report and submitted it to the government in September 2003.

Box 4.1 Chronology of GM Nation?

April 2002: The AEBC submitted advice to the government.

May 2002: The secretary of DEFRA announced that a public debate would take place alongside the Science Review and the Economic Study.

July 2002: The Secretary of State agreed to AEBC recommendations, budget and timetable and appointed Malcolm Grant to be chair of the steering board, to lead the debate and appoint other members.

August 2002: The Government confirmed that the debate would be conducted on behalf of the three devolved administrations, namely Scotland, Wales and Northern Ireland. The steering board accepted the government's suggestion of COI as a prime contractor to manage the debate.

December 2002: The results of Desk research were published.

November 2002: The Foundation Workshops (nine workshops) were organised by Corr Willbourn Research and Development.

February 2003: The Government and devolved administrations agreed to double the budget for the debate programme, to extend the time to July and report to Government by September.

June 2003: Three tiers of public meetings were held.

June and July 2003: Narrow-but-Deep, a series of reconvened discussions was conducted by Corr Willbourn Research and Development. Its report was published in September.

September 2003: The final report was published and reported to the Government by the steering board.

The aim of the Science Review strand was to review the incumbent scientific knowledge on GM crops. Professor Sir David King, the Government's Chief Scientific Adviser, was the chair of the Science Review Panel and led this strand. Officially Howard Dalton (the Chief Scientific Adviser to the Secretary of State for the Environment, Food and Rural Affairs), was supposed to work with David King, but his presence was quite rare. The first report of this review addressed its aim as the following:

> "The aim of this review is to consider the evidence for both the real and perceived risks and benefits of GM crops from a scientific perspective." (Executive summary, in First Report)

Box 4.2 Chronology of Science Review

December 2002 - December 2003: Total of 11 panel meetings in public were held.

January - March 2003: Four open meetings were held.

July 2003: First report was published.

January 2004: Second report was published.

This strand was composed of a few differently designed deliberative activities. These were Science Review panel meetings of 26 scientists, Open meetings of scientists in public with specific themes, and the website was open to citizens and stakeholders to give their opinions.

Science Review Panel Meetings

The Science Review panel was composed of 26 scientists [30] (according to the official website – however, there were different numbers of members during the interim period). Although the range of their interests, backgrounds and affiliations was diverse, most of them were bio-related scientists, who were mainly from natural science, and a few from social science, backgrounds. Two to four secretariats from OST also attended meetings. The panel had 11 meetings (the first meeting being held on 10 December 2002 and the last

[30] The initial number was 25 scientists. Carlo Leifert left the panel from the 6th meeting, and Dr. Bruce Pearce and Dr. Michael Antoniou joined from the 8th meeting. Therefore, the final list of panels published on the website of Science Review has only the latter two people but no record of Carlo Leifert leaving.

meeting on 22 December 2003), which were held in public so that people could observe the meetings. The Science Review panel published two reports (the First Report on 21 July 2003 and the Second Report on 22 January 2004). Their remit was as follows: "The Panel was given two principal functions: first, to oversee the science review and ensure that it is achieving its stated aims and objectives and second, towards the end of the review to summarise the state of scientific knowledge, concerns and areas of uncertainty for each issue, as fairly and as accurately as possible."[31]

Although the panel's role was overseeing the strand of the Science Review as well as providing a summarisation of substantive subject issues on GM crops, the panel actually did not work much on the procedural issues of the strand. Many of the procedural matters were already set even before the panel was composed, which seemed to have been done by OST. It was also because scientists- mostly natural scientists - wanted to focus their discussion on only 'scientific' matter:

> "They were mostly scientists so the atmosphere was that we had to talk about science. We are not here to talk about process. Scientists often say this. They wouldn't really expect to talk about that." (Interview with one of the Science Review Panel members)

The panel was divided into three sub-groups called 'Mentor drafting groups'- *GM food safety; Gene flow, detection and impact; and Environmental impact of GM crops*. In the second panel meeting, the secretary (one of the secretariat from OST) proposed sub-grouping of the panel and invited each member to join the groups according to their own expertise and interest. These three groups were chosen from the five themes of discussion: *GM food and feed safety; Gene flow, detection and impact; Environmental Impact of GM crops; Future Developments; and Regulatory process*. The secretary added his explanation of that the two left themes - *Future Developments and Regulatory process*- would be covered through by all three groups. This frame of the three groups was already set and given by the secretary from OST. However, there were attempts of the panel members to alter the initial given frame so as to apply it to finding their roles in the panel. The following quote from the meeting minutes of the panel shows that somehow the panel's self-reliant role-identifying and thus emerging

[31] The original website (http://www.gmsciencedebate.org.uk) was lastly accessed on 25 April 2008 and it has been archived in the National archive website:(http://webarchive.nationalarchives.gov.uk/20081023141438/http://www.gmsciencedebate.org.uk/default.htm)

characteristic of the structure was acknowledged and encouraged among the panel members:

> "The Review needed to be comprehensive, building on the various themes at the academic/scientific level (bottom-up) and considering, academically, what is required from the regulatory perspective (top-down). It was agreed that the characterisation of the drafting groups might change with time, depending on the nature of contributors' comments and other inputs." (2nd Science Review panel meeting minute)

Open Meetings

Within this strand, there was another type of discussions of scientists, which were also held in public. OST (whose head was David King) commissioned the British Association for the Advancement of Science (BA) to organise these meetings. These exercises were a kind of forum, which were open to anyone to observe, and ask questions and make comments. Each of four meetings (GM Food safety – London, Gene flow - Edinburgh, GM animal feed: safety implications for the food chain - Belfast, and GM crops; gene flow and fitness in natural and agricultural systems – Ceredigion)[32] had a specific theme to be discussed. There were three to four speakers (scientists) to present for ten minutes and then they were questioned by three or four scientists from the Science Review panel. The audience could ask questions or make comments.

These open meetings were somehow for providing an assortment of various science personnel and the public to engage in events. Especially for the spirit of 'openness' of the GM Dialogue, the organiser must have experienced pressure that everything should be made in public. It was just one of showcases for the Science Review strand. One of the panel members said in the interview, that it was a kind of Public Relations exercise. As seen in the following statement for the aim of these exercises, there was not much difference in the role of these events from panel meetings.

> "The aim of these scientific meetings was to explore, in public, the science underlying particular GM issues. In general 3 to 4 scientists were invited at each meeting to offer different perspectives on an issue. Transcripts, papers, speakers' abstracts etc. for the meetings are all set out below."[33]

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[32] Additionally, a discussion on GM Crops, 'Modern Agriculture and the Environment' was held separately by the Royal Society in London in February 2003.

[33] The original website (http://www.gmsciencedebate.org.uk) was accessed in July 2007 and it is archived in the National archive

The first report was published in July 2003. The Science Review panel submitted this to the ministers. The panel posted it on the official website and invited comments from stakeholders and citizens. The following is from David King's foreword to the first report:

> "The Review has endeavoured to take an open look at the science relevant to GM crops and food, and to do so in a way that recognises the interests and concerns of the public as well as the science community. So I am sure this report will be of widespread interest. The Review Panel invites and welcomes your comments on the report. Over the summer, our Review website will be open to receive them. We also continue to welcome scientific contributions to the website. All contributions must be submitted by 15 October 2003.
>
> The Panel will then reconvene in late autumn to consider these comments together with the report of the GM public debate "GM Nation?". In the light of these, we will wish to consider whether there are any further issues we should address. We will also look to see if there have been significant developments in GM science over the summer that we should report on, and will consider the results of the farm scale evaluations of GM crops if these are available."

The second report was published in January 2004. The panel reviewed the first report considering the comments received from individual citizens and stakeholders, and the results of the Farm-Scale Evaluations (FSE) research report.[34]

> "During this second phase, the Panel met on four occasions to discuss comments received on our First Report and the extent to which these altered our conclusions. We also examined the report of the GM Public Debate 'GM Nation?', to consider whether there were any further issues we should address and we also looked to see if there had been significant developments in GM science over the summer that we should report on. In particular, we considered the results of the UK Farm-Scale Evaluations of GM crops." (from David King's Foreword to the Second report)

The Food Standards Agency (FSA) initially started as part of the Science Review strand. However, it carried out a separate research in the end.

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website:(http://webarchive.nationalarchives.gov.uk/20081023141438/http://www.gmsciencedebate.org.uk/default.htm)

[34] FSE- A field research on the effects of genetically modified crops (the herbicide tolerant crops) on farmland wildlife started in 1999. The results of the research were published in *Philosophical Transactions of the Royal Society (Biological Sciences*) in October 2003.

4.2.1.3 The Economic Study

The Prime Minister's Strategy Unit undertook the Economic Study and published a report, *Field Work: weighing up the costs and benefits of GM crops* on 11 July 2003. The report states its objective as the following:

> "The main objective of this study has been to provide a comprehensive and balanced analysis of the costs and benefits of the possible commercial cultivation, or otherwise, of GM crops in the UK. The study focuses on crops that are currently available, as well as possible developments in the next 10-15 years, and develops scenarios to explore a range of possible futures." (from Executive summary in the final report of the Economic Study)

Box 4.3 Chronology of the Economic Study

September 2002: Scoping note was published.
December 2002: Scenario workshop was held.
April 2003: Shocks and surprises seminar was held.
July 2003- The final report was published.

Strategy Unit Project Team

The project team consisted of 10 people from the Strategy Unit. They were mainly economists and had policy background, but they were not specifically experienced in GM policy.

Expert Advisory Group

The project team appointed three Expert Advisory Groups to assist with different aspects of the analysis (*Environment Expert Group, Product Chains Expert Group, and Industry and Science Expert Group*). Each group of seven members met on three occasions to consider the scoping note, scenario development/background working papers and draft analysis papers respectively. Some of them attended the Shocks and Surprises seminar and Scenario workshop as individual stakeholders. Many of them were also engaged in other strands of GM Dialogue with one or two cross membership of the AEBC, the steering board or Science Review panel. For example, one, who was a member of the AEBC and the steering board of the GM Nation?, also belonged to 'Industry and Science Expert Group' with his affiliation of a biotechnology company.

Its final report summarises its structure as three phases:

The first phase: the Strategy Unit team published a scoping note on 25 September 2002 and invited comments from stakeholders and experts. They received the responses from organisations and individuals outside and inside of the government. This scoping note was presented to the steering board in October and it was revised in response to their comments.

The second phase: the Strategy Unit team developed a methodology through discussions with its Expert Advisory Groups and with stakeholders. They held a 'Scenario workshop'[35] with stakeholders and experts on 2 December 2002. The objectives of this workshop were to find out 'key issues and uncertainties' to be addressed and to frame scenarios based on those. 23 experts were invited from various institutions, as broad as universities, research institutions, industries and NGOs. Four people from the Strategy Unit team, two civil servants from DEFRA and two professional facilitators (Frontline Consultants) were there. The output of this workshop was used for the Strategy Unit team's developing of five different scenarios. The scenarios, developed on the basis of this workshop, were part of a wider methodology that the Strategy Unit employed to conduct its study. The Strategy Unit team also published an overview methodology paper and a series of working papers[36] on 30 January 2003. They held a seminar on possible 'shocks and surprises'[37] on 3 April 2003, which might not fit into the developed scenarios. Stakeholders and experts attended to discuss the possible negative and positive impacts of GM. 26 stakeholders, 6 government stakeholders and 6 members from the Strategy Unit team were the attendees.

The final phase: the Strategy Unit team published its report *Field Work: weighing up the costs and benefits of GM crops*, in July 2003, analysing the costs and benefits that could arise under the different scenarios.

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[35] Available from: (http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/strategy/work_areas/gm_crops.aspx)

[36] Available from: (http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/strategy/work_areas/gm_crops.aspx)

[37] Available from: (http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/strategy/work_areas/gm_crops.aspx)

4.2.1.4 Discussions

Representativeness of the experts in deliberation

The experts' deliberation process did not take place in a form of merely rational dialogue with just their 'professional expertise or knowledge'. Emphasising only the 'professional expertise or knowledge' as their explicit qualification for participation could have obscured the other part of the story of the deliberation process, such as political, personal interests and relationships. And consequently, that might have raised the expectation for deliberation to be a pure rational argumentation process among professionals. However, the other implicit, un-codified, informal elements of deliberation among experts also played a significant part in shaping the deliberation process of GM Dialogue. Organising groups of experts (such as the AEBC, the steering board, the Science Review panel and the Strategy Unit team) were composed to manage the deliberation exercises. Their decisions were expected to be independent from any political power outside of the programme. In particular, at this type of policy event, which was entangled with many stakes, the principle of 'arm's length distance' from the Government was often emphasised by the sponsors themselves. While the independence from external power had been emphasised as an important qualification for the experts' deliberation, the independence from internal power was rather taken for granted as if it had been there in the expert deliberation.

Efforts were there in the composition of organising groups to widen the range of perspectives. The AEBC, the steering board, the Science Review panel and the expert advisory groups of the Economic Study all claimed reflections of broad aspects around the issues. However, this claim had often been criticised, both inside and out, and had never received the full satisfaction from all parties. This may be natural as the members of the organising groups represent different stakeholder groups' interests. They were recruited, not only because of their substantive knowledge, but also because of their representativeness of certain stakeholder groups. One of the Science Review panel members said that he was recommended as representing environmentalists groups; he also said that no-one was supposed to represent any group or organisation on the panel.

It is arguable that the composition of an independent credible expert group to organise such novel public deliberation exercises reflected not only their diverse perspectives around the substantive issue, but also incumbent power relations in the policy networks. Therefore,

issues of representativeness were raised among those who were outside as well as inside of those groups. The following quotation is from an interview with one of the AEBC members, who was from a pharmaceutical company:

> "My interest was clear in that the industry did need to be represented on the AEBC. And it was very clear in those first two years […] it was a very lonely voice as they weren't taking notice of any submissions we made to them and they needed to have somebody at the table actually looking into their eyes and saying: Sorry, this is not actually really happening." (Interview with one of the AEBC members)

A few interviewees pointed out that the organising groups themselves somehow represented public diversity in the real world. The dynamics within the groups did not differ much from those of public meetings. Academics, experts and professionals did not have merely a rationale dialogue with publicly defensive arguments; they displayed various forms of relations utilising indisputable facts and disputable arguments for their rationalisation and for 'scientific decisions':

> "The AEBC was a sort of strange body, because it didn't have regulatory powers but it was there to advise the government on the strategic matters. My understanding is that someone in the government or some group of people within the government thought it would be a good idea to, the term I am using is 'encapsulate' the microcosm of the debate, which was going on in society about genetic modification; so, in another words, there is a debate, and there is politics and these things are contested in society. If you get certain key stakeholders from different groups, we put them together in the committee, perhaps to sort this thing out between them, they will work through the tension which exists in society as a whole. My understanding of that was thinking which of them was behind the reason the AEBC had the particular structure and composition that it did […]" (Interview with one of the evaluation team members)

> "I think the most important role of the public or stakeholders was in the constitution of the panel because if you look at this panel, it's a very broad panel for looking at science. […] they [The government] were keen to make sure it looked fair. And they would have been forced into that position because they were on the defensive of GM, They were losing the argument. So they needed to have a group that was constituted broadly and the stakeholder achieved that because they were creating the pressure, political pressure, so it was crucial, even before it began, to make it happen in a certain way." (Interview with one of the Science Review panel members)

Who is the public?

It was quite obvious that majority of the attendants of the public meetings of GM Dialogue were from NGOs and certain groups of people who had specific interests and stakes to come and have their say. Who should be the legitimate representatives of the UK public for GM policy; contrasting views on the representation of the public were

inherently confronted by one another in the designing of public engagement.

There was discussion within the steering board about whether there would be the other public who did not come to participate in the meetings but had a different view, as many participants who attended the public meetings were 'self-selected' and had a strong desire and opinions on the issues to come to the meetings. They were often from NGOs. Whether these participants would represent the general public was a debate among the organisers. Therefore, they designed 'Narrow-but-Deep', which was a kind of experiment to see the possible different opinions between the self-selected and GM-interested, and the recruited and not specifically GM-interested. This discussion relates to the representative issue of public deliberation: who would be the legitimate public to be involved in policy-making process; and what would be the legitimate process of deliberation? Therefore, behind certain explicitly designed public engagement events, people's opinion had been diverged on this fundamental issue:

> "We [the steering board] recognised from the start that all of the activities in the open debate might provide evidence of views from only a certain seam of British society – broadly speaking, people who are regularly engaged in public issues. As we note below, it is quite unusual for people to attend a meeting on a public issue or to write a letter about it (especially one such as GM which has not played a big part in everyday life). We therefore decided to commission a parallel research based on a series of reconvened discussion groups [...]" (The final report of GM Nation?, p. 14)

Especially in the context of science policy making, there were radically different views on the role of the public for the policy making:

> "The obvious problem is that those people who come forward, the people who tend to have a view of these things, either about GM specifically or because they are very interested in democracy, […] But it seems unlikely that people just drift in off the street unless they have some specific reasons, which suggests that you have to be careful about what information you gain from them over what status it has, and obviously it has a status of the people who are stakeholders in a strong sense. […] It would be quite wrong, I think, to suggest that such people shouldn't have a say [...]" (Interview with one of the evaluation team members)

For the example of the case Narrow-but-Deep event, organisers had to pay the participants money to make them come back to the second meeting. The designer of these events pointed out that it was hard to anticipate 'people's goodwill' for them to attend the public meetings, in particular the second meeting.

> "Yes, it is in a standard commercial research that participants have a financial incentive. For the simple reason that's why it gets you a high turn-out and a high number of people coming back. If we have to rely on people's goodwill, it wouldn't have happened. My perception of the public events is that they are largely populated by people who already work in engaged debate and want another chance to express their views. The great silent majority - you have to pay them. That's just the reality of life." (Interview with the one of Corr Willbourn Research and Development)

Voluntary public participation is not just a matter of 'goodwill' to come to discuss public issues for the common good. It is also a power issue around public engagement. Since participation requires resources for attending the meeting and deliberating upon the issue, there might be people who could not come due to the lack of resources they had. An organiser from COI told a story of a young woman that had a child in her buggy who passed by the event venue showing her interest, but could not participate as the venue did not have baby-sitting facilities.

Voluntary participation is not just a matter of an indifferent or ignorant public. It was true that most participants of the public open meetings were from NGOs. It is, therefore, reasonable to debate whether NGOs are representative of the public or at least whether people who have specific interests could be called 'the public':

> "[…] when we went to Swansea the local police said to me over 70% people in the room, we had about 250 people turned out, had been arrested by the police for destroying GM crops, and the police were worried there would be trouble at the event […] Well, they recognised them. They looked at them and said […] yes, they were all from GeneWatch[38] or […]" (Interview with one from COI)

Little designing efforts to integrate divided labours, but endogenous inter-linking of participants

There were a lot of efforts to divide the whole programme to make different spaces with diverse rationales. However, there was little designing effort to integrate all the outputs of the divided deliberative exercises and to make the most use of those diverse parts of participation for decision making. However, instead of systemic efforts to integrate the various divided deliberation exercises, it seemed that participants tried to be inter-linked and inter-fed by themselves so that they were intermingled into the programme.

[38] It needs to be clear that given that GeneWatch is not a mass membership organisation and never itself undertook direct action, this is by definition a false statement, or incorrect memory on the part either of the Police or COI.

Government's the ideal suggestion of integration and inter-feeding between three strands actually did not happen. In fact, the three strands went on rather on their own way. They failed in systematic integration at all. For example, the three strands were operated by different institutions and there was no committee or any group of people responsible for overseeing the whole programme of GM Dialogue.

The government explicit rationale for the design of the three strands in GM Dialogue was to be informed via three different perspectives around the GM issues. In contrast to this explicit rationale of gathering the three different perspectives for GM policy, the government's implicit rationale for having three strands was actually the opposite. In other words, instead of being for the purpose of including three different perspectives on the issues for the policy inputs, the government used the composition – or division – of three strands for the purpose of breaking up the source for decision making so as to prevent GM Dialogue from providing one solid but undesirable answer to the government. Therefore, division of labour was used in order to disperse voices rather than to include different voices by the government.

> "The whole process, having three separate pieces of work in parallel, I suppose, is very unique. I had certainly never come across this before and I haven't come across it since. I suspect the origins of that approach were pretty political. […] Obviously it is largely DEFRA's policy area. I know that Number 10 was quite heavily involved in setting this up. What I am not clear about is the exact thought processes that decided that it should be three separate studies. But I know this was sounded out pretty early on […] also if you wanted a sort of neutral public debate, you don't like to have the Prime Minister's strategy unit involved. It came with a sort of certain amount of baggage with it.
> […] In very simple terms, nobody was asked to bring those together. We were each asked without being given a role on the specific project. […] But I look at it now, perhaps with hindsight, in kind of programme management terms - you had three projects, which constituted a novel programme. There was no overall senior responsible in a way of taking the interests in the programme. There was no programme manager there, who was looking at the interfaces between them."
> (Interview with one of the Strategy Unit Team members)

> "The economics and the science strand, I mean we had never built as an integral thing really to start with because the public dialogue was sort of agreed to, and then, because there was such a political nervousness about it. They had to bolt on some other things. You know they had to bolt on to economics and the science.
> […] Yes, the government was nervous because if they just had a public dialogue and then they came up with the wrong answer, then they wouldn't have any other political support to fall back on really. So that's why they had to have the other strands going."
> (Interview with one of the AEBC members)

Likewise, it is not certain whether the idea of increasing the inclusiveness by divisions of labour, creating all the glossy, glittering looks of diverse deliberative exercises, actually did perform its fundamental function. As discussed in this chapter earlier, comparing the efforts to create all the different range of deliberative exercises, it lacks clearly designing and organising efforts to integrate them into decision process.

Another example of this argument is the way of using the website. Most of the meeting minutes and official reports of the three strands were on the websites. In particular, the first report of the Science Review was submitted to the ministers and published on the website to invite stakeholders' and citizens' comments to reconvene the report. GM Nation? website also got lots of hits and the organisers of the GM Nation? were proud of the large number of the visitors to the website. However, the website was used for delivering the information and message from each side than a venue for real two-way communication. As even though it was used for the public to post up their comments, it is not clear how these were actually read and thus passed on to the deliberation process. The organiser had to admit that they had not been able to read all the comments on the website. It was a tool for one-way communication and a tool for public relations.

Therefore, I argue that there was a lack in systemic designing effort for integrating the outputs of variously designed and organised deliberation exercises. Instead, there was a clear upstream effort made by participants endogenously to be inter-linked and inter-fed with other parts of the programme. Despite this lack in evidence that the divided labours were explicitly and formally included into the process, my analysis of GM Dialogue suggests a new way of including widely-divided labours into the deliberation process. People of certain deliberation exercises tried to have their influence not only on the inside of their event but also different deliberation exercises, where they did not directly belong. In doing so, they got to know the happenings in other parts of the programme. As well as this, they took the issues of their event to the other parts of the programme.

Within the programme, in particular, people had cross membership over the different organising groups of the three strands and delivered the message from one to another. For example, Phil Dale was almost everywhere. He was a member of the AEBC, the steering board and the Science Review panel. He was even on the list of all three sub-groups of the Science Review panel. He also attended events of the Economic Study strand, such as the

Scenario workshop, and the Shocks and Surprises seminar. He played a very important role, inter-linking and inter-feeding different parts of the programme voluntarily and individually. The following quotes from the meeting minutes of the Science Review panel tell us how he brought information from one strand to another and made it influential:

> "43. Professor Phil Dale who has overlapping membership with the Public Debate Steering Board, conveyed the Board's thoughts on the Science Review to the Science Review Panel. The Board felt that it was important the Panel did not give the impression of being self-serving or that the Review was too deep for the public to understand. Their questions should be taken seriously and with genuine empathy.
>
> 44. Professor Dale mentioned that the results of the foundation discussion workshops would be published on 17 December 2002 and would give an indication of "grass roots" GM issues of interest to the general public which would provide a valuable resource for the Science Review.
>
> 45. The Panel agreed to include the outcome of the foundation discussion workshops in the Review process."(1st Science Review panel meeting minute*)*

In addition to endogenous inter-linking among participants, the issues in the discussion themselves were entangled with one another. Therefore, despite various designs of deliberation exercises for different issues, participants often introduced all sorts of issues into their discussion.

4.2.2 Deliberativeness

Internal elements of individual participants' attributes as well as external elements of the wider context of the programme shaped the deliberation process.

A variety of participants brought not merely knowledges but also their respective identities, convictions, and networks into the process. These respective participants' attributes were the internal elements of the programme, which constructed dynamic relationships among participants within the programme. In addition to these, political discourse, governmental and non-governmental institutions and policy networks outside of the programme also played their powerful part in the deliberation process, as external elements.

There were dynamic inter-reflections among the internal elements of the participants inside the programme, and also dynamic inter-reflections between those internal elements and external elements outside the programme. Through these inter-reflections of the

elements, deliberation turned out to not be a form of rationally argumentative reasoning, as theorists assumed; rather, the scenes of deliberation were much more a case of dynamics among participants, such as segmenting, aligning, competing, negotiating and networking. Therefore, the deliberation process was a complex picture of various forms material, social and political relations among participants, which this thesis calls 'discursive relations'.

4.2.2.1 Internal Elements: Plurality in Identities, Convictions and Networks, as well as Knowledge of Participants

Including a large number of people and their views was one of the essential criteria for designing public engagement, such as GM Dialogue, and knowledge is often the most legitimate qualification for the participants of deliberation exercises, especially for science policy making. In addition to this explicit, codified qualification of knowledge, participants also brought many different respective attributes to the deliberation process, such as identities associated with social perception and their institutions, their personal convictions from their philosophy, preference and experience, and their personal networks. Therefore, they did not just participate alone as an independent deliverer of his/her own knowledge. Instead, participants' personal attributes came together and got involved in the deliberation process. Participants' identities, convictions and networks, as well as knowledge, were materialised and influential in shaping the deliberation process as internal elements of the programme of GM Dialogue. These inter-reflections generated new sets of interests, identities, roles, networks, and relationships of participants in the process, which constructed the new context of deliberation. Next part of this chapter discusses the ways in which these kinds of material, social and political relations of participants took place and shaped the deliberation process, by presenting detailed evidence.

<u>Knowledges</u>

Different types of knowledge that are required for the decision-making process are one of the most common rationales, upon which designers relied for their decision on making a list of participants in public engagement programmes.

As discussed in the previous chapter, knowledge is not constructed in a politically neutral manner, but the way of its construction and use is deeply associated with people's various

values. This is even the case for scientific knowledge. It is even more so for the case of technological risk-related decision-making due to its nature of uncertainty. However, knowledge was one of the most popular and explicit rationales for participation in such a politically-sensitive debate as GM Dialogue. It was so, as if knowledge was free from politics and was self-reliant so that it was fair to be used as the explicit rationale for determining participants. Designers might have thought knowledge would be politically expedient to be an upfront rationale for participation.

In particular, for the experts' deliberation exercise, their specified knowledge and expertise constituted the most legitimate rationale for their recruitment. For example, the organising groups, like the AEBC, the steering board and the Science Review Panel, were recruited as independent expertise, which was explicitly claimed to be assured by them and by their sponsors. Under this claim, experts are expected to bring only their neutral knowledge for rational decision making, excluding their personal or institutional interests. However, my case shows that many experts acknowledged the fact that the reason for their requirement was not only their knowledge but also the more direct reason, being the political one:

> "Because I have done a lot of work about precaution […] and they liked the way I was defending the precautionary principle […] they liked the way I was working on uncertainty […] More than that[...] I know the people from the organisations who nominated me [Person A, Person B...] so I knew them personally. That must be an issue also." (Interview with one of the Science Review Panel members)

> "Yes, Michael Meacher asked me to apply. He was the minister in charge. We wanted some more sceptics on the commission so he asked me to apply, basically. […] Well, a sceptical position but probably having some scientific knowledge and insight and I suppose just knowing all sorts of arguments around GM." (Interview with one of the AEBC members)

The recruited experts must have had their established identities and specialties, which cannot be detached nor should they be, since those were also part of their recruitment reasons. Although the attributes of broad specialties and networks of experts were considered for their recruitment criteria for composing experts groups, these might also have been an issue for the credibility of their independent decisions. Therefore, knowledge was the official and ostensible rationale for the experts to come to deliberations and there were implicit rationales behind them, as the 'broad perspectives' of the experts group, which was claimed for the rationale for the wide range of areas of experts, could have been used for the moderate term of different interests.

Identities

Identities that were attached to the participants influenced the deliberation. Participants' identities were often associated with their institutions - where they came from, and also social perception on the institutions. As discussed above, participants did not just bring their expertise but also their institutions' interest, which was reflected in their identities. These identities built bias or aspiration to each other among them. Therefore, they shaped the relationships between participants and, eventually, the deliberation itself.

In particular, this kind of technological risk-related discussion built unique group relationships amongst participants. One can say that scientists, especially those from academia, are generally exempted from suspicion of their political interests, while people working in related industry play often the role of greedy exploiters or the most unfair beneficiaries of the technology; and NGO people are the activists who fight for the public good and are often anti-technology. These stereotypes worked vibrantly and shaped the dynamics of the deliberation. For example, the one who was a member of the AEBC and the steering board recalled how his previous affiliation with NGO influenced his current relationship and work in the programme of GM Dialogue:

> "I was the chairman of Greenpeace, so they were concerned. You know they [interviewers for recruitment in Whitehall] were worried. On the one hand, also they thought 'Mm, that looks good.' One person asked about conflicts, Greenpeace policy. I persuaded them that it was not an issue but it helped me to be honest. Although I never used Greenpeace explicitly, I had no doubt it helped people listen to me because they knew that [...] but it worked against me as well because scientists were so suspicious of me." (Interview with one of the AEBC members)

In general, scientists from academia have more credibility in their contribution to the risk deliberation while people from industry have negative image as they cause the problems but take most benefits. However, interestingly in a few instances of GM Dialogue, participants coupled science with industry. In this presentation, science was not located in neutral position between pro- and anti-GM technology, but explicitly positioned in pro–GM technology. For example, the Strategy Unit team composed three the expert advisory group for the Economic Study strand-*Environment, Product chain, and Industry and Science*. This is interesting that although the other two groups had scientists who were university based, industry and science were in the same basket. The following quote is another example of this coupling of science and industry from the House of Lords' report.

> "Public interest in science in the United Kingdom is high. Survey data reveal, how ever, negative responses to science associated with Government or industry, and to science whose purpose is not obviously beneficial. These negative responses are e xpressed as lack of trust." (in Chapter 2 of House of Lords 2000).

It is also interesting to see how participants were perceived and presented by one another. Many interviewees often keep attaching the relevant institution in front of people as a prefix, like 'industry guy', 'NGO person' and 'government man'. Interestingly, the identity ascribed to someone was different depending on different people. Professor Phil Dale was a member of the AEBC and the steering board attended many different events across the three strands of GM Dialogue. He was referred to as a 'pure scientist' as well as an 'industry person' by different participants:

> "[…] Phil Dale from John Innes, industry guy basically." (Interview with one of the Science Review panel members)

> "I think most of them [steering board members] thought I was the son of the devil [laugh…] No, Phil worked for the John Innes institute. So he was a pure scientist working at a university. He had an interest in GM and I think he worked in the GM scientific community but he wasn't an industry member. He was a scientist." (Interview with one of the Steering Board members)

Convictions: Philosophical difference towards, in particular, science and the public

Participants were not just from different areas and expertise; they also had different philosophical bases. Therefore, the degree of difference in their views was as deep as their widely divergent ontologies. The issues raised for GM policy, therefore, were very fundamental. Participants themselves sometimes found their underlying beliefs indisputable, such as about who the public is and what their role should be in GM policy making; and what science is and what science should do in GM policy making. This was the case, not only between different areas, but also amongst those who were in the same area.

> "[…] but the real thing about GM is that all sorts of social phenomena […] new technologies, globalisation and nature were sort of somehow condensing into this phenomenon of GM crops; so what the controversy was about was more than just immediate issues of safety. It was about regulations, mistrust of government [...] all sorts of issues […] You know as a democrat, you want to embrace all these, discuss it, and explore it collectively to find a way through. That was always of my attitude to the AEBC and that was what the AEBC was there for. Nobody would predetermine what the outcome would be." (Interviewee A from the AEBC)

> "[…] the social interactions and everything else, ok we could do this and do that to

> help the lay people's fears perhaps. But science is still science. So there was never 'Ok, we'll accept that and we will build on that.' There was always 'We are here; you are there.' So everything written was a fudge […] The scientist's role was to provide the facts to the debate […] That's a sort of fact and the information is pure. Scientific fact cannot be disputed, that's it. That what I saw as the scientist's role - to put in, or whether there is something; Phil always argues peer review data." (Interviewee B from the AEBC)

Networks

Just as participants did not leave their institutions and convictions behind to come to the deliberation, they also brought their personal networks into the deliberation. Participants' personal networks were explicit and influential to the deliberation process. Participants had their personal associations with certain groups, alliances and communities. They reported the process and the issues inside to the outside and brought concerns and opinions outside to the inside. Although it would be natural to expect that participants inside of the programme must have been informed and influenced by the outside, the informal and personal relationships of participants with their colleagues and friends outside of the events played a big part in the deliberation process. Therefore, participants, although having been recruited as individual independent participants, did not actually play alone inside. Rather, they worked with their invisible groups out there.

> "There was a little mafia [...] we were always talking together […] the network I was in which was [person A, B and C], myself […] a little bit of an operating environmental […]" (Interview with one of the Science Review panel members)

People who were in this group of the quote expressed their trust in, and expectation of, that person's role to represent their perspective in the Science review strand. In this way, they did not directly participate in the other event, but they got involved in an indirect way.

> "Well, with economics studies we were much more long distance, you know. We were much more kind of formal and submitting and commenting. The Cabinet Office things were much more difficult to penetrate, we didn't have any friends at all. And the science strand, you know [one of their network members] was on the thing so, it was only through [him] really […] and helping [him…]" (Interview with one of the AEBC members)

> "Our relationship with Science Review was rather difficult because the two people from the AEBC, who were on the Science Review, were [person X and Y]. And that meant we didn't have a direct relationship with Science Review as a steering board. […] but that didn't matter in a way actually, because [one mentioned by above interviewee]

> - we had such a confidence in him - he had produced the original framework […] "(Interview with one of the Steering board members)

In addition to this informal way of role-playing through certain networks, participants used their networks at more explicit and codified level. Inside of the programme, participants had cross membership across different groups of the three strands. They were, therefore, messengers linking different deliberative exercises, groups and strands. As well as this, some of participants had cross membership of different institutions of the regulatory system. For example, Professor Bainbridge was a member of ACRE (Advisory Committee on Releases into the Environment) and the chair of ACNFP (Advisory Committee on Novel Foods and Processes) at that time. She also directly participated in the Science Review strand as a panel member and attended the Strategy Unit team meetings as Advisory group member.

People who were outside, on the other hand, sent their message in both formal and informal ways to the inside through the person with whom they had networks. Participants inside reported what was happening inside to the outside. Therefore, people who were not invited to participate in the deliberation inside could know the happenings inside and tried to intervene in various ways.

4.2.2.2 External Elements: Political Discourse, Governmental and Non-Governmental Institutions, and Policy Networks

There were also external elements outside of the programme, which interacted with elements inside to shape the deliberation process. For example, political discourse, governmental and non-governmental institutions and policy networks played their power over the deliberation process. The programme had been developed as internal elements of the programme interacted with these external elements. The programme was intervened by, and responded to, these external elements.

<u>Political discourse, like the BSE event and Iraq War</u>

As established earlier in this thesis, the BSE event was seminal in the history of UK science policy, especially food regulation system. The trauma of a precedent political event was still inherited greatly in the GM discussion. Lord Philips published a report of the BSE inquiry

on 26 October 2000. This reminded the public of an example of ill-governance of food regulations. This report joined the new wave in the science governance by suggesting 'openness of and inputs from broad perspectives into (the) regulation system'. As discussed before, the BSE event was one of the big triggers that brought public engagement into the UK science-related policy making and brought about changes in the food regulatory system of the UK and elsewhere.

Like the BSE case, GM policy was not the domestic matter of the UK. EU members of states were obliged to respond to the primary legislation for the deliberate release of Genetically Modified Organisms (GMOs). The European dimensions directly and indirectly influenced GM Dialogue:

> "Because overall, Margaret Beckett very directly saying to Simon and to Malcolm […] you know EU was about to […] was a new directive going to be implemented. [He could not remember what was exactly] […] this was shaping, this was the pressure we were under to have a deadline for actually having the public debate." (Interview with one of the Steering Board members)

GM Dialogue was also affected by the Iraq War at that time. In general, there was antagonistic atmosphere to the U.S. in UK society due to their relationship and the invasion of Iraq. In particular, a few American bio-technology and pharmaceutical companies, who were leading producers of GMOs, were seen as a kind of public enemy. Therefore, American multi-national companies, the Iraq War and the Labour Government's relationship with the US Government often emerged in discussions:

> "The one I remember most vividly was one in Scotland […] I think it also happened around the time there was something else going on and became hugely influential to the way the people were thinking about the thing – it was the Iraq War. So people, I think, because there was the influence of the Iraq War didn't really believe the war. Yeah, they saw this was something done by America which was forcing upon Britain, so GM got involved in the same thing. And there was a huge anti-American ground as well at these meetings and I do remember […] all fifteen tables said that this technology is not good for this country or whatever." (Interview with one of the Steering Board members)

The Government

Diverse departments of the government had different interests with regard to the programme, GM Dialogue and thus practised their power. Blair's strong advocacy of biotechnology, the DTI's concerns about the economy and industries, and most

interestingly, different perspectives on GM technology within DEFRA between the Secretary Beckett and the Environment Minister Meacher, all together co- existed within the UK Government. The Prime Minster, relevant ministers, David King, Howard Dalton, a few heads of related advisory committees, civil servants from DEFRA, OST and the Prime Minister's Strategy Unit were individuals from the government who got directly involved in the programme.

Given the political sensitivity surrounding the GM policy, the independence of the GM Dialogue programme was emphasised from the outset. However, the government got involved heavily with three strands, both explicitly and implicitly. Different departments, advisory committees and the cabinet office were the stakeholders to the organiser groups of each strand. These stakeholders tried to intervene in the deliberation process both directly and indirectly. One of the AEBC members recalled an unpleasant moment, when civil servants from DEFRA suggested a meeting with Margaret Beckett to enforce their views on the matter. An interviewee from COI also admitted that although they claimed their professionalism in their work, their main stakeholder was DEFRA, who funded them and thus was the one they responded to:

> "COI was working with all of those groups. So our primary client was the steering board, but also working on behalf of DEFRA. That's the other complication - that you know DEFRA had actually commissioned and paid us. So we had a kind of dual thing of working for the steering board, the public debate, but also our ultimate client was DEFRA."(Interview with one from COI)

Margaret Beckett and Michael Meacher were in the same department, DEFRA. They had quite different perspectives on the GM issue. One of the Strategy Unit team said that they had to understand and respond to stakeholders' expectations recalling the different perspectives among them:

> "Most of this project we had a joyous situation because of having Margaret Beckett and Michael Meacher in the same department. That was interesting and had pros and challenges. […] On a range of issues, they had different views. Some of them very strong differences, GM was one of them. Michael Meacher was quite strongly against it, Margaret Beckett was strongly supportive […]" (Interview with one of the Strategy Unit Team members)

Michael Meacher was the Environment Minister between 1997 and 2003. This period, as discussed before, was when the new wave of public engagement in the science policy-making system took place. He got involved in recruiting the AEBC members. His position

was quite clear as being sceptical about GM technology. Michael Meacher was sacked in June 2003. It was commonly understood that he was sacked because he criticised in public the government's GM policy and the invasion of Iraq.

Established Policy Networks

There were already established policy networks around the UK GM policy. People used the existing networks to exercise their power. The existing established policy networks worked quite influentially in terms of dynamics in the organising groups of GM Dialogue. In particular, the established networks amongst high profile figures in the regulatory system reflected a sort of power structure of that community. This power structure was brought into GM Dialogue through the networks. One of the social scientists on the Science Review Panel experienced a senior academic in the British GM regulatory system trying to dismiss him from an advisory committee for a participation study at the European Commission, upon which he was also working at that time. The social scientist got to know this from an informal source and discovered evidence that the senior figure sent a letter to the organisers of the committee arguing that the social scientist should not be on the committee, based on the grounds of his opinion that the social scientist's work was troublesome on the Science Review Panel of GM Dialogue. The senior figure was not on the panel, but he had a close colleague on the panel who did not seem happy with what the social scientist was trying to do on the Science Review Panel. The following quote is from the interview with the social scientist stating his concerns regarding the influence of this kind of power relations:

> "I am sure I'm not the only one. Imagine implications of this happening to biological scientists, who depend upon these life science people for their funding. […] and also I think it is important because the individual concern was that he was in a senior position of the British regulatory system. […] He [A scientist who had quite an anti-GM technology stance, left the Science Review Panel] left because he was dissatisfied with the way the committee operated. […] My case was in the paper, on the front page of the Daily Mail. It was a big story just for a short time. After that he said to the press that he had been also threatened because he had a big research centre on organic farming funded by the EU. He said he was worried about funding for his centre. And he had been threatened. If he carried on, he would cause trouble." (Interview with one of the social scientists in the Science Review Panel)

4.2.2.3 Deliberation is 'Discursive Relations' rather than a Rational Reasoning

Dynamic inter-reflections among internal elements, as well as inter-reflections between internal elements and external elements of the programme, shaped the deliberation process through recursive generation of, and response to, their new representations (interests, identities, roles, relationships, networks etc.). Due to this characteristic of reflexivity, my observation of GM Dialogue provides a very different picture here to that which deliberative democracy theorists presume.

Public deliberation according to deliberative democracy theory is supposed to be a rational reasoning with publicly defensible arguments and it should be protected from any political interest or power. Instead of these characteristics, the deliberation, in reality, was not only a communicative form of rationally argumentative reasoning but was also a complicated mix of various forms of 'discursive relations'.

Participants displayed their complex, dynamic interactions and relationships, which constructed the deliberation process with their material, social and political elements in a discursive way. In other words, participants employed and materialised various internal and external elements of the process such as their knowledge, identities, personal relationships, policy discourse and networks to be influential in the process. Beyond mere rational argumentations, participants dynamically interacted with one another through their various forms of social and political relationships. Participants sometimes segment or align with certain people for power relations, compete or negotiate with one another strategically or cooperatively, and use or make their networks as a resource of their power to influence the deliberation. Deliberation, in my analysis, therefore, was a space for the participants to deliver their arguments, by forming and employing their various material, social and political relations in a discursive manner.

Segmenting and Aligning

Difference in knowledges, convictions and affiliations of participants resulted in interesting grouping and politics amongst them. In particular, in the context of technological risk-related policy, like GM issues, participants often had to face confrontation with one another. The issues were contrasting and often polarised, such as the dichotomies of social science or natural science, and anti-technology or pro–technology stances. These contrasting views

generated group dynamics in the deliberation process.

This was an obvious case in organising groups of GM Dialogue. As organising groups were normally groups of experts, they were supposed to have rational argumentation professionally. However, the real deliberation scene was quite different. Diversity in backgrounds, convictions and interests of participants segmented the group into several smaller gatherings, or participants allied together with others who shared their interests and views to make their voice louder:

> "There were a couple of meetings with Julie [Hill], Brian Johnson and myself […] and also with Mark Avery [the others…] and we did have meetings among ourselves […] because we were kind of more environmentally concerned." (Interview with one of the Science Review Panel members)

> "But I mean two key people, I mean I am talking about in the AEBC, if you like, Sue and me were in one wing and Phil and Ed and the others were in another wing. I mean this is simplified. And there were a lot of opinions in the middle, perhaps less-developed, positions on their own." (Interview with one of the AEBC members)

Confrontations between divided groups generated unique group dynamics. It was interesting to see that the quite similar, but opposite, political atmosphere was developed both in the AEBC and the Science Review panel due to the difference among group members' view. Within the AEBC, on account of its background of being establishment-orientated, many members had quite sceptical views on GM technology. On the other hand, most members of the Science Review panel were based in natural science and quite pro-GM technology. People made their own group with the people who shared their views on the matter. This resulted in the emergence of smaller, nested groups. Then there were power relations built up amongst smaller nested groups. In both cases of the AEBC and the Science Review panel, people who were in the minority group expressed their difficulty, feeling marginalised or intimidated by the majority of the group during the deliberation:

> "I didn't know that circle […] I didn't know hardly anyone there. I know Julie Hill. So when I came into the room, I probably was feeling quite daunted with the unusually large membership. I was very aware of being in a minority[…] Well, because that I knew that I was a social scientist and I knew from the other committees that it often is a quite problematic role to be in because you generally have to go through a tough battle right from the beginning. This did happen in Science Review too […] I feel I intervened quite a lot because I was in a minority and the types of things I was saying were […], otherwise there was no-one to say those kinds of things" (Interview with the one, social scientist, who was in quite a sceptical position with regard to GM technology on the Science Review panel).

> "My interest was clear in that the industry did need to be represented on the AEBC. And it was very clear in those first two years that it was a very lonely voice as they weren't taking notice of any submissions we made to them." (Interview with the one, from industry, who was in the AEBC)[39]

Competing and negotiating

Participants also competed and negotiated with one another to deliver their message into the deliberation. It was not an argumentation process with publicly defendable reasons only. Instead, participants strategically developed and employed their rationales. Therefore, participants experienced a lot of power struggles, in their rationalisation of their argumentations, implicitly and explicitly. While participants were contesting their rationales, they identified and established their position in the deliberation process. They fought for them as well as sometimes they were compromised with the power structure.

The rationales behind competition and negotiation were sometimes due to their discrepancy in perspectives, which could be explicitly made, for example, the relationship between the Steering Board and COI. The Steering Board and COI were the designers and organisers of the GM Nation? and also affected the structure of the other two strands initially. To do so, they had worked closely, but they had quite different expertise and perspectives on public engagement. While the Steering Board, which was mostly comprised of scholars, clearly focused on the principle of 'public framing' for GM Nation?, COI was the professional communication agency which had expertise on matters like PR, publicity or promotional events etc. This gap in their expertise resulted in an uncomfortable situation quite often, especially in the beginning. However, the official relationship between them was clear as being that AEBC was the client of COI. Therefore, COI had to listen to what the client said.

In addition to this publicly claimable rationale, like different expertise or conviction, there were rationales, which were not arguable explicitly in public, such as institutional turf war or professional jealousy amongst them. The following quotes show that there was competition with the not-publicly defendable rationale between professionals in the process:

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[39] This quote has been used repeatedly here.

> "I mean they [the Evaluation team] were critical about it. I am sure there was lots of professional jealousy going on as well, around some of them, you know, who was involved and who wasn't. I think they modulated their criticisms over time as well." (Interviewee A from the AEBC)

> "I found him overbearing. You know, the ACRE didn't like the AEBC […] You know they were the regulators. We were […] they had to work with us but they regarded us as suspicious." (Interviewee B from the AEBC)

Networking

Networking was a critical part of deliberation, as already established in previous sections, describing how individual participants' personal networks and policy networks affected the deliberation process. People did not only use their networks as a resource of their power to influence the deliberation but also made new connections with people outside as well as inside. As evidenced in the previous sections, individual participants, such as specialists or stakeholders, who were involved in the programme, played a role as a messenger and an informal representative of their communities. The following quotes from different positions in the programme showed how well they were aware of the importance and influence of networks and thus used them in the deliberation:

> "I mean I was very well informed about what was going on, so I always knew what was going on and things to bring from outside. I also used to see my role as trying to make sure that from my view, you know, things on report, things we had represented for perspectives […] and I still do a lot of networking both outside and inside." (Interview with one of the AEBC members)

Especially, the following quote shows how a specific group of people who were not at an officially responsible position of a specific matter, actually influenced that significantly. Those within their network, used their power to intervene and influence the process.

> "When GM Nation? was commissioned, and then changed its remit and let the contract go to COI, a group of social scientists was very angry about it[…] they wrote a letter complaining about it.[...] twice. One occasion was when there was a meeting with COI. In the end, it slightly worked, but it didn't work that well. And we also wrote to the Cabinet Office. [Person A] and I were invited to talk to them about their cost benefit study. We criticised it. [Interviewer questioned: As a panel member?] No, I was just an academic. To our amazement, they completely changed their plan. They picked up what we were saying about the scenario analysis then [Person B] was engaged on the scenario analysis [...] so, yes, I was part of this group doing things." (Interview with one of the Science Review Panel members)

4.3 Conclusion

Analysing GM Dialogue, as an example of macro-risk deliberation exercise, suggests the important level of influence of reflexivity in the process and outcome of this extended public deliberation programme for GM crops policy. Due to the inherent reflexive nature, divisions of labour, and inclusion and deliberation of the programme, unfolded in contrast to the ways in which they were depicted in deliberative democracy theory.

Various parts of the stakeholders around the GM policy shaped the context of the birth of GM Dialogue, by producing their discourses, arguments, networks, institutes, interests etc. Their respective expectations for the role of GM Dialogue in GM technology regulation system were so diverse. In addition, among the participants within GM Dialogue, there was also a wide range of divergent views on the roles of GM Dialogue as a whole programme, of each nested small deliberation exercises, and of various individuals and groups of actors, within the programme and in its wider context. Their rationales regarding how to define and divide 'labour' varied. These divergent rationales for the divisions of labour reflected their widely various interests, identities, knowledges, convictions, relationships, networks etc., and these entailed very complex and dynamic material, social and political relations among participants. It was through these participants' discursive relations rather than a structured form of argumentative communication that their diverse rationales engaged with one another and their embedded representations (i.e. meanings and relationships) were intermingled into the deliberation process in a kind of bottom-up fashion.

In brief, the inherent reflexivity in GM Dialogue shaped the way of inclusion of such diverse representations of participants as a kind of 'fermentation' process; and broadened the definition of deliberation as a form of 'discursive relations' rather than as a narrowed definition of rational reasoning. Divisions of labour for enhancing inclusiveness and deliberativeness, therefore, also took place in an endogenous way, and developed through to the end of GM Dialogue.

CHAPTER 5
COMMITTEE ON RADIOACTIVE WASTE MANAGEMENT

5.1 Context of the Birth of the Programme: Various Rationales behind CoRWM

5.1.1 Radioactive Waste Management Policy in Moratorium after History of On-going Battle with the Public up to 2002

From 1978 until 1997, the history of radioactive waste management (Low Level Waste, Intermediate Level Waste and High Level Waste) in general in the UK could be summarised as a victory of the relentless public protest after continuous battle with governance institutions (Blowers et al., 1991). Only one drilling testing for a disposal site searching for High Level Waste (HLW) was able to be carried out in Caithness in 1978 and the rest of the applications for planning were all rejected due to critical public opposition (including planning of land disposal of Low Level Waste(LLW) and Intermediate Level Waste(ILW)) (Blowers et al., 1991). Since then, it had been in moratorium until 2002, when the discussion of the establishment of CoRWM started.

Until the mid 1970s, nuclear waste issue in the UK society was recognised more as technical matter than as political one (Blowers et al., 1991). For the first time, the existence of problematic radioactive waste, the somehow under-recognised by-product of nuclear materials (for the usage of the military, electricity and hospitals) was raised among governance institutions in 1976 when the Royal Commission on Environmental Pollution published a report nicknamed the *Flowers report* (the Sixth Report of the U.K. Royal Commission on the Environment, *Nuclear Power and the Environment*). It drew attention to fallen 'stewardship' (Mackerron and Berkhout 2009) of the industry and the government towards the management of radioactive waste. In response to this, the Department of Environment became the responsible government department of radioactive waste management, and the Radioactive Waste Management Advisory Committee (RWMAC) was established in 1978 to advise the government (Blowers 1996).

In the mean time, British Nuclear Fuels plc (BNFL) proposed building a new spent fuel re-processing plant at Windscale in 1977 (Blowers et al. 1991). Although it drew public opposition through a public inquiry, the proposals were approved in 1978. This event raised distrust among the public against the government's position towards the overall UK radioactive waste management policy (Mackerron and Berkhout 2009). When the United Kingdom Atomic Energy Authority (UKAEA) started searching for sites for dumping HLW in 1978, the long fierce battle between the public (local residents with action groups), the nuclear industry, and the government had started.

Until 1981, the way of dealing with radioactive waste was either disposing of it in the sea or underground, or storing it at generation site. All proposals from 1978 to 1980 for permission to carry out test drilling at the sites for HLW disposal made by the UKAEA[40] were refused as a result of strong public protest (CoRWM 2006) except for one site, namely Caithness. All the refusals were followed by public inquiry, which ignited huge public protest against the government's radioactive waste disposal programme. The government finally prohibited shallow underground disposal of HLW in 1981. Instead of underground disposal, it was decided that HLW would be stored for 50 years to cool down before being placed underground (RWMAC 1981).

On the other hand, to deal with LLW and ILW, the Nuclear Industry Radioactive Waste Management Executive (Nirex)[41] was established in 1982 following the RWMAC's advice. Nirex was due to develop 'a long term solution' for the disposal of LLW and ILW. Its primary tasks were to locate, build and run disposal facilities for LLW and ILW (CoRWM 2006, p. 20).

In the meantime, the nuclear industry relinquished the sea-disposal of radioactive waste in 1983. This was as a result of the National Union of Seafarers' refusal with remarkable pressure from NGOs' campaigns, which were led by Greenpeace (Blowers et al., 1991). This event is one of the most high profile global environment NGO campaigns of the

[40] NERC took over the responsibility for waste research from the UKAEA in 1980.

[41] "The Nuclear Industry Radioactive Waste Management Executive (Nirex), initially as a co-ordinating committee of the four major organisations in the UK nuclear industry (Central Electricity Generating Board (CEGB), South of Scotland Electricity Board (SSEB), UKAEA, and British Nuclear Fuels (BNFL). This later became UK Nirex Ltd, charged with the main task of locating, building and running disposal facilities for LLW and ILW." (CoRWM 2006, p. 20)

twentieth century. Despite the absence of any immediate action from the government, even after the agreement of a two-year moratorium at the London Dumping Convention, dumping radioactive waste at sea actually stopped in 1983 (Blowers et al.,1991).

Following the actual abandoning of sea dumping, land disposal became more attractive as an alternative solution for the waste. Nirex proposed to build facilities for shallow disposal of LLW and ILW in Elstow and Billingham in 1983, (with three more sites later: Bradwell, Fulbeck and South Killingholme) but it faced strong opposition by the public (Morton et al. 2009). Consequently access to the Billingham site was refused by the official survey team in 1985 and the rest of the sites were officially abandoned by the government in May 1987.

Then, Nirex conducted studies for the possible sites[42] for deep disposal of LLW and ILW in 1988. It submitted an application for an underground laboratory at Sellafield in 1994 but the proposal was rejected by Cumbria County Council. To respond to this decision, Nirex appealed to the Secretary of State for the Environment. A public inquiry followed from September 1995 until February 1996. Finally, in March 1997, the Secretary of State for the Environment rejected Nirex's application. This endorsement by the government rested on its concerns regarding the forthcoming general election (Mackerron and Berkhout 2009); UK radioactive waste management had been in moratorium since it was halted in 1997.

The government had to admit this strong opposition against its policy and accept the societal demand of public engagement in radioactive waste management policy making.

5.1.2 Acknowledgement of a New Approach to Public Engagement

Following this series of events, the government realised that it would have to rethink the policy making process for radioactive waste management. It should admit, in other words, the policy failure over the preceding few decades of its approach based on the "closed, expert-dominated process" (Mackerron and Berkhout 2009, p. 999). As the debate on radioactive waste management policy was in deadlock, the government had to find a different approach. The direction of change it chose was quite the opposite of previous technocratic decision making strategy, seeking legitimacy by opening the debating arena to

[42] The sites being studied were not open until 2005.

members of wider society, which was also much promoted in other areas of ST policy making.

An important step towards the breaking of the deadlock in the governance of nuclear waste management was taken by the House of Lords Science and Technology Committee in 1999. They reviewed the status of the UK's nuclear waste policy and published a report. It suggested a phased deep disposal emphasising the need of consultation with the public (Lidskog and Andersson 2002; CoRWM 2006; Kemp et al. 2006*)*. It recommended the government to set up an independent body to be in charge of its nuclear waste policy, and that the public and stakeholders should be involved in the process of decision making from the beginning, diverging from the previous path of policy making, the so-called DAD (decide, announce and defend) (Mackerron and Berkhout 2009) to overcome the breach of relationship with the public:

> "The House of Lords Select Committee on Science and Technology addressed the issue of radioactive waste in its report in 1999. It recognised that 'openness and transparency in decision making are necessary in order to gain public trust' and that mechanisms to include the public in decision making would be necessary." (CORWM 2006, p. 4)

In the same year (1999), the UK Centre for Economic and Environmental Development (UK CEED)[43] conducted a consensus conference over the issues of radioactive waste and it noted in its Executive Summary the need for change in the way of dealing with radioactive waste in the UK:

> "[…]Finally, while the industry has in the past had a well-deserved reputation for secrecy, we /have in the course of the conference noted a welcome shift in culture and a new feeling of openness in dealing with these difficult issues." (UK CEED 1999)

The responsible government department (DEFRA) itself also held a consultation with stakeholders on the way to develop radioactive waste management policy and in 2001 published *Managing Radioactive Waste Safely*. In this document, the government proposed a

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[43] The UK Centre for Economic and Environmental Development (UK CEED) was established as a non–profit-making organization by a group of people from the business, government and scientific communities in order to "support, co-ordinate and monitor implementation of the Conservation and Development Programme for the UK" in its response to the recommendations of the UN World Conservation Strategy in 1984 (Available from: http://www.ukceed.org/about-us/).

widely-engaged consultation process (Kemp et al. 2006) and on 29 July 2002, it announced to Parliament a plan to set up an independent body to oversee the process of reviewing options and to make recommendations for radioactive waste management (DEFRA 2002; CoRWM 2006). The Radioactive Waste Management Advisory Committee (RWMAC) also joined this promotion by setting out principles for policy making process: "early involvement of the public, adequate time to take decisions, openness and transparency, and a deliberative, accessible approach to decision making" (CoRWM 2006, p. 4).

5.1.3 A Further Possible Government Intention: Strategic Instrument for Possible Re-opening of the Discussion on New Build Nuclear Power

In addition to the acknowledgement of government agencies – the responsible department, Defra, in particular – of the need for societal pressure on democratically legitimate decision making, I suspect (but cannot prove on the basis of the present evidence) that some part of the Blair Government might have had another underlying motive for supporting a new approach to radioactive waste management policy making. This may remain a mere suspicion forever unless the relevant people declare it. However, my suspicion rests on the grounds that there seemed a consideration within the government at the time – on the parts of the Prime Minister himself and senior officials at the Department of Trade and Industry (DTI) in particular – to implement a new nuclear build (Dorfman 2008). For this possible case of new nuclear build option, removing policy uncertainty about radioactive waste would have been helpful. Yet the waste management deliberations were effectively decoupled from new nuclear build, so this impression would be given with little risk of disruption of this suspected underlying motive. There follow a few examples of various government statements that support this suspicion.

Mackerron and Berkhout (2009, p. 1003) point out that the new nuclear build issue seemed to be off the political agenda when CoRWM was initiated but it later gained some attention. However, both arguments – that it seemed not to be on the political agenda and that there seemed an intention for it from the parts of the government – can be equally valid. The Prime Minister and DTI might have thought that the eventual breaking of the deadlock over the radioactive waste management policy with an innovative form of decision making would lend support to their new nuclear build aims, especially if legitimacy could be achieved in respect of the former issue. The desire of them to reinstate nuclear power grew more apparent as the CoRWM 1 period (2003–06) approached its completion

(Mackerron and Berkhout 2009; Lehtonen and Martiskainen 2010).

When the Department for Business, Enterprise and Regulatory Reform (BERR, previously DTI) ran the Energy Review consultation on the issue of future UK energy policy in 2006, it was strongly criticised as a failed consultation process, in comparison to CoRWM proceedings in particular (Lehtonen and Martiskainen 2010; Greenpeace 2007; Dorfman 2008). Indeed, in the wake of Greenpeace criticism of the procedure, the review was judged to be 'flawed' and 'misleading' in the High Court by Mr Justice Sullivan (Dorfman 2008; Mackerron and Berkhout 2009; Lehtonen and Martiskainen 2010). Yet, the Prime Minister's stance at the time was so resolute that, in response to the High Court verdict, he announced the return of nuclear power: "this will change the consultation, this won't affect the policy at all" (Dorfman 2008, p.12; Lehtonen and Martiskainen 2010, p.18).

Retrospective observation of this series of behaviours may speculatively argue that some part of the government would have been supportive of removing a serious obstacle to the reintroduction of the discussion on new build nuclear power into UK society. While proposals were being made for the need for public engagement in the radioactive waste management decision making process by various stakeholders, it seems that some sections of the government might have considered possible policy options for new nuclear build. A close analysis of relevant documents -*The Energy Review* (PIU 2002) and *Our Energy Future – Creating a Low Carbon Economy* (DTI 2003) - published around this time by the relevant government departments indicates that such a suspicion cannot be ruled out.

The Energy Review, which was conducted and published in February 2002 by the Performance and Innovation Unit (PIU in Cabinet Office) to review the UK energy issues, hinted at the possibility of the new build of nuclear power. Energy security was the main issue with climate change (security preceded climate change)[44] with a hint of the possibility of the new build of nuclear power and the report recommended a national public debate on energy issues. The following quote was the final line of 'key points' of the Executive summary of the report: "In the light of this review, the Government should initiate a

[44] It is obvious to see that Prime Minister's first concern was energy security: "It is striking that both security of supply and climate change issues are[…]" (Foreword by the Prime Minister, PIU 2002)

national public debate about sustainable energy, including the roles of nuclear power and renewables" (PIU 2002, p. 6).

Following this review, DTI published an energy white paper, *Our Energy Future – Creating a Low Carbon Economy* (February 2003). The tone of the issue was focused on 'climate change', as its title showed. The first priority of the issue, as the challenges that the UK energy policy faced, was changed from energy security to climate change. This change of prior issue was ostensibly presented in the Prime Minister's foreword in the report and was welcomed by the House of Commons in their response to the white paper: "we welcome the priority which it gives to environmental objectives […]" (House of Commons 2003, para.10). Therefore, climate change became the hottest issue as the direction for 'low carbon economy' in the UK's energy policy (Mackerron 2004). This sounded as if the UK government's energy policy considered the 'environment' to be most important, which was politically powerful and legitimate.

The discussion was directed to the need for 'a new energy policy' (DTI 2003, p. 6). The report addressed the three challenges that the UK energy situation was facing: climate change, over-dependence on imports and the need to update much of the UK's energy infrastructure. The first challenge was emphasised with bold letters, i.e. "[…] the first challenge we face is **environmental**. Climate change is real […]" (ibid., p. 6) The second challenge was "the decline of the UK's indigenous energy supplies" (ibid., p. 9). Then it discussed the importance of energy diversity, citing examples of "renewables and smaller-scale, distributed energy sources" (ibid., p. 9), by arguing that it would help to solve the problems of the UK's over-dependence on imports and security issues. The third challenge "the need to update much of the UK's energy infrastructure" led the discussion towards nuclear power:

> "In the absence of new build or life extensions, nuclear power's share of electricity production will shrink from its current level: there would be only one plant still operating by 2025." (DTI 2003, p. 10)

The condition of 'in the absence of' hinted at the possibility of the presence of nuclear new build with a threat of what would result from the absence of that. Then, the discussion revealed their preparation for the case of bringing back nuclear power. In the discussion on any future energy policy, nuclear power was mentioned as "currently important carbon-free electricity" (ibid., p. 12). This was followed by the nuance of 'regret' of the fact that

"however, its current economics make it an unattractive option for new, carbon-free generating capacity and there are also important issues of nuclear waste to be resolved" (ibid., p. 12). It explicitly mentioned that although the white paper did not propose the new build of nuclear power plant, they did not deny the possibility of its return: "We do not rule out the possibility that at some point in the future new nuclear build might be necessary […]" (ibid., p. 12). Therefore, it is clear that nuclear waste was one of two hindrances to new build nuclear power that needed to be resolved (Mackerron 2004).

Having established this evidence, I would suspect that there could have been attached in the explicitly agreed decision-making process – public consultation – of CoRWM another implicit reason by other part of the government for supporting the inauguration of CoRWM. Formation of CoRWM was necessary to meet a societal need for democratically legitimate decision making, but it also might have been used later by some part of the government to strategically support their interest in new build nuclear power.

When discussion on the possibility of a new nuclear build started to become explicit, concerns were raised among members of CoRWM about the implications of new build to the operations of the Committee. They decided to put out a statement proclaiming that CoRWM held no position on new nuclear build (Plenary meeting minutes, November 2005). In the meeting minutes, they emphasised that their priority was the legacy of waste management, quoting the Terms of Reference of CoRWM:

> "Whatever decision the Government takes, there is a large and growing legacy of highly radioactive waste with no long-term management strategy. That is why CoRWM was set up, and not in anticipation of any new-build programme. Although CoRWM's Terms of Reference require it to take account of possibilities including a new build programme when making its recommendations, its priority task is clearly spelt out:
>
> > CoRWM's priority task is to recommend what should be done with the wastes for which no long-term management strategy currently exists – that is, high and intermediate level waste now in storage or likely to arise over the next century or two[...]"(Terms of Reference)
>
> (Plenary meeting minutes, November 2005)

Committee members were concerned and repeatedly made a point of distancing themselves from new nuclear build both during the period of the process and after the completion of

the process (Dorfman 2008; Mackerron and Berkhout 2009). However, the fact that most members themselves believed that the Committee was intended to deliberate only on legacy waste notwithstanding, interestingly, there was no mention of such a restriction in the terms of reference.

Indeed, regardless of the commitment of CoRWM to find a legitimate solution to the management of legacy waste, after the submission of its final recommendations, the government used its recommendations explicitly for the purpose of arguing for new build nuclear power (Dorfman 2008; Mackerron and Berkhout 2009; Lehtonen and Martiskainen 2010). Indeed, the government strategically utilised the achievements of CoRWM – public trust in the decision making process and confidence in decisions concerning currently limited knowledge in particular – in pursuing its nuclear ambitions.

I cannot state unequivocally that the above evidence demonstrates that an additional intention of the government in setting up CoRWM was as a strategic instrument for introducing new build nuclear power. However, it may be sufficient to suspect the possible existence of another motive from other relevant members of the government to support CoRWM on the grounds that government policy direction in respect of new nuclear build hinted at such an agenda on a number of occasions, bringing to bear the "infection effect of Government's conflation of legacy and new build waste issues" (Mackerron and Berkhout 2009, pp. 1004–5), which continued to be evidenced in subsequent government behaviour.

5.2 Divisions of Labour of CoRWM

At this point, CoRWM was born to meet the above-mentioned expectations in the context of the UK radioactive management policy. In addition to the rationales of the whole programme, there were also various respective rationales for the nested divisions of labour within the programme, which various participants wanted to realise. These various rationales were often found to be contrasting to each other, and consequently there were dynamic interactions between them. These interactions were their responses to one another with political, epistemic, and ontological tensions and struggles. These generated new relationships and stakes that constructed the new environment wherein the participants had to respond to, and in so doing, produced new rationales. This recursive process of

generating and responding to a new context continued and was reflected in the formative process of the various divisions of labour within the programme. And through this recursive process, the divisions of labour developed endogenously within the programme. Participants inside and stakeholders outside of the programme had been through a process of various interactions with their rationales, and these interactions formed their own divisions of labour by contesting and performing their rationales. Consequently, the design of the whole programme was continually re-shaping its structure until the conclusion of the programme.

This section will show the inherent reflexivity in the elements and dynamics of CoRWM: with evidence of emergent and designed aspects of the divisions of labour with their different rationales; and how radically different the actual deliberation and inclusion appeared through this reflexive process against the characteristics depicted in deliberative democracy theory.

5.2.1 Inclusiveness

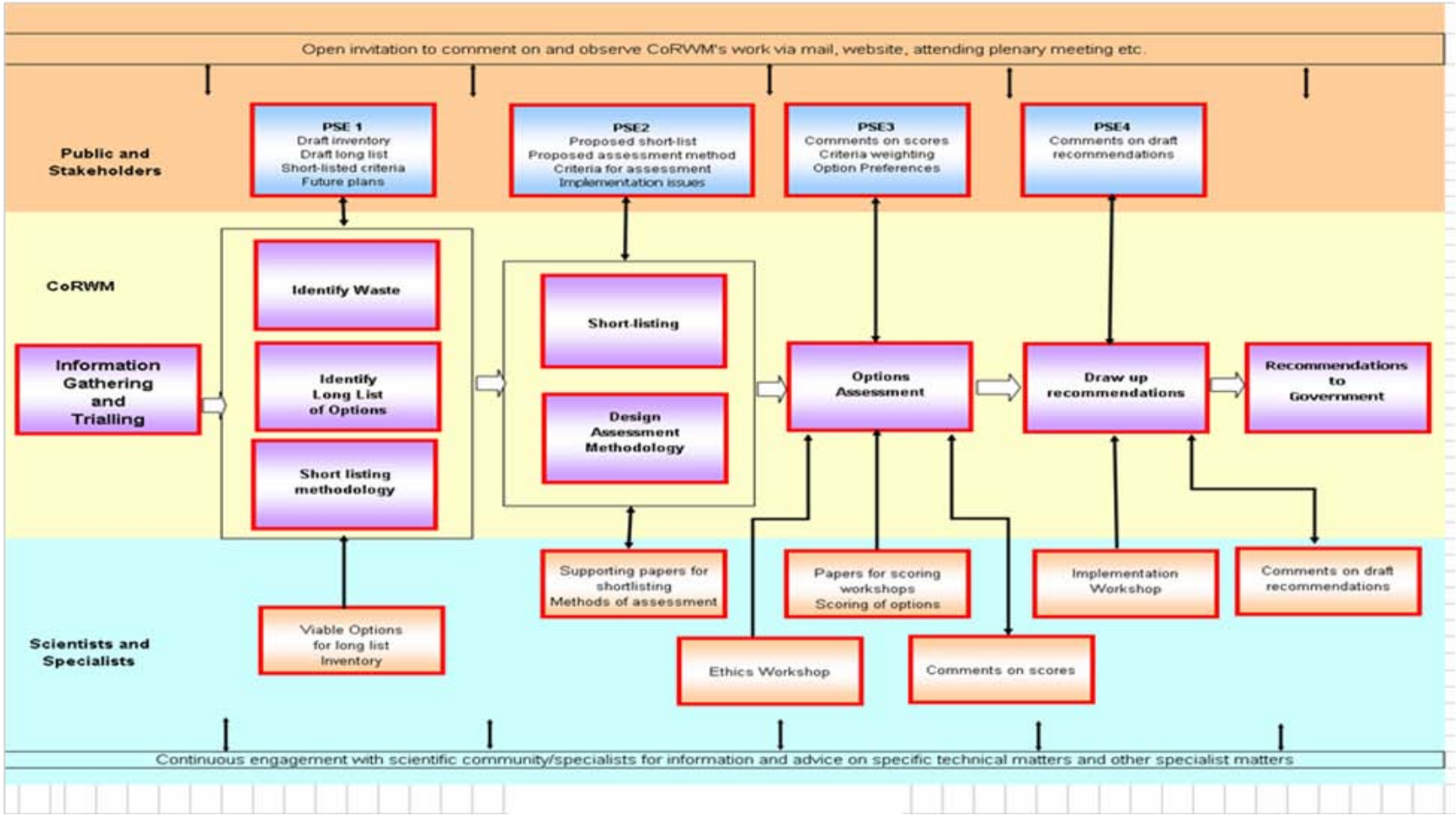
Macro-deliberative democracy theorists expected inclusiveness to be fostered by using various forms of divisions of labour, since they believed that the division of labour would allow more people and more values to be included in the deliberation. Therefore, the division of labour was claimed as a means, in theory, for enhancing inclusiveness. Regarding its scale and scope, CoRWM was an unprecedented public engagement for radioactive waste management policy in the UK. A huge number of people got involved and a wide range of issues were discussed by them. However, the systematic efforts to integrate all the results of the discussions were clearly short compared to the efforts to devise and organise various discussions. Instead of a kind of mechanical formalised downstream efforts to collect and sort out the entire list of divergent meanings of participants for decision making, my analysis of CoRWM suggests a new way of inclusion. It is, namely, reflexive endogenous efforts for participants to engage themselves with one another. Different participants had diverse rationales over the divisions of labour, which caused various dynamic interactions among them. These dynamic interactions increased the degree of diversity in rationales over the said divisions of labour as they generated their new relationships and stakes into the programme. They then produced new rationales to respond to this new context. Through this recursive process of generating and responding

to the new context, participants' divergent representations (interests, identities, roles, relationships, networks etc.), cross-reflected and influenced one another, and were intermingled into the process.

Structure of CoRWM

CoRWM started with a design of a staged decision-making process. It was composed of four main sequential phases. Across these divided phases, there were three main groups of actors, who participated in all phases with different roles and influences at each stage. This initial design was made by the Committee with consultation with specialists. The ensuing detailed designs of divisions of labour within this frame were developed through various forms of interaction of the Committee members with specialists and stakeholders outside, as well as inside, in the course of the programme.

Figure 5.1 Key Steps in CoRWM's Process



(Source: CoRWM 2006, p. 35)

5.2.1.1 Four Phases

Since CoRWM had a clear aim of producing recommendations for policy options, the initial formal design of the programme followed one of conventional decision making, i.e. a staged process. Therefore, the biggest and most apparent level of formal division of labour of CoRWM was the structure with sequential stages of the decision-making process. The rationale behind this design was, as Morton et al. (2009) analysed, that this sequential structure is one of the rationalist models of the decision process. The programme was divided into several phases according to the tasks to be performed in order to complete the process of reaching a decision:

> "Allan Ashworth presented a programme model which was intended to help CoRWM to think systematically about the programme including key stages in devising it. This was broken down into key activities and linkages to show how each component contributed to another" (Plenary meeting minute January 2004)

This process was formally divided into four phases: Phase 1 - information gathering, identifying a long list for potential options and designing the methods for short listing; Phase2 - short listing; Phase 3 - assessing the short listed options; and Phase 4 - formulating recommendations and drafting a report (CoRWM 2006, p. 34). According to the different stages of decision making, the role of different groups of actors varied and sub Working Groups under the Committee evolved as the phases progressed. Three main groups of actors (*the Committee, Public and Stakeholders, and Scientists and Specialists*) were involved in all these stages. However, their roles also differed from each other at each different stage. Consequently their influence on the decision process varied at these different stages.

In this light, it was, on the other hand also a process of concurrent divisions of labour. Within each stage of the sequential structure, simultaneous examples of division of labour were taking place. While this four-phase process was formally designed in the beginning, detailed tasks and participants were left to be discussed and were developed during the course of the programme by the Committee, and two other groups of actors. In addition, although the process was presented formally as sequential phases, some tasks were carried out in parallel. For a clear example, I could not define a certain period of Phase 3 and Phase 4 in the following Box. This is because there were not always clear cut gaps between phases, due to this concurrent division of labour.

Box 5.1 Overview of the Process of CoRWM

Phase 1 (November 2003 – September 2004)
1. Information gathering and pilot testing
2. Identifying the waste to be managed
3. Identifying a long list of options
4. Integrating ethical issues

Phase 2 (September 2004 – July 2005)
5. Shortlisting

Phase 3 (July 2005 –)
6. Assessing the shortlisted options
7. Studying implementation issues

Phase 4 (– July 2006)
8. Integrating and drawing up recommendations
9.Drafting recommendations and submitting its final recommendations to Government on 31 July 2006

(Source: CoRWM 2006, pp. 34-6)

Phase 1 (November 2003 - September 2004)

The first phase was broken down into several tasks to be completed. As it was a framing stage of the process (Morton et al. 2009), it was involved with information gathering, identifying a long list of potential options and designing the methods for shortlisting. By the end of March 2004 the Committee had to present its draft programme to ministers (Plenary meeting minute March 2004).

Information gathering and pilot testing - basically about PSE (public and stakeholder engagement)

The Committee collected information, like lessons on public and stakeholder engagement, from other events of Brent Spar (issues around oil platforms) and GM Nation? (issues of GM crops). It tried Deliberative Mapping (DM), which is a participative method employing the multi-criteria optional appraisal. Although it was not adopted entirely, the Committee claimed that it learned 'how to interface with specialists, stakeholders and the public', and also several techniques used in the DM trial were adopted into the programme later. The Committee also commissioned a review of the methods for PSE.

Identifying the waste to be managed

The Committee had to identify the quantity and location of radioactive waste and materials. It consulted specialists and made a draft inventory of waste. Public and stakeholders were invited to comment on this draft inventory.

Identifying a long list of options

The Committee drew up a long list of options for the long-term management of radioactive waste, which was based on the previous project report[45] (2002) to DEFRA with advice from Nirex[46]. It was first reviewed by the international scientific community, and then was published for comments from the public and stakeholders and for checking whether anything had been omitted by the specialists.

Integrating ethical issues

The Committee organised a two-day workshop for themselves on the issues regarding ethics and radioactive waste with four ethical experts.

Phase 2 (September 2004 - July 2005)

Shortlisting

While reviewing the long list of the options and ethical issues, methods of short listing were considered. The Committee gathered relevant existing scientific knowledge by commissioning studies. The public and stakeholders were also asked for their views on shortlisting criteria and methods (PSE 1) and a proposed shortlist (PSE2). The Committee drew up a shortlist.

Phase 3 (July 2005 -)[47]

Assessing the shortlisted options

The Committee developed methods for assessing the shortlisted options based on Renn's

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45 Wilkinson Environmental Consulting Limited, *Information Needs Research Project - Identification of Information Needed to Decide with Confidence on the Long Term Management Options for Long Lived Radioactive Waste*, DEFRA Report DEFRA/RAS/02.014.

46 UK Nirex Limited, *Description of Long-term Management Options for Radioactive Waste Investigated Internationally*, Nirex Report N/050, May 2002.

47 Since most of the work of Phases 3 and 4 was carried out simultaneously, the dates cannot be specified.

the Co-operative Discourse Model[48] : a Multi-Criteria Decision Analysis (MCDA) process and a holistic assessment process. PSE comments were invited for the proposed outline of the process in PSE2. The Committee involved about 70 specialists in scoring the options against the criteria for MCDA that had been drawn up with inputs from various methods of PSE3. The public and stakeholders added their input to the weighting of the criteria for MCDA and provided their preferences for the options and reasons for the holistic assessment. Comments were invited on the specialist scores through the CoRWM website.

Implementation issues

In parallel, the Committee commissioned external experts for the study of implementation issues and organised a workshop themselves.

Phase 4 (– July 2006)

Integration and drawing up recommendations

The Committee formulated the recommendations based on the outputs from the two methods of option assessment, considering scientific, ethical and PSE issues. The public and stakeholder comments were invited. The final recommendations were submitted to the government on 31 July 2006.

Evolution of design: replacing of settled divisions of labour with newly-emerging divisions of labour

As these phases were developed according to the tasks to be done, within each phase, there was also development of nested tasks with various participants and methods. For example, sub-working groups for specific tasks and various PSE events were developed as phases progressed. This evolution was the result of dynamic interactions among the Committee members by responding to participants of the programme, such as stakeholders, the public and specialists, as well as stakeholders outside of the programme, such as various institutions and the media. Therefore, development of the programme was a continuing replacement (or addition/omission) process of emerged, and then settled, incumbent divisions, with newly-emerging divisions. In other words, divisions of labour took place

[48] Renn, O. (2005), *Analytical-deliberative Process of Decision Making. Linking Expertise, Stakeholder Experience and Public Values*, University of Stuttgart.

'sequentially' as well as 'simultaneously'. The recognising (or arising) of a newly-formed division of labour is based on the winning rationale, which was the result of the contesting of divergent rationales over divisions of labour in different groups and at different stages:

> "People were able to choose which working groups they went into. This is the benefit of hindsight. We could have done with a clear process of allocating people to working groups to make sure that we were properly utilising people's skills and experiences and to make sure that we weren't over burdening certain individuals. So it was all a bit ad hoc, but I think quite often in this process that's the way it does work. And it was very difficult to sort of plan and organise it rationally […] we did have to sort of, to an extent, design the process as we went. But we had a sort of a broad shape of the programme established pretty early on. It was more to do with filling in the detail.
> […] because you have to be flexible in both process and in terms of the way you respond to what people tell you. A traditional project manager may have seen it as a problem. Also you have to remember that in our period of PSE, there were elements of it, which were about asking people what they thought about plans for the next stage. So you can't have those plans for the next stage set in stone. So I think that was a strength." (Interview with one of the Committee members)

Significantly less efforts to integrate the results of divided labours than the efforts to divide labours

Although a huge amount of effort was made to engage the public and stakeholders in the process of 'consultation', it was not clear how these results of engagement actually made a difference as regards to input to the decision. In other words, comparing all the efforts made to design and implement these various forms of PSE, the efforts to make the most use of the outputs of those various PSE events for decision making were relatively less. Decision-makers (the Committee members) must have been influenced by the results of various PSE events at certain level through both formal and informal channels. In addition, it was practically difficult for them to consider all details of the outputs of PSE events and specialist meetings.

Having acknowledged all of this, however, it was clear that the formal designing efforts made to integrate the voices heard were definitely less than the efforts made to make more voices heard. This lack of designing attention with regard to integration was evidenced in many occasions. The official evaluation report of CoRWM in particular raised this integration issue in several places:

> "Nevertheless, we were left at the time with a sense of unease. Because short listing

> was completed before the majority of the PSE reports were finalised, stakeholders could well be left with an impression that Members had formulated their positions and taken their decisions without adequate consideration of the views expressed." (Faulkland Associates 2006, p. 19)[49]

> "CoRWM argues that the MCDA and HA were comparable, in that they were both structured analysis that incorporated inputs from specialists and cross-cutting activities and allowed insights to be distilled and integrated in a transparent manner into the decision-making process. The MCDA programme was well documented and discussed in detail at plenaries so there was no doubt about what it involved and how it would work. However, the same cannot be said for the HA programme and it is therefore easy to see how stakeholders came to think of it as a label for a programme of events rather than an integrated assessment strand in its own right." (Faulkland Associates 2006, p. 24)

Sub-contractors were hired to design and conduct various PSE events. However, the chair of the PSE Working Group undertook all summary reports of the results of the PSE. A huge number of issues from various meetings were reported to him for reviews and summaries. The chair of the PSE Working Group himself was confident to say that he made sure the results of PSE were fed into the decision-making process. However, at official level, it was not clear how systematically he was able to have gone through all the reports, integrated them and transferred them to the other members of the Committee. As the evaluation report's points out above, therefore it is in particular not transparent that how those outputs of the PSE events had been under the Committee's thorough consideration and into the final decision. The Committee members had been under time pressure and often the next phase had to be planned while the previous phase was being carried out. Comments made via the website were not used as an important source of inputs from the outside either. It was rather a way to give outsiders a chance to have a say, whether or not they be heard; and to let the outside know what was happening inside:

> "I suspect that our web-based activities were probably not fully reflected, being more difficult to summarise." (Interview with one of the Committee members)

> "I saw my role making the PSE programme work and making sure the outputs of PSE were fed into other decision-making processes and that's absolutely critical. I had been concerned in the past in other processes where what organisers of PSE were being told wasn't fed into their decision-making processes [...] We put a huge amount of effort into trying to do that. In a way I saw myself as a champion of trying to make sure that happened." (Interview with the Chair of PSE Working Group)

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[49] This report was written by David Collier, who was hired as an official evaluator of CoRWM from Faulkland Associates.

The Integration Working Group was formulated at quite a late stage before producing the report. One of the Committee members said that although the Committee had recognised that integration was important, it was not necessary to have a group until they needed to write a report, as integration was believed to be part of 'the sequence of the activities'. It implied that integration was believed to take place naturally as the phases went forward. Integration was understood as the efforts to present the decision made to the outside rather than the efforts to make a decision itself:

> "Well, I think we all believed, without necessarily saying it, that integration was necessary, but we didn't set up a specific group to think about integration until we got close to reaching a conclusion, because, until we knew what to integrate, it wasn't necessary. It was just the sequence of the activities. It didn't require a group of that kind until we reached a point of thinking about how we were going to present our recommendations to the world." (Interview with one of the Committee members)

In short, the formal, codified way of devising various divisions of labour for PSE is apparently great. However, compared with this, it is equally clear that formal designing attention to integrate the wide spectrum of various PSE events and thus to enable the actual values of the public and stakeholders to be engaged with the decision relatively less.

5.2.1.2 Three Groups of Actors

In spite of the fact that there was a wide range of different actors involved in the programme, with various roles at different stages, knowledge is arguably one of the biggest and most explicit rationales for framing the main groups of actors in CoRWM. The aforementioned Figure 5.1 Key Steps in CoRWM Process in the CoRWM's final report (2006) illustrates the main groups of actors - 'the Committee, Public and Stakeholders, and Scientists and Specialists'- and their roles. Its simplified job description of them was: Public and Stakeholders were supposed to "comment on and observe CoRWM's work via mail, website, attending plenary meeting etc."; Scientists and Specialists were due to continually "engage with scientific community/specialists for information and advice on specific technical matters and other specialist matters"; and the Committee, which was in the middle of the picture was responsible for making the final "recommendations to Government" (CoRWM 2006, p. 35). The underlying assumption of this division of labour was that these three big groups of actors contributed to the decision with different 'inputs' (ibid., p. 33).

This categorisation resonates with the summary of Collins and Evans (2002)' typology of expertise: *scientific specialist expertise (core-set scientists); contributory expertise (non- specialists from the general public);* and *interactional expertise (i.e. facilitator) and translation expertise (communicator)* in Chilvers (2007, p. 202). Kemp et al. (2006) also categorised three types of participants for a Public and Stakeholder Engagement (PSE) process according to the knowledge they have: *Specialist knowledge – scientific, technical, socio-economic expertise etc.; Procedural knowledge – knowledge of due process, legal and institutional frameworks; and Lay knowledge – knowledge of a particular community and locality* (2006, p. 1021). 'Expertise' still sounds as if restricting its attributes to specialists only, while 'knowledge' seems to be comprehensive enough to be applied to non-specialists. This is maybe why knowledge is the more common qualification for participants in public engagement literature, as well as practice. Nevertheless, the term perhaps needed to be qualified by the adjective 'lay', which has the meaning of being unqualified.

Therefore, knowledge is one of the most acceptable rationales for making a list of participants for public engagement and inviting them in. This was also the case for CoRWM. Knowledge was convenient for those who designed the programme, to employ as an explicitly-codified rationale for the composition of the main actors of the CoRWM programme. Therefore, knowledge was a main official rationale for DEFRA officials (with OCPA) to recruit the Committee members (CoRWM), and for the Committee themselves to decide the initial framework of three main groups of actors of the programme and further composing of each group.

Consequently, this typology of participants, based on their knowledge, also brought expectations of the pre-determined roles for the participants. However, participants played their part far beyond this given, formally-codified division of labour. There were much more implicit rationales to this politically expedient, and thus explicit, rationale - knowledge - in CoRWM. Therefore, this formally-codified, given division of labour between the Committee, Public and Stakeholders, and Scientists and Specialists did not continue as they were supposed to be, during the course of the programme. Instead, it was a much more complex picture in terms of the role, power and relationship between actors, which shaped the divisions of labour through their contesting and performing their respective rationales over divisions of labour:

> "He suggested three key questions. What did CoRWM want to get out of the public and stakeholder engagement process? How should the outputs contribute to CoRWM's decisions? And what would be the role of the Committee itself?" (Plenary meeting minute, May 2004)

The Committee on Radioactive Waste Management

The Committee ended its work with 11 members, who were appointed jointly by Ministers of the UK Government and the devolved administrations. The first Chair, Katharine Bryan, resigned at the beginning and Gordon Mackerron took over the position. One member (Keith Baverstock) was dismissed and replaced by new member (Fiona Walthall), and another member (David Ball) resigned at the end of the first phase. Their remit was "to oversee a review of options for managing solid radioactive waste in the UK and to recommend the option, or combination of options, that can provide a long term solution, providing protection for people and the environment" (CoRWM 2006, p. 154). There was a variety in expertise and background of the members such as "scientific, social, economic, environmental and public perspectives on the issue of radioactive wastes" (Faulkland Associates 2006, p. 3).

Representative of Expertise Community

The Committee members, who were the experts in the specific area necessarily, had their own pre-established networks and relationships. Therefore, their contributions were not only from their knowledge and expertise, but also their connections and networks from which they could get resources:

> "They were not there to 'represent' a constituency, but Members *were* chosen for their spread of backgrounds and perspectives, for (in some cases) their previous involvement in this area, and for their good contacts with a wide range of organisations." (Faulkland Associates 2006, p. 8)

> "I have worked across a huge spectrum of people, so I was constantly in contact with very large and diverse communities. And that's my job and that's going to be my contribution to the Committee." (Interview with one of the Committee members)

This diversity of expertise implied that they could informally represent the communities to which they belonged. Although members of the Committee were not elected as formal representatives of their communities or organisations, they played double roles as a kind of informal representative of their community and an independent expert working for the

programme. Diversity in areas of the Committee's expertise was appreciated as a strength. Members however, were aware of political elements in recruiting as well:

> "It was also very clever to get me involved in particular, because it was an eclectic group of people […] (Interview with a Committee member who had been working in NGOs)

Contrasting perceptions over each other's role

Individual members were recruited, based on their diverse individual attributes, from various backgrounds as well as collective attributes as a team:

> "Any public body wishing to set up has to publish the specifications of what the organisation has to do and what type of person it is looking for. So you publish the collective attributes the organisation has to have and the individual attributes that you want to see in members." (Interview with one of the secretariat of CoRWM)

Therefore, they were supposed to contribute to the team by playing a complementary role to one another. However, there was sometimes a discrepancy in members' perceptions over each other's role. Their ascribed attribute and their own perception on their roles were different. This discrepancy in perceptions resulted in different expectations and different interpretations on each other's role and position in the programme. Therefore, this discrepancy in members' perceptions on themselves and on fellow members' roles generated disputes and affected group dynamics. Also, the ground for criticism of others' roles in the Committee was often coupled with the accusation of 'being political', expressing suspicion on the fundamental issue of recruitment:

> "We believed that some of the people of the Committee were politically appointed."(Interview with one of the Committee members)

Different Understandings of the Committee's Role

There were not only different understandings on each other's role in the Committee but also different understandings over the role of the Committee itself in the programme. Although there were terms of reference given to the Committee, many occasions showed that members of the Committee had different ideas of their collective role:

> "Well, at the end of the day, the Committee would make a decision. Yes, they should make a decision. But they should have been appointed to […] They were open to

> receive the wisdom of the stakeholders and they were open to listen to the concerns of the public."(Interviewee A from the Committee)
>
> "The role of CoRWM was very clearly set out to be to listen to what the public had to say. Part of our terms of reference was to increase public confidence in the programme."(Interviewee B from the Committee)
>
> "He said at a meeting that we should consider ourselves to be in the same position as doctors diagnosing illness and as we diagnose illness we propose to the patient the best solution and we persuade the patient […]" (Interviewee C from the Committee)
>
> "I think they resigned over a misunderstanding of what the original CoRWM was set up to do. But the minister wasn't asking for hard recommendations. He was asking for a framework recommendation […] He encouraged CoRWM to carry out their mission, which was designing the process rather than designing the technical solution." (Interview with an independent consultant)

Therefore, the Committee had identified and established their own role as the programme progressed. There was a moment when members discussed what their role would be in terms of decision making: what if they hear very different opinions from others. They concluded that they were not simply a conduit for others' views and that they would make their own independent decision on what to recommend:

> "Summing up, the Chair said that there was general agreement that public concerns should be identified at the start of the process. CoRWM would be more than just a channel for public and stakeholder views. The engagement process might not yield clear and unambiguous answers. One challenge would be to inform the process while minimising any unintentional bias in information provided by the Committee." (Plenary meeting minute, May 2004)

The initial role of the Committee, which was overseeing the process, was gradually changed to that of direct decision maker on the substantive matters. There was a awareness of this change among the members, and the members themselves sounded proud of what they had done:

> "CoRWM in some senses operated more like a consultancy project team than the 'one day a week' oversight and decision-making committee that appears to have been the original intent. The main factor driving the shift away from 'oversight' to 'doing' was the determination on the part of both a majority of members and the sponsoring department to deliver to programme despite being constrained by tight timescales, delays in appointing the Project Manager and pressure on resources at critical points." (Faulkland Associates 2006, p. 8)

Public and Stakeholders

As this programme was called 'public deliberation' or 'public consultation', public and stakeholder engagement (PSE) was actually a main entity of the programme. The public and stakeholders were involved in every phase as PSE 1, 2, 3 and 4 with various methods. There were various methods of PSE used in the programme: through face-to-face meetings, documented consultation or web-based comments: Discussion Groups**,** Citizens' Panels, Discussion Guide, Schools Project, National Stakeholder Forum, Nuclear Site Stakeholder Round Tables, Open Meetings, Bilateral Meetings, Consultation Documents and Web-based (See Table 5.1). These diverse methods of engagement were used for different purposes with different participants at different stages.

Box 5.2 Four Phases of Public and Stakeholders Engagement

- PSE 1 (November 2004 – January 2005)
  To seek views on the inventory of radioactive waste and materials, a long list of long-term radioactive waste management options and the criteria that should be used to screen out options

- PSE 2 (April 2005 – June 2005)
  To seek views on the proposed shortlist of management options, the criteria that should be used to assess them, participatory processes for options assessment, and implementation issues

- PSE 3 (October 2005 – February 2006)
  To enable participation in the assessment of shortlisted options, including the expression of views on the importance of different criteria, on specialist judgements of option performance ('scores'), and preferences for long-term management options

- PSE4 (May 2006)
  To seek comments on CoRWM's draft recommendations, including proposals on how they should be implemented, and the ways of increasing public confidence

(Source: CoRWM 2006, p. 47)

Different Definitions of the Public and Stakeholders, and Their Role in the Programme

As the wide range of different approaches in PSE programmes shows, designers (the Committee and specialists from The Environment Council, The Centre for the Study of Environmental Change at Lancaster University, Dialogue by Design, Public Space Ltd and Wayne Talbot Associates), used diverse characteristics to categorise people under 'Public and Stakeholders', as these were obviously not homogeneous. In addition to this

heterogeneity in the real public and stakeholders around the radioactive waste management issue, people who were in the position of designers or participants, had a different picture in their head for categorising groups of actors for the radioactive management policy. The discrepancy in people's perception was as deep as the fundamental level of their different concepts over 'the public' and 'the stakeholders': who does belong to the category of the public and who belongs to the stakeholder group. This was the case for both people who were outside of the programme and direct participants inside of the programme. The following quotes showed the different views on the roles of the public and the stakeholders in the programme:

> "I think there is a sort of fairly standard definition, but it is prevalent […] which is essentially that a stakeholder is anybody who perceives themselves to have an interest in the issue. I tended to distinguish stakeholders from members of the public. A member of the public is someone who essentially does not perceive themselves to have a particular interest in the issue […]
> Well […] The public is everybody. We are all members of the public. Maybe we need a different terminology but the way in which I looked at PSE was - stakeholders, they had an interest. Members of the public - they may actually have an interest at some point down the line but …they don't have a particular interest in it. (Interview with the Chair of the Committee)

> "Oh, I think there is no situation where you can say there is a public out th ere. I mean, you could go to a football match and ask 40 thousand men and boys and girls, what their views were. That's the public, as we generally mea n it. But you wouldn't get an answer, would you?" (Interview with the chair man of a site stakeholder group).

The Committee discussed this issue amongst themselves at a plenary meeting, with the questions 'Who should be involved? What do we mean by 'the public'? (Plenary meeting minute April 2004)'. The designers had different ideas over the categorisation of PSE, although ultimately, whatever the winning rationale was among the designers, the categorisation for PSE methods (Table 5.1) was confirmed by the Committee. In this sense, the list of diverse groups of actors in the category reflected the winning rationale of the Committee for PSE. However, this does not necessarily mean that it reflects the real world as a composition of these mutually exclusive, different groups of people:

> "We defined the public separately from stakeholders as those people who had no particularly strong view about the subject matter because our conviction, which I think was fairly well substantiated by evidence that most people don't have a strong

> view. The public as defined here may have some vague enthusiasm and some vague suspicion but are open to argument and persuasion." (Interview with the Chair of the Committee)

Extensive and Intensive: Different Approaches to the Public and Stakeholders

Although the public and stakeholders were coupled together into a group of three main actors of the programme, there was a clear difference between these two categories among participants' views. This different definition between the public and stakeholders became the rationale for a different approach to these two groups. Despite co-existence of divergent views on the public and stakeholders, the Committee defined the public and stakeholders as that the public have neither a specific interest nor information on the issue, while stakeholders do. This became the rationale for the design of PSE events. CoRWM used the concept of 'extensive and intensive': extensive methods for the public and intensive methods for the stakeholders. This shows that the different expectations of the contributions from these two groups shaped the design of the methods:

> "The public's role is precisely there. I mean we had two types of approaches. We had extensive and intensive […] What we were trying to do with stakeholders was to get some very informed views about technical and scientific arguments. What we were trying to do with the public was to get their values […] What sounds about right as far as the public is concerned from ethical and moral points of view […] What would they feel about it? […] So that was the distinction that we used." (Interview with one of the Committee members)

Table 5.1 PSE Methods

Activity	Participants	Main Aims
Discussion Groups	Eight groups of 8 recruited citizens at different locations across the UK.	To elicit basic views and concerns about radioactive waste management (PSE1).
Citizens' Panels	Four panels of 12-16 citizens met three times. The panels covered Scotland, Wales, North and South England. Citizens were recruited to ensure a mix of gender, age and social class, but to avoid people who work for the nuclear industry or belong to an anti-nuclear group.	To participate in shortlisting, options assessment and review of draft recommendations (PSE2, 3 and 4).
Discussion Guide	568 self-selecting groups from across the UK, including community groups, environmental groups, older people and schools.	To discuss issues relevant to the assessment of shortlisted options and provide feedback (PSE3).
Schools Project	1305 students (aged 11-18) from 15 schools in Bedfordshire.	To identify and discuss the issues considered important to the assessment of options and provide feedback (PSE3).
National Stakeholder Forum	20-25 participants from national bodies, including Government Departments, Non-Departmental Public Bodies, the nuclear industry, the regulators, local government and campaigning groups. The NSF met four times.	To participate in shortlisting, options assessment and review of draft recommendations (PSE1, 2, 3 and 4).
Nuclear Site Stakeholder Round Tables	Meetings in eight locations for stakeholders from local organisations around a total of 14 nuclear sites (covering civil and military, public and private sector and different types of facilities). The RTs met three times, with a fourth round of events for nominees from each area.	To participate in shortlisting, options assessment and review of draft recommendations (PSE1, 2, 3 and 4).
Open Meetings	Two rounds of open meetings were held in eight areas close to nuclear sites.	To identify views and concerns about radioactive waste management, including shortlisting (PSE1 and 2).
'Bilateral' Meetings	A series of meetings between CoRWM members and representatives from stakeholder organisations.	To obtain information and discuss issues as appropriate to the aims of each period of PSE.
Consultation Documents	Various stakeholders and members of the public.	To seek views on a formal consultation document over a three month period (PSE1 and 2).
Web-based	Various stakeholders and members of the public.	To provide opportunity for comment on consultation papers, specialist judgements of option performance, and draft recommendations (PSE1, 2, 3 and 4).

(Source: CoRWM 2006, p. 45)

Who were in the stakeholder group: Representativeness

Who are the participants in stakeholder group meetings is associated with the issue of representativeness. For example, it was the case of a parish councillor who claimed himself to be a legitimate representative of the site, which was in contrast to the accusation by local campaigners:

> "THE leader of an independent watchdog body set up to monitor Oldbury nuclear power station has written to Prime Minister Tony Blair calling for a new atom plant on the Severnside site and says he has the people of South Gloucestershire behind him. Malcolm Lynden, chairman of the Oldbury Site Stakeholders Group, says there is overwhelming local demand for the replacement of Oldbury's nuclear reactors when they shut down in 2008 after 40 years of power generation. […] Fellow stakeholders group member Alan Pinder - also a member of South Gloucestershire Friends of the Earth - said: "I have no objection to him writing as an individual as long as he does not claim to be representing the stakeholders group or, come to that, the people of South Gloucestershire."
> Thornbury Gazette, Front page 9, December 2005[50]

> "So I responded to that with a long email, where I set out my position and I also said in it that I am firmly convinced that I have represented the views of the majority of the community […]Yes, I am the parish council representative on the site stakeholder group." (Interview with the councillor - Chairman of the Oldbury Site Stakeholders Group)

Different methods were used for stakeholder engagement, such as the National Stakeholder Forum, the Nuclear Site Stakeholder Round Table, 'Bilateral' meetings and comments through documents and websites. Some participants were delegates from certain sites, organisations or groups, but some of the participants were self-selected. Therefore, whether they were entitled to be representatives was in question. An interviewee referred to a quote of someone's view on community representativeness that 'I would rather have a bunch of aliens to represent my community than a local councillor'.

Scientists and Specialists

Role of science and scientific experts in risk decision making

There were a lot of specialists, who were involved in the process directly and indirectly including the members of the Committee, some participants from PSE and those who

[50] Available from: (http://www.glosgreenparty.org.uk/content/view/927/2/)

were involved in designing and conducting actual processes. In particular, although it was acknowledged that radioactive waste management was not only a technical issue but also social and ethical issues, technical expertise on the radioactive waste was highly appreciated:

> "If the Committee's recommendations are to offer protection to people and the environment, they need to be based on the best available scientific and technical knowledge. CoRWM engaged with the scientific community in a variety of ways. For example, it used expert knowledge in a specific context in shortlisting options; it deployed much more intensive application of scientific knowledge to the detailed assessment of shortlisted options in assessing option performance within the framework of formal Multi-Criteria Decision Analysis (MCDA); and it used broader scientific assessments to examine the critical question of confidence in the long-term safety of geological disposal." (CoRWM 2006, p. 6)

As discussed in the previous section, different definitions of the public and stakeholders relied on people's various perceptions, and they contradicted one another. Likewise, the definition of scientific knowledge and its role in radioactive waste management policy-making were divergent depending on different people. These contrasting views on the fundamental issue produced much disagreement among stakeholders inside and outside of the programme, and brought about a split within the Committee. The House of Lords (2004) accused CoRWM on the ground of insufficiency in scientific inputs to the decision-making process and two members of the Committee also criticised CoRWM as taking an insufficient scientific approach. The following quotes showed that the Committee members had contrasting views on science and its role in the risk decision-making process:

> "We [the Committee] broadly took the view that most of us scientists should be on tap but not on top; he [one of the two Committee members who criticised the process] particularly criticised this view […] (Interviewee A from the Committee)

> "But there were many people on the CoRWM who proved themselves to be very antagonistic to technical input. They were what I would call 'social relativists'. They didn't believe technical input because they didn't trust it or they were politically against it. Combined with that, they were all anti-nuclear." (Interviewee B from the Committee)

> "Radioactive waste management […] should be based on the absolute truth […] Technicality was not considered […] Public can't answer to the technical issue […]" (Interviewee C from the Committee)

In short, there were such contrastingly divergent rationales for divisions of labour among participants inside and stakeholders outside. These divergent rationales over divisions of labour reflected various attributes of participants, and complex context of the programme.

The way of embracing these widely divergent rationales was not played out in a formalised manual. Instead, it would be better understanding that a wide range of rationales were somehow encompassed through a complex, implicit and rather discursive way.

5.2.2 Deliberativeness

A wide range of different participants did not merely bring knowledge, but also introduced their respective identities, convictions and networks into the deliberation process. These respective participants' attributes played their part as internal elements of the programme and these generated various meanings and dynamic relationships within CoRWM. Furthermore, political discourse, governmental and non-governmental institutions and policy networks were the external elements outside of CoRWM, which influenced their power in the deliberation process. There were dynamic inter-reflections between these internal and external elements of the programme. As well as this, there were inter-reflections amongst internal elements of the participants in the programme. For the duration of these continuing inter-reflections of the elements of the programme, deliberation appeared as a complex form of various 'discursive relations' among participants. It was not simply a communicative form of rationally argumentative reasoning as characterised in theory. Instead, participants experienced various material, social and political relations, such as segmenting, aligning, competing, negotiating and networking.

5.2.2.1 Internal Elements: Plurality in Identities, Convictions and Networks, as well as Knowledge of Participants

Plurality in the number and views of people is an important value for designing a public engagement programme, such as CoRWM. In particular, knowledge is one of the most common and legitimate qualifications for the participation of public engagement. As established before, it was also the case for CoRWM to use knowledge as one of its most explicit, official rationales for inviting participants.

Participants, however, did not only bring this official, explicit qualification - knowledge - but also introduced many different respective attributes to the deliberation process. These attributes were, for example, participants' identities that stemmed from social perception and their institutions; their personal convictions on the basis of their philosophy,

preference and experience; and their personal networks. Reflections amongst these internal elements also generated new sets of knowledge, interests, identities, roles, networks and relationships of the participants, which shaped the new context of their deliberation. The ensuing part of this chapter, presents the ways in which these various attributes were inter-reflected by participants, and materialised in divisions of labour of the deliberation process.

Knowledges

Different participants brought different types of knowledge into the deliberation. The three main groups of actors of CoRWM were the Committee, Public and Stakeholders, and Scientists and Specialists. As argued earlier in this chapter, the rationale for this categorisation was the type of knowledge they had: knowledge for decision making for the Committee, the experiential or local knowledge of Public and Stakeholders, and scientific and technical knowledge from Scientists and Specialists. It was a mostly common typology shared in the literatures and practices (Kemp et al. 2006). Various types of knowledge were the main attributes expected from the participants, which was the same within each group. In particular, for the science-related policy-making, like CoRWM, 'knowledge' is the non-disputable qualification for participation.

For example, the Committee was composed of various experts, such as an economist, risk experts, an NGO person, social scientists, environmental scientists, decision-making process experts, etc. They had established experience and knowledge in their areas, which were able to be explicitly recognised and thus often became the reasons for recruiting them. This attribute of 'knowledge' entitled participants to have legitimate participation in the deliberation process. Particularly this would be the case for the experts' group discussion for science-related policy-making. For instance, when the government had to set up the Committee (CoRWM) to manage the programme, it stressed the Committee's independent authority on its decision-making. This independence from the government was explicitly emphasised as an important principle. In addition to that, Committee members had to declare their interests clearly in the Committee, for example, any financial or personal interests in the issues discussed. This was the device with which to protect the decision process from possible criticism of contamination of its decisions by members' personal interest. Therefore, the forefront rationale of knowledge for recruitment may have raised

expectations that the decision would be independent, not only of the Government/industry but also of any interest of the inside that made the decision. In this light, emphasising only knowledge for the constituting element for deliberation would be misleading as if knowledge is the only constituent for decision-making process, ignoring the other parts of the deliberation process:

> "They were not there to 'represent' a constituency, but Members *were* chosen for their spread of backgrounds and perspectives, for (in some cases) their previous involvement in this area, and for their good contacts with a wide range of organisations. Criticism of members for potential bias because of their background therefore seems misplaced." (Faulkland Associates 2006, p. 8)

Since in reality, in addition to this explicit and forefront attribute of participants, there were actually much more, contributing to the shape of the deliberation process. These other parts of the deliberation process were rather implicit, and yet materialised to be influential elements, which made the deliberation process 'discursive relations' rather than rational argumentation.

Identities of the Participants

Participants had their identities, which were generally associated with their institutions or expertise. These were useful indicators with which to recruit people into the programme. However, they also played a critical role in shaping the deliberation by forming stereotypes or sometimes biased views, and affecting the relationships among participants. These personally perceived identities generated a discrepancy between the ascribed identities by others and own perceived identities, which resulted in different expectations over their own and others' roles. Interviewees characterised themselves and others in contrasting ways. Taking the example of the chairman of a site stakeholder group (who used to be a local councillor), he claimed his legitimate representation of the local residents of the site, but local environmental groups argued that he was self-elected and should not have claimed for being representative of his local site.

In addition, there were antagonistic relationships between different kinds of groups within the participants, such as pro- and anti-nuclear; industries and NGOs; or natural and social scientists. Interviewees easily employed pro- and anti-nuclear stances to categorise participants. The narrative was simply divided into 'pro' or 'anti':

> "[…] somebody said to me at that time when the appointments [of the Committee] were made, they were all made by OCPA[51] and then referred to the minister. They said that Michael Meacher would have been pleased with the Committee, because we've got four people on that Committee out of the thirteen, who were presumed to be anti-nuclear." (Interview with one of the Committee members)

Particularly, participants often coupled the pro-nuclear stance with industry people, and these industry people and NGO people were a kind of enemy to each other. One of the interviewees, who had been working in an NGO background exemplified this antagonistic relationship between them:

> "I mean I was inside. There were lots of NGOs on the outside who had far less impact than I did. I always had this problem, you know, people say you are working with industry."
> (Interview with one of the Committee members)

Another interviewee, who was the chairman of a site stakeholder group described NGO people as those who 'were difficult to work with', and 'the single-minded', while considering industry people to be those who 'knew substantive matters and thus were entitled to make a decision':

> "They were difficult to work with. Work does not progress with those. They don't tackle the issue […] I will call them the single-minded […] Industry, people who knew all about nuclear would conclude […]" (Interview with the chairman of a site stakeholder group)

Convictions

Contradicting views of participants were not necessarily the result of their wide areas of expertise, but were sometimes due to their fundamentally different convictions. These participants' respective beliefs on the issues created contrasting ideas over the deliberation process. In particular, a different philosophy towards definitions and roles of science and the public in the policy-making process for technological risks was critically influential to the dynamics between participants. People who were dealing with the same issue had very different definitions of science and the public. Consequently, their opinions on the role of science and the public in risk decision-making were very different. This fundamental difference appeared to be a difficulty or intractable discrepancy beyond the possibility of deliberation. This discrepancy in fundamental philosophy became one of the main reasons which caused the departure of two members of the Committee and brought about a

[51] OCPA is an acronym for the Office of the Commissioner for Public Appointments.

change in the process of CoRWM. Two members, who left the Committee at a quite early stage, criticised CoRWM for being not sufficient in scientific input. They rather had a different point of view on the role of technical experts and the public in radioactive waste management. The following quotes show these contrasting views among the Committee members. The first and the second quotes are from the two members who departed from the Committee:

> "It [scientific knowledge] comes in very useful, if you are concerned with a specific kind of hazard like [...] that's where the technical knowledge comes in […] you couldn't expect the lay people to know that, but technical people will be able to tell you. […] Because CoRWM had only three years to do its job, there was no way to start doing good science. After two years, especially, several people on the Committee who had the most influence due to their personalities, were antagonistic to science […]
> [one of the Committee member] said things like: Science is as changeable as politics. Today I have been teaching my MS students about risk management. We were talking about the different beliefs that people have: they are a range from the naive positivist and the cultural relativist. She is the cultural relativist. She thinks anybody's opinion is as good as anybody else's, even on technical matters, because the day of science is over."
> (Interviewee A from the Committee)[52]

> "That was the very seed of all our disagreements. Because this group on the Committee were relativists. Because they thought that relativism was a respectable academic position to take[…]But there were other things, like how rapidly radioactive waste will leak from a containment constructed. In this way, which is based much, much more on absolute truth. Things, which we can measure and predict, so these two kinds of truth came into conflict […]"
> (Interviewee B from the Committee)

> **"**We broadly took the view that most of us scientists should be on tap but not on top; he [one who departed the Committee] particularly criticised this view […]"
> (Interviewee C from the Committee)[53]

> "And I think he [one who departed the Committee] felt that placing so much emphasis on PSE was going to deliver to us technically ill-informed recommendations […]"
> (Interviewee D from the Committee)

Networks

As established before, participants' personal networks played such an important part in the deliberation process. Participants inside of the programme reported the process and the issues to the outside and took concerns and opinions from the outside to the inside. The

[52] Part of this quote was used in other place of this chapter.
[53] This interview material is used in previous part of this chapter.

influence from these informal and personal relationships of participants with their colleagues and friends outside of the programme was quite remarkable in relation to transferring their message beyond the formal communications like set meetings.

Therefore, in this sense, these people, who had personal association with the participants inside of the programme, also got involved in the deliberation process, although they were not officially invited. People who were outside, sent their messages in formal and informal ways to the inside through the person with whom they had network. Participants inside played the role of building a bridge between the outside and the inside. A good example was that of an expert having a personal network with some Committee members had a close look at the process and influenced it by his personal links. He was an NGO associated, but independently working, consultant and academic. He had a strong relationship with two members of the Committee of CoRWM. He said that he had discussed CoRWM issues with them a lot while the programme took place. They had been working together on other occasions as well. His argument over the government's response to the CoRWM's recommendation was the same as that expressed by one of the two Committee members with whom he had a link:

> "I am a personal friend of two members of the Committee, [Person A] and [Person B]. I also met a number of the members because I participated as a representative of an NGO called SERA, which stands for the 'Socialist Environmental Resources Association'[…] So I knew quite a few of the CoRWM representatives, who were in that stakeholder dialogue as well. So I had friendship with some and a professional relationship with others." (Interview with an independent consultant)

Participants inside reported what was happening to the outside. Therefore, people who were outside of the deliberation could know the happenings inside and tried to intervene in various ways. For example, when two members had conflicted with the idea of scientific inputs and public engagement in the programme, they raised this issue to the outside through their networks:

> "They were able to talk to their scientific colleagues saying that CoRWM was corrupted and scientifically weak etc. […] Corrupt, no one would believe really for a moment, but scientifically weak, yes, they believed that. So it took a long time for CoRWM then to build up kind of peer-review quality control mechanisms." (Interview with one of the secretariat of CoRWM)

Transferring the ideas and opinions between the inside and the outside took place through

informal and formal networking routes, which were sometimes more visible and sometimes on a very personal level. In addition, the multiple networks outside of CoRWM made a coalition to make a louder voice and influence their power over the deliberation. Therefore, the networking in fact, enabled more people to participate than the actual number of the participants inside:

> "You are only able to see a limited number of people but especially in the stakeholders community, they have links with many, many more people. Our hope was that they would report back face-to-face experiences [...]" (Interview with one of the Committee members)

> "What I did at the end was to produce the critique of the process [...] But stakeholders were saying to me 'I don't think this process is working' or 'I really worry about their plans for this.' Then I wouldn't wait till the end to tell people. I wrote monthly reports. […]Yes, because it went on for many years. I was working in this area. I might have been working for another project as well [...] You would find it in the nuclear area, a lot of people know each other very well." (Interview with one of the evaluators of CoRWM)

Networks enabled multiple, fragmented individuals and communities to be connected and to transfer their views. Therefore, as some scholars suggest, this could work for a new mode of representative democracy. However, there are also concerns of legitimacy of this kind of representativeness, as often the self-elected or -selected was the case. Both sides of networks regarding representativeness were shown in this case. There were various occasions which showed networks helped to include more views than the actual number of participants inside. However, there also sometimes, questionable representativeness was claimed by un-authorised representatives (Hendriks 2009), such as the previous example of the chairman of one site stakeholders group who confidently claimed the legitimacy in his representing of his site.

5.2.2.2 External Elements: Political Discourse, Governmental and Non-Governmental Institutions, and Policy Networks

In addition to these elements of the insiders, things outside of CoRWM, such as political discourse, governmental and non-governmental institutions and policy networks exerted their power in the deliberation process. These external elements outside CoRWM interacted with internal elements of the programme. CoRWM had been developed through its continuing process of responding to as well as being intervened by these external

elements.

Nuclear policy: Climate Change and Energy Security Discourse

In the previous section on the birth of CoRWM, I established the role that the UK nuclear energy policy played in radioactive waste policy-making. Putting it the other way around, it was a discussion about how important the UK radioactive waste management solution was for the UK nuclear energy policy discussion. This section will now discuss how discourses around it actually contributed to the nuclear new build discussion with the examples of climate change and energy security.

It is interesting to see how the same environmental discourse was deployed with contrasting rationales by different stakeholders in the context of nuclear power policy-making. Nuclear power has been one of the main issues to be tackled by environment activists over the last few decades. It was claimed as being environmentally-unfriendly. In this argument, the equation of anti-nuclear to environmentally-friendly worked. However, since climate change took a great attention on the planet, the pro-nuclear stance emerged legitimately from some stakeholders to support the argument of environmental concerns. This was the case in CoRWM. In the discussion on the new build of nuclear power in the UK, the discourse on climate change played as important a role as low-carbon policy. It was discussed as the way to go forward. Climate change was not only a UK government argument, but a globally confirmed norm. It was, therefore, a politically powerful, and thus useful, means for legitimising the nuclear new build policy. Although there were different arguments, climate change discourse was very fit for purpose.

Mark Higson (Chief Executive, Office for Nuclear Development, Department of Energy and Climate Change) argued that 'reducing carbon emissions' was the core issue that the government faced and the government's role was to follow 'a coherent and practical suite of policies' in his answer to defend the criticised nuclear new build policy-making process:

> "I think that comes down to the heart of what is the role of the government and what is it that should be done by broadened consensus. And I have got a view that the government is responsible for a coherent and practical suite of policies, which unrealistically fit together. That's what the government is basically responsible for. So if you take the view of the government, we've got the most enormous challenge of reducing carbon emissions […]" (Mark Higson, at a seminar held at SPRU, University of Sussex on 1 February 2010)

Energy security discussion was another useful means to support the new build of nuclear power, although the priority was changed from energy security to climate change in the government's official documents (see the discussion in the section of the context of this chapter). Failure in electricity control, which resulted in a blackout in the summer of 2003 in the UK and other countries, supported the argument of the need for nuclear power (Mackerron 2004; Watson 2007). The following quote from The Guardian pointed out the efforts of the UK nuclear industry using this event to build their claim of additional nuclear power:

> Terry Macalister, The Guardian, Monday 29 September 2003[54]
>
> "But rising incidents of power shortages around the world will be welcomed at one source: the British nuclear industry, which has been trying to convince the government that the UK needs a new generation of nuclear power stations. Some observers argue that without additional nuclear power, the UK could find itself depending on "unpredictable" wind power, or even gas imports from such unstable political regimes as Algeria.
>
> This week British Nuclear Fuels peppered the pages of the left-leaning New Statesman magazine with adverts promoting its new-found "responsibility" and the vital role it thinks it should have, addressing future energy needs.
>
> BNFL's tactic seeks to convince Tony Blair and the rest of the Labour party meeting in Bournemouth this week that nuclear should get a second chance. The nuclear industry has always admitted privately its best chance lay in a growing fear of power cuts."

Michael Meacher and Elliot Morley: Environment Minister(s)

Michael Meacher,[55] who was Environment Minister (1997-2003) and his successor, Elliot Morley[56] (from June 2003) were important figures in CoRWM. They had been influential in the birth of CoRWM and during its period of CoRWM 1 (2003-2006). Michael Meacher, in particular was involved in the initiation of CoRWM and had a significant role. Although he was sacked in June 2003 even before the Committee of CoRWM actually started its work, his influence was still inherited by his successor. Meacher's influence on CoRWM was not

[54] Available from (http://www.guardian.co.uk/environment/2003/sep/29/italy.climatechange)
[55] Michael Meacher was believed that he was sacked because he criticised in public the government's GM policy and invasion of Iraq.
[56] Elliot Morley had been a junior minister in DEFRA since 1997 until he succeeded Michael Meacher as the minister in DEFRA.

visible, but was substantial:

> "I'm not without my own environmental credentials," Morley says. "I've worked with Michael for many years. In fact, he told me that if he were to leave the department he hoped I would be his successor." (Interview with Elliot Morley, by John Kampfner, New Statesman, 30 June 2003)[57]

Michael Meacher was sacked in June 2003 and replaced by his old colleague, Elliot Morley. Although during CoRWM 1 (2003-2006) Morley was the minister, interestingly interviewees spoke a lot about Meacher as they remembered him as the minister. It was interesting that when many interviewees talked about the minister, they referred to Meacher rather than Morley. The following quote showed that one of the interviewees mentioning Meacher instead of Morley in explaining the important role of minister in CoRWM:

> "A very important actor was Michael Meacher. He was the environment minister. He was important because he encouraged, despite the Lords' criticising CoRWM. He encouraged CoRWM to carry out their mission, which was designing the process rather than designing the technical solution. So he was very important politically because he legitimised the mission and therefore they didn't change around because of the criticism outside. [...] They were frustrated because CoRWM wasn't doing what they wanted CoRWM to do but CoRWM was doing what the minister wanted CoRWM to do, because the minister asked them to look at a policy-making process, not an engineering solution." (Interview with an independent consultant)

The following quote from the interview with the Chair of CoRWM on the question of criticism:

> "There were an outsider view that we had insufficient expertise, and that we were politically biased in favour of Michael Meacher, we were called once a friend of Michael Meacher." (Interview with the Chair of the Committee)

One of the interviewees (CoRWM member) genuinely thought Michael Meacher was actually on his side in an anti-nuclear position saying that 'we had a very sympathetic government at the time, and the minister was Michael Meacher, he was definitely anti-nuclear'.

House of Lords

The House of Lords Science and Technology Committee criticised the CoRWM process in

[57] Available from(http://www.newstatesman.com/node/145770)

that it was not scientific enough (House of Lords, 2004). They published a report in December 2004, sounding as if they pressured the government to 'correct' CoRWM, particularly in terms of 'being scientific' and also pushed to achieve speed:

> "There has clearly been a great deal of debate about the adequacy of the Committee's approach, a critical report by a House of Lords committee and adverse comment in national newspapers. Two ex-Members whom we consulted and whose views we take seriously, said that their departure was because of disagreements over this and related issues." (Faulkland Associates 2006, p. 35)

When the Committee was accused of not being scientific, this provoked a change in the process. The Committee had to show to the outside that they had considered the criticism:

> "The problem is that it generated the very complex peer review process. It went to such lengths to prove that there were scientific inputs to everything. It almost didn't work. It seemed to me so. It was too complicated. So sometimes, it didn't have the scientific input you would have had. Everything was formalised so that you could trace it […]" (Interview with one of the evaluators of CoRWM)

The following quote is from the plenary meeting of the Committee in January 2005, after the House of Lords published the report and government responded to it:

> "The Chair mentioned three developments relating to science and quality assurance. These involved the Royal Society, the House of Lords Science and Technology Committee report and the Environment Department (DEFRA) proposed response, and a meeting with DEFRA's Chief Scientific Advisor." (Plenary meeting minute, January 2005)

The Royal Society

Learned societies influenced the process in a way of advising with specific expertise. However, in some cases they intervened directly in the process. For example, the Royal Society was directly involved in the process in particular for advice for the Quality Assurance group when the criticism of scientific inputs arose. The following quote is from the plenary meetings:

> "The Quality Assurance group's agenda would also need to cover finalisation of the pool of peer reviewers, the possibility of an external expert panel with a remit extending to quality assurance of proposed work (in relation to which the secretariat had been asked to arrange a meeting with the Royal Society)[…]
>
> Action 18. To arrange to meet representatives of the Royal Society to examine the scope for providing assistance with CoRWM's quality assurance/peer review work. Chair, Secretariat."
>
> (Plenary meeting minute, December 2004)

> "He had met Professor Sir David Wallace, Vice President of the Royal Society (RSL), to discuss ways in which the Society could contribute to CoRWM's work. This could include informal comment and nomination of people who could advise or contribute in a personal capacity, say as peer reviewers or on CoRWM's quality assurance group. RSL would retain its independence and its ability to comment freely on CoRWM's work." (Plenary meeting minute, January 2005)

Professor Geoffrey Boulton from the Royal Society joined the Quality Assurance group of the Committee from May 2005. The Royal Society published reports on the issues of CoRWM. One of them was *How should the UK manage radioactive waste?*:

> "As we have previously outlined, and has been raised by the House of Lords Science and Technology Committee (House of Lords 2004), we have concerns over the low level of scientific representation on CoRWM, especially in the field of Earth Sciences. […]
> In the next phases of CoRWM's work, especially in the final decision-making process, there is a continued (and possibly stronger) need for robust scientific and technical input. It may be necessary to set up a technical committee or sub-committee that includes CoRWM members, to assess and summarise the scientific literature, which CoRWM members cannot be expected to do alongside all their other duties. Purchasing pieces of advice from external contractors is no substitute for continuous input from experts with extensive experience of the relevant technology." (RS Policy document 13/05 June 2005)

Another report *The long-term management of radioactive waste: the work of the Committee on Radioactive Waste Management (CoRWM)* (Policy document 01/06 January 2006) was published after they held a seminar to 'identify science-based issues that are of particular importance in the crucial final phases of CoRWM's work, prior to its report to Government in summer 2006' with CoRWM and DEFRA. Recommendations were made to CoRWM and DEFRA.

NGOs

NGOs have been important actors in particular nuclear issues in general and perhaps necessarily they have always been present in the history of UK radioactive waste management. In many of the public oppositions in radioactive waste management history in the UK, NGOs have played a big part by supporting and leading the local protesters as discussed in the previous context section. People from NGOs were involved everywhere inside of the programme such as a member of the Committee, specialists and stakeholders. In addition, outside CoRWM, they were monitoring and intervening by aligning with other local campaigners and approaching the media:

> "When I finally saw the final report and heard how it was being interpreted, I wrote a very long letter to the sponsoring ministers, which I also copied to all the NGOs saying that this is wrong in the following area and since then I am campaigning as hard as I can." (Interview with one of the Committee members)

5.2.2.3 Deliberation is 'Discursive Relations' rather than Rational Reasoning

Dynamic inter-reflections between these internal and external elements, and inter-reflections among internal elements, shaped the deliberation into a complex picture. Participants generated and responded to new representations (interests, identities, roles, relationships, networks etc.) through these inter-reflections of the elements of the programme. This reflexive process was the way that deliberation in the real world was played out.

Deliberation, in theory, should be a form of rational reasoning and be protected from political and strategic interest or power. Some scholars have more flexible position regarding the forms of deliberation, as Dryzek (2000) argues that other forms of communication should be allowed, like rhetoric or storytelling. Rational reasoning however, is the characterisation for deliberation process shared by many deliberative democracy theorists

Contrastingly, deliberation in practice was not a mere communicative form of rational reasoning as suggested in theory. Rather, it was such a complicated mix of various forms of 'discursive relations'. Participants employed various personal and contextual elements of the programme in order to realise their interests and values in the process. Participants in other words, interacted socially and politically, with one another in various relationships, materialising their knowledges, identities, relationships, policy discourse, and policy networks to be influential in the process. Participants for example, segmented or aligned with others for their power relations, made strategic competition or negotiation with one another, and employed their networks to influence the deliberation. In doing so, participants displayed and experienced various forms of material, social and political relations. Deliberation process comprised these various relations rather than merely the argumentative form of public reasoning.

Segmenting and aligning

Committee members generated their various informal and formal dividings, such as segmenting and aligning. Committee members were recruited, based on 'the collective attributes the organisation wished to have and individual attributes (from an interview with the Secretariat of CoRWM)'. This job attribute is the skills they have, which includes experience and knowledge in their expertise. However, as I discussed in the previous section, their different, even sometimes radically contrasting convictions did not allow them to have only rational reasoning. It was sometimes impossible to compromise with each other's views. They, therefore, naturally and strategically banded together with certain people who shared their conviction, and the Committee was segmented by these emerging 'wings'. Issues in CoRWM were often divided as between those anti- and pro- nuclear, or social scientists and scientists:

> "Some people who were in CoRWM were 'antagonistic to science' […]
> They were what I would call 'social relativists'. They didn't believe technical input because they didn't trust it or they were politically against it." (Interview A from the Committee)[58]

> "In terms of colleagues on the Committee, naturally I was sympathetic with those who were anti-nuclear." (Interview B from the Committee)

Two of members left with the disparity in their position over the process from the others. One of the main reasons was the discrepancy in their ideas over, in particular, scientific inputs and public engagement in the process. The two members worked closely, sharing their opinions with each other:

> "I feel that most of the Committee members were intimidated by the ferocity of the attack from [Person A, B and C]. They were intimidated by this group of people, [Person A and B], aided by [Person C]. (Interview with the member who resigned from the Committee)

> "I can remember how [the one with whom he shared opinions] and I became friends, because I didn't know him. On the second day of our meeting, I saw [him], and I went to up to him and I said: […], do you feel that you are at a party to which you haven't been invited?. He said: Exactly how I feel. Quite honestly from then onwards, [he] and I referred to this to as an 'Alice in Wonderland' experience. We just could not believe that the things that were happening in the way they were happening, because it was so conflicting to our philosophy of dealing with risk." (Interview with

[58] This quote was used in other part of this chapter.

the member who was sacked from the Committee)

Competing and negotiating

When people had different ideas, they had to compete or negotiate with one another. The decision made was not only the result of pure publicly-defendable reasoning. Instead, political pressure often affected the decision, implicitly and explicitly. For example, one of the Committee members did not agree with deep disposal. Instead, he insisted and believed in storage as the better solution. He tried to persuade other members but finally had to compromise with the option of deep disposal, or had to accept that decision:

> "There were differences of view between me and a few others. […] Well, I just spoke up […] I was always outvoted. I mean, I could have left but my view is that if you are on the inside, you have a lot better opportunity to influence than being outside. So I stayed in. I thought there were a lot of good things about the process. You were able to argue your point and you were able to do so in public […] I was feeling that I was getting into a position of being in the minority more and more." (Interview with one of the Committee members)

When CoRWM was accused of being not-scientific, the Committee had to respond to the criticism. This criticism made the government apply pressure on the Committee to show something to the outside. The Committee, therefore, had to meet their various stakeholders to discuss what to do to meet their demands. Therefore, sometimes they had to compete for their argument as well as to negotiate for compromise. The quote below was from the Committee meeting minutes after that pressure from outside CoRWM:

> "9. The Chair mentioned three developments relating to science and quality assurance. These involved the Royal Society, the House of Lords Science and Technology Committee report and the Environment Department (Defra) proposed response, and a meeting with Defra's Chief Scientific Advisor.
>
> 10. He had met Professor Sir David Wallace, Vice President of the Royal Society (RSL), to discuss ways in which the Society could contribute to CoRWM's work. This could include informal comment and nomination of people who could advise or contribute in a personal capacity, say as peer reviewers or on CoRWM's quality assurance group. RSL would retain its independence and its ability to comment freely on CoRWM's work.
>
> 11. He had met Defra to discuss its proposed response to the report published in December by the House of Lords Science and Technology Committee. Many of its recommendations were for Government. But some - especially relating to the "blank sheet of paper" review of options, CoRWM's use of science, its meetings and its public engagement - were more relevant to the Committee and would be

> discussed later in this meeting. He planned to write an article explaining why CoRWM had been set up and how it was going about its work.
>
> 12. He had also met Professor Howard Dalton, Defra's Chief Scientific Advisor, who planned to set up an expert advisory panel to enable him to assist CoRWM in its work. The implications for CoRWM were not yet clear and discussions were continuing."
>
> (Plenary meeting minute, January 2005)

Networking

As evidence previously provided showed, networking was a critical part of deliberation. Individual participants were very well aware of the power of networks, and thus made the most use of their existing networks and also created new ones to affect the deliberation process. The following quotes tell us how widely networking was used for deliberation by participants from various positions in the programme, such as chairing of the Committee, evaluation of the process, and participating in a stakeholder deliberation:

> "I appointed Geoffrey Bolton who was a fellow of the Royal Society [...] to be an inside member to look at the scientific issues and Quality Assurance generally, and he then reported informally to his colleagues in the Royal Society and elsewhere about whether we were doing a good enough job.
> […]You only are able to see the limited number of people but especially in the stakeholder community, they have links with many, many more people. Our hope was that they would report back face-to-face experience […] (Interview with the Chair of the Committee)
>
> "What I did at the end was producing the critique of the process […] But stakeholders were saying to me 'I don't think this process is working or I really worry about their plans for this.' Then I wouldn't wait till the end to tell people. I wrote monthly reports […] Yes, because it went on for many years. I was working in this area. I might have been working for another project as well. [...] You would find it in the nuclear area, a lot of people know each other very well. (Interview with one of the evaluators of CoRWM)[59]
>
> "Yes, I am the parish council representative on the site stakeholder group. I report back to them regularly at the meetings, any issues and things which happened." (Interview with a participant of the Nuclear Site Stakeholder Round Table)[60]

On the other hand, consequently, participants themselves were influenced by others' networks. In particular, established policy networks brought their existing power structure

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[59] This material was repeatedly used.

[60] This part of interview was used in the earlier section of this chapter.

from the outside into the process. When the criticism of two members of the Committee over the process emerged contrasting to others, they reported their arguments to the outside for aid of auxiliaries. A member of the secretariat of CoRWM recalled that those efforts were sufficiently influential to bring about the change in the CoRWM process of setting up a peer-review mechanism.

5.3 Conclusion

One specific and important element found in my empirical examination of CoRWM is inherent reflexivity. Recognition of such a nature in a real macro risk deliberation exercise provided me with a better understanding of the divisions of labour in such a practice for radioactive waste management policy-making. A close analysis of real-world macro deliberation revealed a way of the division of labour, inclusion and deliberation that took place in contrast to that of deliberative democracy theory.

Various actors around CoRWM had very divergent views on the role of CoRWM (here, referring to the programme) in the radioactive waste management policy-making, as well as roles of its nested small deliberations within the whole programme. They also showed their different views over the roles of individual participants and stakeholder groups within the programme. Consequently, they had diverse design preferences and tried to exert their influence in order to realise their preference in developing CoRWM. In doing so, they had employed and been through various material, social and political relations, which I would call 'discursive relations'. This was a different picture to deliberation of theory defined as a kind of rational reasoning. Through the participants' discursive relations, a contrastingly wide range of rationales and their embedded presentations (i.e. meanings and relationships) were cross-reflected and integrated into the deliberation process. This was a kind of endogenous, upstream way of inclusion, such as a kind of 'fermentation' process. That is also different to what the theorists presume the inclusion to be achieved, as such a mechanical aggregation by certain premeditated design.

To conclude, recognising the influence of reflexivity in shaping these ways of inclusion and deliberation in CoRWM, also improved understanding of the ways in which the divisions of labour took place. It was an instrumental approach that macro-deliberative theorists attempt to maximise two qualities of inclusiveness and deliberativeness by providing

various designs of the divisions of labour in public deliberation. However, the divisions of labour in the real exercise of public deliberation - CoRWM, were played out in an endogenous way and developed throughout the course of the process.

CHAPTER 6

DISCUSSION

I interrogated divisions of labour in two UK macro-deliberation exercises (GM Dialogue and CoRWM) regarding their inclusiveness and deliberativeness, and reflexivity. I now summarise the empirical findings displayed in the previous two chapters on GM Dialogue and CoRWM. This chapter begins with a discussion of reflexivity in divisions of labour of two real macro-risk deliberation exercises, GM Dialogue and CoRWM. It then draws attention to new thoughts on the notion of deliberative democracy, and finally concludes with the relevance of the two deliberative exercise cases to decision making for ST Governance.

6.1 Reflexivity, and Divisions of Labour of GM Dialogue and CoRWM

Division of labour in deliberation stemmed from the idea that it would improve the degree of inclusiveness without compromising the quality of deliberativeness in deliberation. To maximise these two essential qualities of deliberative democracy - deliberativeness and inclusiveness in their implementation - the division of labour is claimed to be useful by those who support macro-deliberative democracy. However, the importance of another element – 'reflexivity' in the deliberation process - has not been fully considered. Reflexivity in this thesis refers to the property arising during subjects' continuing reflections. Understanding of the reflective, endogenous, self-contingent, self-influential, discursive nature of reflexivity lies in observation of the ways in which subjects' responses to their environment return and influence the subjects themselves. In other words, it is about the contingent ways in which subjects' representations of their environment re-structure this environment and thus re-condition their next representations. This study specifically focuses upon the implications of this reflexivity in divisions of labour. It does so by investigating how divergent participants' representations of the divisions of labour are generated, and the ways in which these representations of the division of labour have influence on shaping the nature and outcome of deliberation.

In order to elaborate upon this process and elucidate the implications of reflexivity in the

divisions of labour of the deliberation process, I revisit the two dimensions of process and outcome of reflexivity, which were established in Chapter 2 (Theoretical Considerations) of this thesis. This creates a link between the theoretical concepts to empirical evidence in GM Dialogue and CoRWM in the ensuing section.

6.1.1 Process Dimension of Reflexivity: Endogenous Divisions of Labour in the Evolutionary Process

The process dimension of reflexivity in the divisions of labour explains the evolving characteristics of the process. There were winning, and thus explicitly-formed (decided) divisions of labour out of contrasting divergent rationales, and these formed divisions of labour were also followed by the newly-emerging divisions of labour. These two interacted, and then formulating process moved on to its next stage of determining an explicit design. This kind of sequential, continual change took place within, and across, different stages and groups of the whole programme; and, as a whole process, the design has evolved.

For instance, the newly-generated relationships and interests of the participants, as a result of the interaction of participants' various rationales, became the new context to which participants themselves would respond. The examples of new networks of participants, group dynamics, the development of new sub-deliberation exercises, new sets of sub-groups, the new involvement of certain institutions and new sets of decisions, were the results of the participants' interactions; and these newly-generated responses re-conditioned the ways in which the participants again interacted with one another. This continuing process therefore kept re-formulating the shape of the programme over time. Through this recursive process, the programme has evolved. The next part of the discussion demonstrates this characteristic with the detailed examples of both cases - GM Dialogue and CoRWM.

The background of the birth of both cases reflects a reflexive process in the level of the national ST system. In both contexts, there were downstream policy directions on the one hand, such as the incumbent government's strong interest in biotechnology in the GM regulation system and nuclear new build in the radioactive waste management regulation system; whilst on the other, there was also strong upstream resistance against those directions from various actors in society. And interestingly both cases had a moratorium status. Moratoria of both cases were prompted by strong resistance from the public, by

their coalition with other stakeholder groups and these moratoria actually brought about the macro-deliberation exercises - GM Dialogue and CoRWM. The incumbent responsible government department, DEFRA (formerly DETR, until 2001), had to respond to the societal demand for a new mode of ST regulation by setting up independent bodies and public engagement practices. The establishment of the independent new bodies of the AEBC and the CoRWM (which here refers to the Committee, which organised the deliberation programme) was the result of this context. Stakeholders (the government, NGOs, institutes etc.) then reacted to this new environment with their roles, stakes and power. In other words, stakeholders reacted and responded to this newly-set up context by attempting to intervene in the deliberation programmes, with direct participation in, or indirect influence upon, the programmes. For example, various policy networks emerged and influenced the discussion within these bodies and programmes.

This was the way by which those stakeholders gave themselves opportunities to have their voices heard in the process of the regulation of technology of GM crops and radioactive waste management. Whether their voices had a real influence on the final decision of each deliberation programme is another story though; both cases show the ways in which those stakeholders' interactions among themselves, and their reactions to the context, constructed the new environment of the regulation system. And this newly-constructed environment again became the new context, in which the stakeholders are situated.

In short, the dynamic interactions of the various actors in the governance system of each technology resulted in the birth of both GM Dialogue and CoRWM (the deliberation programme), as other examples of new institutional bodies like the ABEC and the CoRWM (the Committee, which ran the programme), discourse like new mode of ST governance with public engagement, various policy networks through formal and informal relationships, and so on. These again became new constituents of the regulation system of each technology. In this way, those stakeholders in the governance system re-configured the rules and resources of ST governance by performing and re-setting rationales of their role and the procedure. In other words, it was a reflexive process of the development of each technology system, presenting its nature of recursive endogenous evolution.

Developments in the structures of both programmes also displayed characteristics of a reflexive process – comprising continually emerging reconfigurations in divisions of labour over the evolution of the programmes. Being born from societal pressure for public engagement in regulation, each case of deliberation started with a different role in the ST regulation system. GM Dialogue faced the question of whether the UK should have GM crops on their land and had to review different perspectives on that matter, while CoRWM faced the question of how to deal with the legacy of radioactive waste in the UK and had to find policy options for it. The structure of each programme reflected the different roles and rationales for their divisions of labour. For example, GM Dialogue comprised three strands concerned with reviewing the issues from different perspectives: GM Nation? (public debate), Science Review (an examination of current scientific knowledge), and the Economic Study (economic analysis of costs and benefits). On the other hand, CoRWM set its basis of four phases of the decision-making process to find the options with which to provide the government: Phase 1 - information gathering, identifying a long list of potential options and designing the methods for shortlisting; Phase2 - shortlisting; Phase 3 - assessing the shortlisted options and Phase 4 - formulating recommendations and drafting a report. In addition, three different groups of actors - the Committee, the Public and Stakeholders, and Scientists and Specialists participated in each phase with their different roles.

These formed the initial and overall structure of programmes as formal divisions of labour. These divisions of labour were made by those who were involved in initial designing such as the AEBC and DEFRA officials for GM Dialogue and the Committee for CoRWM. However, each programme had been developed, as were the diverse rationales of participants of the programmes, and the participants competed with each other with their respective rationales. Therefore, further development of programmes was the evolutionary process of a series of newly-emerging divisions of labour, such as development of additional groups or sub-groups of actors and nested smaller deliberation exercises out of the competition between participants' diverse rationales. For instance, participants were invited with their initial given role in the process; as an example, the main groups of actors in CoRWM were composed of different knowledge holder groups, like the category of the experts for overseeing the programme; the public and stakeholders; and scientists and specialists in the sequential decision-making process. However, participants played their

part far beyond this given, formally-codified division of labour. Along with this kind of explicit, given rationale for the divisions of labour, different understandings of the category for divisions of labour also existed among different participants. The different rationales had gone through the process of participants' dynamic interactions and then certain rationales had emerged for certain divisions of labour. Therefore, the evolutionary development of each programme took place through reflexive interactions among participant's different rationales over the divisions of labour.

The overall official aim of GM Dialogue was to review the incumbent knowledge on commercialisation of GM crops from different perspectives. It started with the initial design of three strands of GM Nation?, Science Review and the Economic Study. Each strand had its sub-deliberation exercises. These varied in their purpose and method. GM Nation? for example, had the experts' kind of committee meetings of the Steering Board, the Foundation Workshops with recruited citizens, three-tiered public meetings, and focus group meetings, named *Narrow-but-Deep*. These nested exercises were developed by the Steering board and COI as a result of their discussions. Almost simultaneously, the other two strands - Science Review and the Economic Study - had developed their own nested deliberation exercises. In addition to the development of sub-deliberations through interactions among designers, there were also attempts to intervene and change the given rationales of these nested deliberations from participants themselves. Therefore, development of these nested deliberations of GM Dialogue has been made through various interactions between the designers' and the participants' rationales, as well as interactions between divergent rationales of the designers. As the programme developed, therefore, there was a complicated scene behind these explicitly-performed and emerging divisions of labour.

CoRWM, on the other hand, developed a design of a staged decision-making process; it was composed of four main sequential phases. Across these divided phases, there were three main groups of actors (the Committee, the Public and Stakeholders, and Scientists and Specialists), who participated in all phases with different roles and influences at each stage. This initial design was made by the Committee following consultation with specialists. The ensuing detailed design of the divisions of labour within this framework was developed by interactions of the Committee members with specialists and stakeholders outside, as well as inside, the programme. Within each stage of the sequential structure, the

division of labour were also concurrently taking place.

The programme's evolution comprised continuous change (or addition/removal) of emerged, and then settled, incumbent divisions, with newly-emerging divisions. These were the results of the attempts of participants to realise their own rationales and sometimes to alter the initial given framework so as to apply it to identifying their roles and positions within the process. This kind of endogenous development of divisions of labour and thus the emerging characteristic of the structure, were acknowledged and encouraged among participants. The development of new divisions of labour was through the contesting of participants' divergent rationales over the divisions of labour in different groups and at different stages. In this way, the development of the programme took place through a series of the recognition (or arising) of a newly-formed division of labour.

6.1.2 Outcome Dimension of Reflexivity: Multiple Rationales over Divisions of Labour

The outcome dimension of reflexivity explains why there were so many divergent rationales over the division of labour among different participants. A wide range of participants in macro-deliberation had such differing ideas over the issues (both procedural and substantive issues) and interacted with one another, which generated complex, diverse relationships and stakes among them. This generation of new relationships and stakes resulted in setting a new condition where the participants produced new sets of responses (relationships, stakes and rationales for divisions of labour). This continuing recursive process resulted in the generation of multiple rationales over divisions of labour. The following paragraphs bring detailed examples for this argument from both cases of GM Dialogue and CoRWM.

The huge scale and scope of both macro-deliberation programmes necessarily brought a high degree of plurality and diversity in the types of participants' roles, identities, interests, knowledge, values and relationships, and of course, their ideas over the programmes' divisions of labour. Subsequently, through the reflexive process, participants' rationales for the divisions of labour were multiplied. For example, certain forms of divisions of labour were made through interactions of these different rationales, and after that, there were different interpretations and responses regarding these formed divisions of labour. In

addition, due to participants' divergent ontologies, there was a significant degree of ambiguity in the boundaries of 'labour' in programmes. In other words, participants projected different frame to define others' identities in specific contexts, their performing roles in the process, their relationships with one another, and substantive issues for them to discuss. These participants' subjective boundaries of the issues (both procedural and substantive issues) formed the ways in which participants saw the programmes' divisions of labour. These subjective boundaries increased multiplicity and complexity in rationales over the programmes' divisions of labour. Therefore, the reflexive process, being associated with participants' divergent ontologies, produced multiple rationales for the division of labour in each programme of GM Dialogue and CoRWM.

There are constituent agents within the ST system, such as organisational institutions, the market, technology trajectories, knowledge production, the policy-making process, discourse, etc. For example, there are various governmental departments and institutions, non-governmental institutions, NGOs, industries, individual citizens, the media and various interest groups in the system of GM regulation and radioactive waste management regulation in the UK. These agents interact with one another within the system. They also have multiple layers in their own interior structure. For example, there are smaller constituent elements, such as various departments, groups, individuals, policies etc. within each agent. These nested smaller elements also interact with each other. These multi-layered constituents of agents in the ST system go through the reflexive process within, and across, different layers.

Likewise, GM Dialogue and CoRWM were one of the events for policy-making in each regulation system with many other agents, with whom GM Dialogue and CoRWM interacted. Furthermore, within each programme, there were various constituent parts in various forms, such as groups, smaller deliberation exercises, or stages; and individuals were the components of each of those groups, exercises and stages, interacting with one another. In other words, various divisions of labour of the programme reflected these divergent layers.

Boundaries determining these layers were sometimes explicit, objective and agreeable; but sometimes, implicit, subjective and disputable. The relatively more objective, explicit boundaries of the division of labour, which were more or less agreed upon amongst

stakeholders, became the rationales for setting the initial divisions of labour. There were for example, three strands of GM Dialogue, and four decision-making phases and three groups of actors within CoRWM. These explicit boundaries for the divisions of labour were followed by anticipated roles attached to these categories. For example, expert groups were composed/or divided up, such as 'participatory process experts', 'environmental scientists' and the stakeholder groups were divided and entitled with 'specific interest associations', 'local residents', 'NGOs', etc. The titles of the groups, to which they belonged, also implied more or less their given roles in the programme. The examples are the Steering board of GM Nation? strand, the Panel of Science Review , Expert Advisory Groups of the Economic Study for GM Dialogue, and the Committee, Public and Stakeholders, Scientists and Specialists for CoRWM.

On the other hand, the rather subjective, implicit boundaries also shaped the division of labour. These tacit, disputable boundaries often appeared to be contrasting, and competed with one another for determining emerging, endogenous, bottom-up divisions of labour. Taking the example of CoRWM, the different understandings of Committee members and the stakeholders outside over the role of scientific knowledge and the public in radioactive waste management policy- making process caused conflicts and controversy amongst them. Committee members in particular were the experts who had been working in this specific area for some time, but they still had such contrasting views on this issue. These different understandings of the issues brought about the departure of two of its members, and addition of some new roles within the programme such as the Quality Assurance group. There also similar discrepancy emerged in GM Dialogue. Different opinions about defining legitimate public for public meetings on GM policy were contested and generated different forms of deliberation exercises such as three different tiers of open public meetings and focused discussion - Narrow-but-Deep. Narrow-but-Deep was a kind of experimental deliberation practice in order to check whether there would be other kind of public, so called 'silent majority' who did not have specific interests in the issues. Likewise, these subjective and contested boundaries for 'labour' of deliberation from different participants also determined certain divisions of labour of the programmes.

Since an agent is a constitution of many elements, for example, the government is not an homogenous subject, but consists of various departments, individuals, rules etc. and their respective characteristics. The same applies to even a single person. Therefore, participants

brought multiple attributes into the process and they projected different categories with these different attributes to understand one another and to divide the 'labour'. Therefore, even single person(s) did not participate in the programme either with a single identity or a solitary role. Instead, such a person brought multiple identities and roles into the process with his/her multiple attributes of knowledges, identities, convictions and networks. These multiple attributes of individual persons, and the multiple components of the groups (or organisations), such as various departments and people in the groups, and their respective perspectives, were the elements constructing various rationales for the divisions of labour. For example, GM policy had many different aspects, like ecology, economy, health, EU regulations etc.; and radioactive waste management had various aspects to be considered, like energy, climate change, local environment, equity between generations etc. Participants projected different categories with different aspects to recognise or define procedural and substantive issues. In other words, participants displayed divergent ontological boundaries over the issues and shaped their respective rationales for divisions of labour, which were contested by one another.

Therefore, significant discrepancy emerged between participants' perceptions concerning each other's roles, which generated disputes and affected group dynamics. For example, participants within the deliberation exercises in GM Dialogue and CoRWM applied different identities to, and anticipated different roles of, the same person according to their own understanding and for their own interests. A social scientist within Science Review panel (of GM Dialogue), found contrasting views between what he thought to be his role and what other fellow natural scientists expected him to play in the panel. Another example was the differently projected identity to the same person by the different fellow members as 'industry person' or 'pure academic' in GM Dialogue. Also other instance was shown in the case of different roles attached to a single local councillor in CoRWM's case. He considered himself a legitimate representative of their site, but he was seen as one of local stakeholders by a local NGO group. Such as these examples, a single person was seen differently from either a professional expert, someone's friend, or a sponsor of their funding, and their role in the process were anticipated differently as either a mediator, a delegator, or an organiser, etc. by different people.

In addition to these different understandings of each other's roles within the group at the individual level, there were also different understandings over the collective role of the

groups of actors within the programme. For instance, an interviewee from Corr Willbourn Research and Development, who designed and ran two deliberation exercises within GM Nation? criticised the evaluation team of their direct intervention during the process. He argued that their intervention could have influenced the process, which was not what their role should have been in the process of GM Nation?. The organising groups, stakeholders' groups, sponsors, evaluation groups, etc. often faced contrasting views on each other group's collective roles.

These examples of participants' different understandings of 'labour' constructed their respective informal, tacit rationales for divisions of labour of the programmes; and created various responses, such as attempts to intervene in the process, whether negotiating, compromising, segmenting, aligning or networking, which accordingly, shaped various divisions of labour.

Despite the participants' contrasting views on divisions of labour, the decisions were made to be implemented anyway, and were presented in various deliberation exercises within each programme. Whatever it was, with the winning rationale at a certain stage and, thus formed, division of labour, there were also different interpretations on this formed divisions of labour. Participants continued producing their various rationales for the divisions of labour through their reflexive interactions with one another. Therefore, diverse rationales over the divisions of labour of GM Dialogue and CoRWM were multiplied.

6.2 Reflexivity, and Re-thinking the Notion of Deliberative Democracy

Recognition of the implications of reflexivity in the divisions of labour in real-world macro-deliberation then draws our attention to the notion of deliberative democracy. The division of labour discussed in macro-deliberative democracy theory was a suggestion for maximising two essential qualities – inclusiveness and deliberativeness. However, due to the quality of reflexivity which was not fully, explicitly considered by such process, the ways in which the divisions of labour were played out in real macro-deliberation, were much more complex and contrasting than those characterised in theory. Accordingly, recognition of reflexivity also suggested new aspects of the two qualities of inclusiveness and deliberativeness of deliberative democracy. This part of the discussion displays the ways in which these two qualities appeared in real-world macro-deliberation exercises.

6.2.1 Inclusion through Endogenous 'Fermentation' Process

Inclusiveness is one of the primary qualities of deliberative democracy theory in relation to incorporating a wide spectrum of the public's values, interests, knowledges and perspectives into deliberations on policy. The idea of a division of labour is employed in the attempt to institutionalise this concept by those who suggest a macro-approach to deliberative democracy. Given the inherent tension of wide inclusion and deep deliberation, the division of labour sounded useful for maximising both qualities, since it might have been able to widen the boundary of participation without compromising the depth of deliberation. This was an instrumentalist's approach to inclusion by the provision of optimal designs of the divisions of labour to allocate people to those devised divisions to deliberate upon issues. However, my empirical findings suggested a rather different possible way to this conventional, instrumentalist's approach to inclusion of various values, interests, knowledges and perspectives in to the process.

Firstly, due to diverse rationales for the divisions of labour, there remained a representativeness issue in question among the stakeholders. Secondly, after developing various divisions of labour aiming for inclusion of many values, interests, knowledges and perspectives to be discussed in various methods, there were, in fact, few efforts to integrate the results of the divided labours into the decision-making process. However, instead of the top-down efforts to integrate the divided labours into the decision-making process, there were bottom-up efforts to engage with other parts of the process by the participants. They, themselves, brought many other issues to the discussion table on top of the given issues from the designers or organisers of the meetings, and they connected themselves to other groups of actors inside and outside of the programmes in order to deliver their message and to be kept informed. During the process, the participants inter- reflected on each other by challenging, contesting or competing with one another regarding their respective rationales (including the given ones from the designer). This inclusion process was rather endogenous, complex, non-static, and intertwined, which I would call a 'fermentation' process. In such a kind of fermentation process, diverse values, interests, knowledges, perspectives and rationales were intermingled. These were quite the opposite characteristics to the instrumentalist's approach to inclusion. That is an attempt to provide certain protocols of the divisions of labour, which is a mechanical, top-down, static way of aggregating plural values, interests, knowledges and perspectives.

GM Dialogue and CoRWM represented an unprecedentedly large scale of public engagement in the UK ST regulation history. A huge number of people became involved and a wide range of issues were discussed by them. Participants had diverse rationales over the divisions of labour, and they interacted with the rationales of others, including the given ones. Through a reflexive process, a significant degree of endogenous divisions of labour took place, and the process was moving on and developing. Therefore, a top-down approach with a structured design to embrace such diversity in rationales over the divisions of labour, and such changes over time, might not have been effective. Actually, there was little attempt in the designing process to integrate all the divided labours into the process. Even in the case of GM Dialogue, the opposite attempt was suspected: the up-front proclaimed rationale for the three-strand design by the Government - the inclusion of different perspectives - was suspected as possibly the Government's intention for preventing the different perspectives from providing an integrated answer to the Government.

Instead of mechanical downstream efforts to collect the entire list of participants' divergent meanings, and screen them out for decision-making, my empirical analysis suggests a new way of inclusion. It was the reflexive upstream approach through which participants engaged themselves with one another. In this way, participants' divergent representations (values, interests, knowledges, identities, roles, relationships, networks etc.) cross-reflected and influenced one another through a kind of endogenous, murky and even possibly smelly (acknowledging and embracing sometimes unpleasant political part) fermentation process.

6.2.1.1 Representativeness

Defining and inviting certain groups of participants to partake in a public engagement exercise for ST regulation are associated with the representativeness issue of social actors in the ST regulation system. Namely, it is the question who should participate with what kind of role? There were widely divergent views on this and serious discussions about the definition of 'the public' for designing GM Dialogue and CoRWM took place. However, contrasting views still remained among stakeholders.

Many voluntary participants in the public meetings of GM Dialogue and CoRWM were often from NGOs, or those who were 'self-selected' to come and offer opinions on the issues. There were different views on whether these people could represent the general public or not. This discussion relates to the representative issue of public deliberation. In other words, it is the matter of defining 'the legitimate public' and 'the legitimate procedure' for the policy-making process. Voluntary participation does not rely solely on participants' willingness to participate, but the procedural conditions are decisive elements for them to make it, since participation requires resources for attending meetings and deliberating upon the issues. Therefore, voluntary participation is also associated with the issue of power. Given this situation of co-existing contrasting definitions of 'the public and stakeholders' among participants, it would be meaningless to argue that public deliberation serves the quality of inclusiveness for deliberative democracy. Likewise, there were widely different understandings over the roles of experts and science in such deliberation exercises for technological risk issues (GM crops and radioactive waste management) among participants.

6.2.1.2 Efforts at Designing Integration of Divided Labours

Instances of deliberation within GM Dialogue and CoRWM varied in their size, location, format and authority. In UK science policy, this employment of widely varied means and rationales for the divisions of labour was novel to these public engagement exercises. From the view of macro deliberation theory it is commendable that such attempts should be made to reach out to such diverse voices. However, given huge investment in design, organisation and participation itself, there was surprisingly little effort to integrate these distinct strands and extract thus realise the benefits of such investment.

A wide public deliberation was the primary principle centred in their whole programme of GM Dialogue and CoRWM. Accordingly, various methods of the divisions of labour were exercised at public debate events, for example, diverse sub-deliberation activities of GM Nation?, in GM Dialogue, and of the PSE (Public and Stakeholders Engagement) within CoRWM. As well as these methods of direct attendance at the physical meetings, online communication was highly advertised in order to engage many people. Both cases strongly promoted active use of the Internet for the process. Most of the meetings' minutes and the official reports of GM Dialogue and CoRWM were put on websites to receive feedback. Comparing these efforts with the rationale of maximising the level of inclusiveness, there

were few designing and organising efforts made to integrate the results of variously designed deliberation exercises. It seemed that designers and organisers were satisfied with the fact that the programmes came across to a huge number of people, up and down the country, and gave them a chance to 'have their say'.

This lack of integration efforts at designing integration of divided labours does not correspond to the primary principle of both programmes GM Dialogue and CoRWM, namely 'the engagement of wider public (and stakeholders)'. The design of three strands of GM Dialogue, for example, which was claimed to include diverse perspectives, turned out to have served the opposite role of preventing an integrated but undesirable answer to the Government.

6.2.1.3 Endogenous Integration

In contrast to this relative lack of formal, codified, top-down efforts to integrate the divided labours into the process, my analysis shows, on the other hand, a variety of ways in which participants themselves made bottom-up efforts to do so. This evidence suggests a different approach to think about inclusion of widely-divided labours into a deliberation process.

Participants tried to exert their influence, not only within their event, but also across different deliberation exercises, where they did not directly belong. In doing so, they got to know the events in other parts of the programme and they also took the issues of their event to other parts of the programme. Within the programme, in particular, people had cross membership and roles over different groups and stages, and delivered their message from one to another. In GM Dialogue for example, despite the absence of downstream effort to integrate three distinct strands, many participants of each strand themselves tried to be engaged with other strands both in official and personal way. In the case of CoRWM also, instead of evidence of explicit, systematic aggregation of the outputs of variously devised PSE events, there was a rather implicit, discursive way of inter-linking participants of those events. Committee members devoted themselves to attending various PSE events. The role of them in the events was not only providing information but also more importantly building up close relationships with stakeholders by showing the Committee was listening to them. Participants' various relationships with one another in formal and

informal ways, and individually and collectively, enabled participants to be connected to one another. Various networks were important channels amongst participants within the programme, as well as between the inside and other stakeholders outside for delivering their messages in both cases of GM Dialogue and CoRWM. Networks in this light, served the crucial means for the actors, who were located in divided labours to be inter-linked with each other. Through these rather discursive and endogenous interactions, different parts of the programme were inter-linked and inter-fed with one another.

In addition, the issues in the discussions themselves were entangled with each other. Therefore, despite various designs of deliberation exercises for different issues, participants often re-introduced all sorts of issues into their discussion. Taking the example of GM Dialogue, it was recognised from the beginning stage, when the results of the Foundation Workshops were released, that the public's issues were covering a wide range of issues. In the public meetings, although the three topics were given at the beginning, people actually discussed almost everything. They discussed such fundamental questions as, 'Do we need GM crops?' even before thinking about commercialisation. It was not because they did not follow the guidelines, but because the issues were all inter-related. In particular, for the case of regulation for technological risks, policy is not just a technical matter, but associated with social and ethical values. Artificial and mechanical categorisation and division of the issues for discussion may not be the best way, nor be easy.

Therefore, despite the efforts for mechanical categorisation and the division of issues for discussion, they emerged together as mixed and interlinked in real deliberation exercises. Barbagallo and Nelson (2005), who worked on organising Open Meetings as part of the Science Review in GM Dialogue addressed this issue. They (the British Association for the Advancement of Science) had argued that science and other matters should not be separated for discussion, but this argument had not been heeded at that time (ibid.). The leader of the SU team of the Economic Study in GM Dialogue also pointed this out. They found the issues that were separated into three strands were actually 'hugely linked-up' in their discussion while they were looking at the costs and the benefits of commercialisation of GM crops in the UK.

It was clear that pre-determined, structured divisions of labour did not last entirely, as they were initially meant to, throughout the programme. The given, codified rationales for initial

certain types of divisions of labour were not thoroughly kept by the participants during the deliberation. Instead, the rationales for divisions were challenged, contested and changed. Therefore, they were added to, converged, diverged, displaced or replaced by new ones, which entailed a constant re-framing process of both the procedure and the contents of the programme as time passed. Through this reflexive process, participants' representations (e.g. relationships and meanings) were kind of fermented into the decision-making process. In other words, this was an inclusion process by a clear upstream effort from participants endogenously to be cross-linked and cross-fed with other parts of the programme.

6.2.2 Deliberation is 'Discursive Relations' rather than Rational Reasoning

As the ways in which inclusion was played out were contingent on the reflexive process of the divisions of labour, the other property, i.e. deliberation was also influenced by the quality of reflexivity. Deliberation appeared as a complex mix of various forms of material, social and political relations of participants, rather than simply that characterised as an 'argumentative form of reasoning' in theory. My empirical analysis of two macro risk deliberations in practice strongly supports the criticism on the current concept of deliberativeness in established deliberative democracy theory, since the reality is too far removed from this narrowly defined property of deliberation. In particular, for the context of deliberation on technological risks at a relatively macro level in terms of its scope and scale, the current notion of deliberativeness is not applicable to understand the deliberation process. My empirical findings depict a radically different picture of deliberativeness to that of the theory.

A wide range of different participants brought their diverse attributes, such as knowledges, identities, convictions and networks into the deliberation process. These participants' attributes played their part as internal elements of the programme. Furthermore, there were the external elements of the programme, such as political discourse, governmental and non-governmental institutions and policy networks, which influenced their power in the deliberation process. Dynamic reflections between these internal and external elements shaped the deliberation process. During these reflections of the elements of the programme, deliberation appeared as a form of various 'discursive relations' among participants. Instead of merely communicative activity such as rational argumentation or reasoning, participants had been through various forms of material, social and political

relations, such as segmenting, aligning, competing, negotiating and networking.

The phrase 'discursive relations' has been used by a number of sources. Most of these relate in some way to the work of Michel Foucault (e.g. *The Archaeology of knowledge*, 1972) and its commentaries in various disciplines (e.g. political economy, feminism, linguistics etc.). Here, the term 'discursive' is employed in the second adjectival form given as follows in the Oxford English Dictionary definition: "of or relating to discourse or modes of discourse…" (See footnote 61 below). 'Discursive relations' therefore refers to the various kinds of relation that may in some sense be seen to be associated with discourse.

In particular, this phrase is used in Nancy Fraser's work on Habermas' Public Sphere (Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy, 1990). Although she refers to the concept only once, her argument is telling for the present discussion. For Fraser, "[t]he public sphere in Habermas's sense is also conceptually distinct from the official economy; it is not an arena of market relations but rather one of discursive relations, a theater for debating and deliberating rather than for buying and selling. Thus, this concept of the public sphere permits us to keep in view the distinctions between state apparatuses, economic markets, and democratic associations, distinctions that are essential to democratic theory." (Fraser 1990, p. 57)

Given my own understanding of reflexivity developed in this thesis, however, this term 'discursive relations' also carries a helpful further overtone. Another distinct adjectival meaning listed by the Oxford English Dictionary is: "1. digressing from subject to subject … fluent and expansive rather than formulaic or abbreviated"[61]. In addition to specifying the association with discourse, then, this reference to informal expansive fluency nicely invokes the particular styles of relation that I envisage as most relevant. Among all those kinds of relation that are variously associated with discourse, I refer here to those that most

[61] Available from:

(http://oxforddictionaries.com/us/definition/american_english/discursive?q=discursive)

> 1 digressing from subject to subject: *students often write dull, secondhand, discursive prose*
> (of a style of speech or writing) fluent and expansive rather than formulaic or abbreviated: *the short story is concentrated, whereas the novel is discursive*
> 2 of or relating to discourse or modes of discourse: *the attempt to transform utterances from one discursive context to another*
> 3 *Philosophy*, *archaic* proceeding by argument or reasoning rather than by intuition

display this (already much-mentioned) quality of 'dynamism', so central to my understanding of reflexivity.

6.2.2.1 Reflections of Multiple Elements of the Macro-Deliberation Process

Inter-reflections of internal elements within the programme

Participants' plural knowledges, multiple identities, contrasting convictions, and various relationships were the elements, which influenced the deliberation process within the programme. Inter-reflections amongst these internal elements generated new sets of interests, knowledges, identities, roles and relationships of the participants, which shaped the new context of their deliberation.

A different type of knowledge was one of the most important anticipated attributes of the participants in the deliberation process. In particular, for ST regulation context, like GM Dialogue and CoRWM, knowledge was one of the primary, explicit qualifications for participation. There were also some other attributes, which were informal and not explicitly presented in their official title or role, such as identities, convictions and personal networks. Participants performed their role(s) with their explicit attributes or official qualifications, such as 'bio-chemist', 'environmentalist', or 'participatory process experts' with their specific knowledge. As well as these explicitly presented qualifications, their informal attributes were materialised in, and thus also influenced, the deliberation significantly by forming group dynamics, specific relationships, new identities, interests, bias, and so on. Therefore, there were many more elements influencing deliberation than the explicitly seen attributes in such things as titles and roles, with which the participants were invited. The informal, implicit attributes shaped deliberation behind the publicly-acceptable reasoning with explicit rationales. Therefore, some explicit attributes, such as different types of knowledge, were set at the front as flagged attributes and contributions from participants. As well as the explicit attributes, there were many other attributes influencing the deliberation process, although they were not claimed explicitly in public.

Taking the example of participants' identities attached to their affiliation and areas, they brought with them specific stereotypes, bias and aspirations. For instance, 'pure scientists', 'industry guy', 'government man' and 'NGO person' were the informal titles attached to

the participants by others. These informal titles reflected their anticipated roles, one to another. Confronting but implicit structures amongst participants, such as anti- and pro-GM (or anti- and pro-nuclear) also determined informal divisions. In the case of convictions underlying the participants' views, they sometimes appeared to represent an intractable discrepancy amongst participants and, sometimes, as a reason for alliance. This fundamental difference was not reconciled through deliberation, but remained in disputes and influenced group dynamics. Participants' informal relationships with their colleagues and friends were also critically influential to the deliberation process. Participants passed on their own and others' opinions across different deliberation exercises inside the programme, as well as with those outside of the programme, through informal networks. Therefore, although the messages were influential enough to inform the process, sometimes the source and the way the messages were constructed and delivered into the process, were not transparent. In other words, personal networks transferred various ideas to be examined, but also delivered publicly non-arguable values attached to the ideas, such as prejudice, personal interest, etc.

These internal elements (both explicit and implicit) interacted with one another within the programme. Participants' plural knowledges, identities, convictions and networks influenced each other by competing with, changing and shaping one another. Through these interactions, they generated new sets of elements, such as new identities, relationships, disputes, decisions, interests, roles etc., and these constituted the deliberation process.

Inter-reflections between internal elements and external elements

External elements outside the programme, such as political discourse, governmental and non-governmental institutions and policy networks, interacted with the internal elements of the programme. The programme had been developed through the continuing process of responding to, as well as being intervened by, these external elements.

The context in which the process was taking place was important regarding its influence on the procedure: for example, existing political discourses and various political events, like BSE and the Iraq war for GM Dialogue, and nuclear energy policy and climate change for CoRWM; the political and geographical location of the UK in its international relationship; and various institutions in the domestic regulatory system, and, of course, the Government. All of these were elements outside the programme but still exerted significant influence on

the deliberation process.

Participants, individually or collectively, responded to the environment in which the deliberation was situated. While they interacted with elements outside of the programme, they produced new understandings, relationships, knowledges, certain groups etc. For example, they used certain political discourses for their argumentation; they made alterations in their decisions as responses to outside criticism; and they made or used various networks to exert their power. These newly-produced responses constituted a new context for them, to which, again, the participants had to respond. While they responded to the contextual elements outside and interacted with other participants inside, participants formed and experienced various relations.

6.2.2.2 Various Forms of Relations

Deliberation in theory should only be argumentative form of public reasoning excluding political power, personal interest, or strategic manipulation internally or from outside. However, the deliberation process did not take place solely around the table with rational dialogue, and public reasons. Instead, people built up, and went through, material, social, political relations with their knowledges, interests, relationships, identities, roles, expectations, aspirations etc. during the course of the programme, in order to deliver their message. In other words, participants turned those various elements of the programme to account in their interactions and relationships with one another.

For example, diversity in participants' knowledges, backgrounds, convictions and interests segmented the group into several smaller gatherings; as well as participants allied together with others who shared their interests and views to make their voices louder. This emergence of smaller, nested groups resulted in informal and formal divisions of labour in the programme. In order to realise their interest, participants also competed and negotiated with one another in their power relationships. They fought for them, as well as sometimes being compromised by the power structure. It was not an argumentation process with publicly-defendable reasons alone; instead, participants strategically developed and employed their rationales and experienced a lot of power struggles, in the rationalisation of their argumentations. Networking with people, inside and outside, for example, was a critical part of deliberation as a resource for participants' power to influence the

deliberation. Therefore, the decision made was not only the result of an argumentative reasoning process. Instead, the decisions and the process were shaped through participants' various relations while they were deploying and materialising various elements of the programme to be influential in such political and social interactions and relationships with one another in the process.

In short, the quality of reflexivity, in this context of real-world macro deliberation, displayed a much more complex and contrasting picture of the two fundamental qualities of deliberative democracy to that articulated in deliberative democracy theory. In reality, 'inclusion' took place in a kind of bottom-up fashion, by participants' engaging themselves with one another, rather than according to premeditated design. In this way, participants' divergent meanings were cross-reflected and influenced one with another, not through theoretically-envisaged top-down aggregation, but through a kind of endogenous process of 'fermentation'. In addition, deliberation in practice emerges as a much more complex and dynamic scene than a mere communicative activity of public reasoning. It comprises various forms of material, social and political relations of participants – what this thesis calls 'discursive relations'.

6.3 Relevance of Two Deliberative Exercise Cases to Decision Making for Science and Technology Governance

This section draws implications from my findings on the roles that the two case study, practical macro-deliberative exercises played in terms of decision making in UK ST governance.

Although the two cases analysed – GM Dialogue and CoRWM – were chosen as examples of macro-level deliberation in UK ST policy-making, they were each concerned with different policy issues. GM Dialogue addressed the commercialisation of GM crops, while CoRWM was set up to produce policy options for the management of the legacy of nuclear waste. While they both dealt with technological risk as it related to governance, the nature of each risk was rather different. GM Dialogue was mandated to review the social, ecological, economic, and environmental harm and benefit respectively of commercial farming GM crops on UK land. On the other hand, CoRWM needed to find the best solution to the management of existing radioactive waste. This difference in the purpose

of deliberative practice brought a different structure to each programme (as detailed in chapters 4 and 5). GM Dialogue was divided into three strands respectively named GM Nation? (a public debate), Science Review (a review of current scientific knowledge by scientists), and Economic Study (an economic cost and benefit analysis). Conversely, CoRWM consisted of four stages of decision making facilitated by three main groups of actors – the Committee, Scientists and Specialists, and Public and Stakeholders.

The influence of the recommendations of these programmes on policy making in each area also differed. The results of GM Dialogue did not give the green light to the government. Therefore, for Margaret Beckett, Secretary of State for DEFRA, its outcome was perhaps not very satisfactory, as she was highly supportive of GM technology and might have wanted to push its development forward. After GM Dialogue was completed, the House of Commons Select Committee on Environmental Food and Rural Affairs Eighteenth Report (November 2003)[62] urged the government to make its position clear on how to incorporate the results of public debate in its GM technology policy decisions:

> "We endorse the view that it is critically important that the holding of the debate is seen to have an influence on the decisions subsequently made by Government.We recommend that in its response to the report of the public debate (and to this report) the Government set out exactly how it will take into account the outcomes of the debate in its decision-making about GM technology. In particular it should set out precisely the legal framework under which decisions about GM will be taken (Paragraph 8. Taking account of the debate, in Conclusions and Recommendations)"

However, what the government stated in its response to the final report of GM Nation?, 'The GM Public Debate: Lessons learned from the process', in March 2004 was not at all clear on this issue. Rather, it considered only the methodological aspects of public debate, and the sceptical view and uneasiness of the public around GM technology were not taken into account in the policy it implemented. GeneWatch UK (2004) argues that while the results of the other two strands of GM Dialogue – Science Review and the Economic Study – and that of the other research project, the FSEs in particular, were influential in government's approach to GM technology, the results of GM Nation? were not clearly reflected in that at all.

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[62] House of Commons Environment, Food and Rural Affairs Committee (2003) *Conduct of the GM Public Debate,* Eighteenth Report of Session 02–03.

The House of Commons Select Committee on Environmental Food and Rural Affairs Eighteenth Report (November 2003) addresses its suspicion that if the government actually intended to listen to diverse perspectives from the public through GM Nation?:

> "The public debate was an imaginative initiative, but nonetheless represents an opportunity missed. Although other reasons for its failure can be found, including, no doubt, a degree of public apathy, two principal problems resulted from Government decisions: the tight deadline set for completion of the process, which meant that relevant data (the reports from the Strategy Unit and the GM Science Review Panel, and the outcome of the FSEs) was not available, and the paltry resources allocated to the debate. The Government, in its response to our report, must allay the suspicion that, having agreed to undertake a public debate, it did as little as it could to make it work. (Paragraph10. Summary, in Conclusions and Recommendations)"

As discussed previously, there was suspicion of government intention with regard to its rationale for three different strands to GM Dialogue, which was at official level, for reviewing different perspectives and integrating them into policy making. It was argued that the government did not actually anticipate that all three strands together would produce the unanimous recommendation, which it may not desire. The absence of a single overseeing committee presiding over all three strands corroborates this position.

CoRWM was rather different in terms of its influence on policy making. Its recommendations were expressly welcomed by the government. The following quotation is from a government statement responding to the report and recommendations of CoRWM (2006):

> "Accordingly Government welcomes CoRWM's report and believes it provides a sound basis for moving forward. Most recommendations can be acted on immediately; others require us to undertake more work.
> In particular, Government accepts that geological disposal coupled with safe and secure interim storage is the way forward for the long term management of the UK's higher activity wastes… (UK Government and the devolved Administrations 2006, p. 3)"

CoRWM made 15 recommendations to the government. Although the Committee emphasised geological disposal as a long-term management solution for radioactive waste, the set of recommendations was presented as a package that incorporated other issues such as the importance of volunteerism and interim storage. This integrated perspective was stressed by the Committee.

However, the government's apparent immediate welcome, but which concentrated on geological disposal alone for a solution to the radioactive waste problem and the rush to implement it in order to move on, was criticised by the Committee members themselves. The following quotation is from a letter[63] that Pete Wilkinson, Committee member wrote to Hilary Benn, Secretary of State for DEFRA, on 8 October 2007:

> "Instead of taking the CoRWM recommendations as a package and initiating a full programme involving research, storage review and announcing how it will go about implementing the monitoring of alternatives to disposal, Government has selected what it sees as the solution offered by CoRWM and, to the exclusion of everything else and ultimately at the potential expense of the MRWS programme, is pursuing a narrow programme of implementing disposal. This is an unsustainable response and will do little to enhance the level of public confidence which CoRWM painstakingly developed over three years."

This attitude of the government supports the suspicion raised in this thesis that its strategic purpose was to use CoRWM as a springboard for re-introduction of nuclear new build in the UK. According to the remit of CoRWM, its priority task was to provide policy options for managing legacy nuclear wastes, and Committee members were so sensitive to this issue that they clearly stated that their recommendations should be considered only for the legacy radioactive wastes only. However, after CoRWM had provided an answer to the question of managing the problem by means of a legitimate decision making process, the government attempted to exploit this legitimacy to push its nuclear policy forward.

GM Dialogue and CoRWM are both examples of macro deliberation as each according to its own regulatory system comprised numerous micro deliberations in the form of division of labour; although, as discussed above, each played a different role in the governance of the technology it addressed. On the other hand, in the broader context of UK ST governance, they can each be regarded as individual examples of multiple public deliberations that dealt with risk policy issues and contributed to the deliberative turn in ST governance.

As discussed in the section on different ontologies on the division of labour in the theory chapter, scholars have differing views on the roles and forms of public deliberation in society with regard to institutions, methods of participation, and the decision-making spheres applicable to the public and the scientific community respectively. Moreover,

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[63] A letter sent by Pete Wilkinson, a member of CoRWM, to the Secretary of State in October 2007

discussions on different ontologies draw different boundaries of subject, which lead to multiple layers of the ST system. In the sense of the possible existence of such different boundaries in the reflexive process due to divergent ontologies, GM Dialogue and CoRWM are examples of sub–deliberations within the system of UK ST governance, especially considering that the timing of these two deliberation exercises was within the six-year term of the Blair Government.

GM Dialogue and CoRWM played an experimental role in macro deliberation on risk policy in terms of addressing wider issues and participation in nationwide public debate. In this sense, both programmes were meaningful. In spite of the facts that no clear policy influence emerged from the GM Nation?(Wilsdon and Willis 2004; GeneWatch UK 2004; Grove-White 2006), there were shortcomings in the procedure, and suspicions abounded around the strategic purpose of exploiting such public deliberation for specific government policy orientation, there were significant outcomes in terms of innovative, symbolic and social learning practice, and the attempt to implement macro-level public deliberation in the interests of UK ST governance.

CHAPTER 7

CONCLUSION

This final chapter synthesises the key findings of the thesis discussed in the previous chapter and provides a definitive answer to the overarching research question:

What are the implications of reflexivity in the understanding of the division of labour in macro risk deliberation exercises?

7.1 Implications of Reflexivity in Understanding the Division of Labour in Macro Risk Deliberations

The first contribution of this thesis is in addressing the significant degree and role of reflexivity in macro risk deliberation, which has not been fully recognised in macro-deliberative democracy theory. Accordingly, although macro approaches to deliberative democracy suggest the concept of division of labour in order to maximise both inclusiveness and deliberativeness, they do not fully account for how this mechanism might operate in practice, overcoming the paradox of plurality[64] in such a treatment of division of labour.

The results of my examination of two practical macro risk deliberation exercises fill this gap in the theory, addressing the role of reflexivity in enabling division of labour to work in such an approach. It was found that it was reflexivity that enabled division of labour to achieve both defining qualities of deliberative decision making. However, the way in which macro deliberation operated – in other words, how division of labour worked for achieving deliberativeness and inclusiveness – proved to differ from that assumed in deliberative democracy theory. Due to reflexivity, the role of which has not hitherto been fully recognised in macro-deliberative theory, the way inclusion and deliberation played out through division of labour contrasted to that characterised in the theory. Addressing such a nexus of inclusion, deliberation and reflexivity in deliberative democracy is the second contribution of this thesis.

[64] This concept is discussed in detail on page 42 of Chapter 2.

Macro-deliberative approaches employ division of labour to maximise both key qualities of deliberativeness and inclusiveness of deliberation, and overcome the inherent tension between them. However, the question arises as to whether the macro approach itself can manage the inherent dilemma between inclusion and division, such as the paradox of plurality. In other words, there is the question of how the idea of dividing the deliberative decision-making process into multiple micro deliberations in order to include more people for deeper discussion on more issues can work without leading to problems around inclusion and representativeness. In order to answer this question, I initially made a close observation of the ways in which division of labour took place in actual macro deliberation contexts.

Division of labour is the instrument that proponents of macro-deliberative democracy perceive to be critical if the goals of inclusiveness and deliberativeness are to be achieved. Although ideas about how to design division of labour differ, these individuals believe that certain optimal protocols for division of labour can be employed to identify the best design, which may be utilised to ensure that macro deliberation has the best chance of realising its aim of including a wide range of voices from society in deep, free, open and rational reasoning. This is the instrumental management approach that attempts to find an optimal design for division of labour and harness it for the implementation of policy practices.

However, in contrast to such an approach, the way in which division of labour took place in the case studies tended to be upstream, endogenous, non-static, and discursive – a reflexive way. Through recursive inter-reflections of various multiple elements of deliberations, widely divergent rationales for the division of labour were continually generated and applied to the process of developing the deliberations, which facilitated the evolution of the overall process. During the course of the reflexive process of the divisions of labour, a wide range of meanings, values and interests on the part of participants and other stakeholders were cross-reflected, cross-linked, and integrated into the overall decision-making process.

This represented a discursive, endogenous and reflective fermentation process that resulted in a kind of bottom-up inclusion rather than a top-down aggregation of different opinions. Deliberation did not in this case constitute a rational dialogue based solely on knowledge and reasoning that could be defended in public. Rather, it signified an amalgamation of

various relations of participants (and wider stakeholders); the embracing of political power dynamics; social relations comprising different configurations and networks; and the constituent elements of these relationships, such as knowledges, personal convictions, personal relationships, identities, political discourses, and policy networks. Such new characteristics of deliberation can be described as a mixture of discursive relations that range far outside what theory defines as equal, free and rational dialogue for the common good.

7.2 Relevance of a 'More' Reflexive Deliberation for Science and Technology Governance

Given the conclusion of the previous section, the question arises as to why macro risk deliberations in particular provide an environment conducive to such reflexivity; in other words, what are the specific conditions for greater reflexivity in the deliberation exercise? This triggers a second question with regard to what this recognition of the importance of reflexivity can contribute to knowledge in terms of designing and delivering macro-deliberations, so as to such alternative approach to be benefit to deliberative and inclusive decision making processes.

It was not the primary purpose set for this thesis either to reach a verdict on reflexivity as a good thing or a bad thing[65], or to identify principles for facilitating reflexivity. However, in this conclusive chapter, answering the above questions will help determine the relevance of greater reflexive deliberation in ST governance, which, in turn, will prove useful in gauging the extent of the viable extrapolation of the findings of the study.

Close observation of the ways in which the divisions of labour were played out in macro deliberations revealed some features of the context in which reflexivity seemed to be more vibrant. Considering the concept of reflexivity as it arose naturally during the reflections of subjects, such reflections were found to be vibrant when there were many subjects who freely inter-reflected with one another and the results of their reflections became new constituents of the environment, which also functioned as subjects in the environment. According to this understanding, a higher degree of reflexivity is most likely to be achieved by means of an unrestricted discursive structure that accommodates multiple subjects, the

[65] Lynch (2000) stresses that reflexivity has values in providing a methodological virtue but itself is "not an epistemological, moral or political virtue (p.26)".

divergent ontological perceptions are acknowledged, and their inter-reflections are encouraged.

These contextual features for the vibrant reflexivity resonate with the characteristic of macro-deliberations that is, an expanded form of deliberation which embraces a wide range of participants, their attributes, contextual elements, methods and issues, operating within a structure that is not tightly organised but non-static, fluid, expansive and discursive. The discursive structure and plurality of deliberative elements are the characteristics of macro deliberation that differentiate it from micro deliberation. This is the reason why reflexivity does not feature distinctively in the micro form of deliberation. This observation suggests that the inherent nature of reflexivity in perpetuating reflection in an uncontrollable manner notwithstanding, certain conditions of reflection can facilitate or decrease the level of reflexivity.

Thus, reflexivity is facilitated by the conditions of macro deliberation, which also operates through reflexivity. This paradoxical argument resonates with the duality of reflexivity elaborated in Chapter 2. Accordingly, reflexivity arises naturally during the reflection of subjects, the results of which recondition their subsequent reflections. Likewise, a wider range of participants and their attributes together with various external contextual elements form the basis for their inter-reflections in deliberation process. The results of these recursive reflections continually generate new sets of elements that subsequently re-constitute the environment for reflections.

Such a process may be represented as the downside of reflexivity in governance issues to those who want managerial control, as it is inherent, autonomous and contingent in nature. However, what we can benefit from its autonomous and recursive power is that it can be expected to facilitate the endogenous development of ST system. As we saw in the divisions of labour in the two case studies, there was a high level of endogenous divisions of labour, and consequently the deliberative process continually evolved throughout the lifetime of each programme. Many participants found this to be a good thing and encouraged such continuous change, regarding it as development. Another useful function of reflexivity in governance is found in the role in the inclusion of such diverse meanings of society. Otherwise, the exogenous, top-down approach with its fixed design does not

enable the inclusion of such controversial and ontological divergence in the meanings of society.

Accordingly, despite the fact that there is a significant level of reflexivity in governance and its autonomous, inherent and recursive nature cannot be fully controlled, there are benefits to be gained from its reflective, self-developing and discursive characteristics. Indeed, reflexivity in deliberative decision making may contribute to the efficacy of ST governance. The following section elaborates the implications of the application of greater reflexive deliberative decision making in ST governance.

7.2.1 Inclusion of the Multiple Meanings of Social Actors

Various representations (such as relationships and meanings) of social actors are multiplied by the reflexive process and become the sources of further reflexivity as they form new constituents of the ST system. In other words, the reflexive process is the means by which social actors explore multiple representations and incorporate them into the ST system.

The virtue of plurality in meanings of social actors in modern public policy making (Wynne 2002) notwithstanding, it is simultaneously a challenge to include such a variety of meanings of society in the process. This challenge makes the case for a 'closing down' as well as an 'opening up' procedure, since policy making should embrace not only the process of making available all these multiple meanings for exploration, but also that of filtering them for the final decision making. Participants do not only want to have their voices heard; what they ultimately want is to have an influence on decisions. The challenge of opening up and closing down many different voices can perhaps be aided by the reflexive process. It is a kind of fermentation process that helps the system open up for reflection on plural meanings such as alternative and conflicting positions; and it may also help the system close down to reach a decision through an endogenous, fermentative integration process of a wide range of meanings.

Otherwise, the actual inclusion of the diverse meanings of many people negotiating deep discussion towards a final decision may not be feasible. It may be naïve to believe that processes of mechanically formalised way of aggregation or reduction can facilitate the inclusion of plural meanings, especially when it comes to the uncertainty and controversy

in governance of new science and technology. Rather, recognition and promotion of the reflexive process, which is somewhat reflective, endogenous, self-contingent, self-influential, and discursive, offers the chance to improve the inclusion of the multiple meanings of social actors in ST governance.

7.2.2 Structural Change of the System

The evolutionary processes that the deliberation programmes have been developed demonstrate the potential of reflexivity in promoting structural change of the system. It is particularly important that the change takes place throughout the whole structure in groups and stages, a factor that also has critical implications in terms of the autonomy of change.

The established forms, and newly-emerging forms, of the divisions of labour interacted through discursive relations before moving on to the next stage in which explicit division of labour was undertaken. This evolutionary process took place within and across different groups of participants and at various stages of the overall programme. Participants interacted with each other in their attempts to realise the rationale of each in the division of labour, which had consequences in respect of the evolution of design through the course of each programme. As the programme progressed, participants underwent a journey, reformulating the divisions of labour by contesting and performing their own rationale as much as possible. Therefore, to a great extent, endogenous divisions of labour took place through participants' discursive relations; meaning that the structure had consequently significantly evolved towards the end of the programme.

It may be necessary for decision making process to be relatively less structured, when it is the case of the huge scale and scope of ST governance. Accordingly, it would be difficult to establish managerial intervention in all cases. It will be so in particular when issues under deliberation were diverse and distributed in that context. Any attempt to modify the overall structure in this context would not be a straightforward uniform managerial issue. Rather, real change may be more effectively and efficiently addressed by the inside of the system. The reflexive process found in the analyses of my two cases suggests potential for this mode of structural change (development) of the ST system.

7.3 Importance of a Deliberative Turn for Decision Making

Proponents of deliberative democracy claim that such a process has benefits for ST governance in terms of either its democratic value in the decision making process, or substantive value in problem solving – or both. And perhaps deliberative decision making sounds promising to those who are interested in delivering policy, considering its potential for increasing the acceptance of a final decision. Likewise, deliberative decision making was considered a good way of responding to the limitations and failures of a current policy making system very much based on technocracy, as its defining qualities of inclusiveness and deliberativeness accord well with the societal demand for a shift in the mode of ST governance towards more openness and transparency. The context of emergence of two cases in early 2000s corroborates this argument.

However, unsolved issues such as those around representation and contrastingly diverse views on how deliberative mechanisms should be designed and delivered warn us that burdening this trend with a surfeit of expectations could bring other disappointments. This could especially be the case with the current narrow conception of deliberative democracy. In other words, if the aims or contributions of deliberation to the policy making process rely on the current model of decision making approach to inclusion as open, equal, rational dialogue for the common good, they will create the illusion that all deliberation practices can give legitimacy to any decision – even those made with the strategic purpose of gratifying self-interest of specific groups in decision making process. The risk of the strategic employment of deliberative democracy in a specific stakeholder's self-interest is all too real if we overlook the elements of the actual policy context of deliberation and exclude diverse decision making mechanisms, both of which could prevent the true participation of society. At the beginning of this thesis, I raised several issues related to the strategic purposes of deliberative exercises reflected in the discourse of public engagement in the UK. The two case studies representing practical technological risk deliberation demonstrated attempts to strategically employ public deliberation exercise in specific interests, by the government in particular, but there were also challenges to these attempts from other parts of society.

In this context, therefore, this study suggests that we have to accept first, enormous effort in the conceptualisation and implementation of deliberative mechanisms (those for ST

governance in particular) notwithstanding, there still remain many conflicting notions around the implementation of deliberative democracy. And second, it is not at all easy to find legitimate solutions through deep, rational and equal dialogue that takes into account the divergent values and interests of wider society, in particular dealing with uncertain and controversial technological risk issues.

Deliberative mechanisms may need to extend not only their boundary of participation, as the macro- deliberative approach suggests in terms of its methods and range of participants, but also embrace the broader stage that encompasses such elements as political, social and material relations as part of deliberation process. The advocates of deliberative democracy should accept that the idealised narrow definition of deliberation as equal and free reasoning among widely diverse interests, values, meanings of society can neither reflect the real deliberation process nor possibly be implemented, if they desire a high quality of inclusiveness and deliberativeness. Indeed, perhaps it is not through a neatly standardised setting for a rational reasoning that these things can be attained, but by a messy, smelly and murky fermentation process.

To conclude, recognition of the inherent quality of reflexivity in macro-deliberation provides an enhanced understanding of the complex public engagement process of ST governance. In particular, my empirical analysis suggests that it might be very difficult (or even impossible) to provide a formalised set of design criteria for macro-deliberation for ST governance. Therefore, the designing attention probably needs to be shifted from the prescriptive provision of structured design protocols, towards construction of the environment for actors to afford their own reflexive deliberation. Such an arena can be built by developing and promoting various types of networks; capacity building for competent reflection such as providing access to information on relevant issues and opening up channels for networking; ensuring incentives for participation; assuring appropriate policy influence; and encouraging a diversity of methods.
Then, let them brew!

7.4 Suggestions for Further Research

Focusing on two macro-deliberation exercises around technological risk related policy making, the theoretical and empirical discussion in this thesis has provided a detailed

picture of ways in which these public deliberation programmes unfolded. In particular, it has offered useful insights for those who are interested in designing such practices. This last section suggests some specific directions for further research in this area. Given the narrow focus of this study limits on particular instances of deliberation, it is possible more confidently to generalise further questions, than answers. The general relevance of the key object of attention here, divisions of labour, underscores this possibility of wider learning. Whilst the present findings may be quite circumscribed to the instances addressed, the questions that arise may be more widely applicable to more general deliberative practice in ST governance and, potentially, other policy arenas.

In order reasonably to test and interrogate the picture yielded in this study, further research might share key features of the analytical framework developed here. In particular, the central focus might lie on policy making processes concerned with technological risks and with relationships between macro-deliberation exercises, and the general quality of reflexivity in governance. It is at the conjunction of these themes where this work might best be improved and expanded.

A first such area for further research might lie with the governance of different technological risks, associated with technologies other than nuclear power or genetic engineering. Newly emerging technologies are a particularly intensive focus for attention. More specific characteristics of suitable foci in this regard, would be where uncertainties and conflicts among stakeholders are more pronounced than in other science-related policy making – leading to involvement of an unusually wide range of stakeholders and their diverse perspectives in policy-making. Nano-technology may offer a particularly appropriate example of an area for such further work on reflexivity in public deliberation.

Second, the lessons learnt in this thesis might inform more general research extending beyond the governance of specific technologies, to broader and more diverse fields such as climate change. Here, the greater complexity might be expected to amplify the central message, concerning the importance of diversity and dynamism in the ways disparate, yet interlinked issues can be articulated at the same time. The challenge of tackling climate defies understandings that multiple aspects and actors can be formally articulated at different levels, groups and stages. Instead, the comprehensive approach to structural change, extending to the structures, where the deliberation is undertaken, would be

required. This salience of broad societal structural change – encompassing individual behaviour, technologies, economies, industries, environments and societies – makes climate change an area in which the open, unstructured dynamic qualities of reflexivity highlighted here become particularly important. And the structural changes implicated in discussion of climate change are densely interlinked, and mutually contingent. So the present notion of reflexivity – and a reflexive approach to governance – might have a particular premium in helping conceptualise the kinds of pervasive qualities necessary in discursive relations – transcending small, codified sequential nested structures and extending instead into more dynamic fluidity between different moments and spaces.

Another possible context for the application of the lessons of this study might concern not only ST governance, but also other policy making processes. Examples might include urban planning or local governance. Here we also encounter similar challenges of diversity in opinions and interests often emerge as conflict, facing controversy or sometimes deadlock. Stakeholders have their respective reasons to argue, and develop their rationales to deliver their messages. Including those opinions and interests into the decision making process is not always seen as fair and rational to all parties. The reflexive processes explored and examined here may help the actors themselves to inter-reflect on each other's rationales, and to go through their own decision making process.

In all such ways, the shedding of light on this crucial quality of reflexivity has hitherto been too much ignored under dominant instrumental perspectives – where interests focus on public engagement programmes more as a means to some prior given end, than as a way to deliberate different ends themselves. It is on this broadest stage that the acknowledging of the key features of reflexivity in governance becomes most important. In particular, the ways in which the qualities might be understood in the light of this thesis as reflective, endogenous, self-contingent, self-influential, and discursive, may offer a useful caution in the face of mainstream pressures for overly-formalised, rigidly-structured processes in public engagement programmes. Here there may be repercussions not only for research but also for policy for design, in that the value is suggested of experimenting with more relaxed approaches to procedural design, with greater attention to enabling convivial environments for reflexivity. This might involve, for instance, providing self-organising platforms for actors' own reflexive interactions with their own societal networks and affording them the time, resources and latitude necessary more fully to explore and experience not only the

implications of the focal issues, but also the nature and potential for democracy itself.

BIBLIOGRAPHY

Barclay, C. (1999) *Genetically Modified Crops and Food*. House of Commons Library Research Paper 99/38, March 31.

Barbagallo, F. and Nelson, J. (2005) 'Report: UK GM Dialogue Separating Social and Scientific Issues', *Science Communication*, 26 (3), pp. 318-325.

Bauer, M.W. and Gaskell, G.D. (eds.) (2000) *Qualitative Researching with Text, Image and Sound: A Practical Handbook for Social Research*. London: Sage Publications.

Beck, U. (1992) *Risk Society: Towards a New Modernity*. London: Sage Publications.

Beck, U. (1997) *The Reinvention of Politics: Rethinking Modernity in the Global Social Order*. Cambridge: Polity Press.

Beck, U., Bonss, W. and Lau, C. (2003) 'The Theory of Reflexive Modernization: Problematic, Hypotheses and Research Programme', *Theory, Culture & Society*, 20(2), pp. 1–33.

Beck, U., Giddens, A. and Lash, S. (1994) *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*. Cambridge: Polity Press.

Benhabib, S. (ed.) (1996) *Democracy and Difference: Contesting the Boundaries of the Political*. New Jersey: Princeton University Press.

Blair, T. (2002) 'Science Matters'. (Prime Minister's speech delivered at the Royal Society, London, May 23, 2002). Available from http://www.number10.gov.uk/output/Page1715.asp [Accessed February 3, 2007]

Bloomfield, D., Collins, K., Fry, C. and Munton, R. (2001) 'Deliberation and Inclusion: Vehicles for Increasing Trust in UK Public Governance?', *Environment and Planning C: Government and Policy*, 19(4), pp. 501-513.

Blowers, A. (1996) 'Transboundary Transfers of Hazardous and Radioactive Wastes'. In Sloep, P. and Blowers, A. (eds.) *Environmental Policy in an International Context, Book 2 Environmental Problems as Conflicts of Interest*. London: Open University of the Netherlands, pp. 151-186.

Blowers, A., Lowry, D. and Solomon, B. (1991) *The International Politics of Nuclear Waste*. London: Macmillan.

Bohman, J. (1996) *Public Deliberation: Pluralism, Complexity, and Democracy*. Cambridge, MA: The MIT Press.

Bohman, J. and Rehg, W. (eds.) (1997) *Deliberative Democracy: Essays on Reason and Politics*. Cambridge, MA: The MIT press.

Bregman, J. (2000) 'Theoretical Frameworks of Deliberative Democracy', working draft. Available from http://cyber.law.harvard.edu.

Bryman, A. (2003) 'Triangulation'. In Lewis-Beck, M.S., Bryman, A. and Liao, T.F. (eds.) *Encyclopedia of Social Science Research Methods*. Thousand Oaks: Sage Publications Ltd., pp. 1142-1143.

Cabinet Office (2002) *Risk: Improving Government's Capability to Handle Risk and Uncertainty*. Cabinet Office Strategy Unit Report, November 2002.

Cabinet Office (2003) *Field Work: Weighing Up the Costs and Benefits of GM Crops*. London: Cabinet Office Strategy Unit.

Central Office of Information (2002) 'Desk Research on Strategic Considerations for the Debate' (A Report to GM Nation? Steering Board).

Chilvers, J. (2007) 'Towards Analytic-deliberative Forms of Risk Governance in the UK? Reflecting on Learning in Radioactive Waste', *Journal of Risk Research*, 10(2), pp. 197-222.

Chilvers, J. (2008) 'Deliberating Competence: Theoretical and Practitioner Perspectives on Effective Participatory Appraisal Practice', *Science and Technology & Human Values*, Vol 33(2) pp 155-185.

Cohen, J. (1997) 'Procedure and Substance in Deliberative Democracy'. In Bohman, J. and Rehg, W. (eds.) *Deliberative Democracy*: *Essays on Reason and Politics*, Massachusetts: The MIT Press, pp. 407-438.

Cohen, J. (1998) 'Democracy and Liberty'. In Elster, J. (ed.) *Deliberative Democracy,* Cambridge: Cambridge University Press. pp. 185-231.

Cohen, J. (1999) 'Reflections on Habermas on Democracy', *Ratio Juris*. 12(4), pp. 385-416.

Collins, H.M. and Evans, R. (2002) 'The Third Wave of Science Studies: Studies of Expertise and Experience', *Social Studies of Science*, 32(2), pp. 235–296.

Commission of the European Communities (2001) 'European Governance: A White Paper'. Available from http://ec.europa.eu/governance/white_paper/en.pdf

Committee on Radioactive Waste Management (2006) *Managing Our Radioactive Waste Safely: CoRWM's Recommendations to Government*. CoRWM Doc 700. London: Committee on Radioactive Waste Management

Committee on Radioactive Waste Management (2004) '3rd Plenary Meeting Minute', January 2004 (Doc 122)

Committee on Radioactive Waste Management (2004) '5th Plenary Meeting Minute', March 2004 (Doc 276)

Committee on Radioactive Waste Management (2004) '7th Plenary Meeting Minute', May 2004 (Doc 496)

Committee on Radioactive Waste Management (2004) '13th Plenary Meeting Minute', December 2004 (Doc 879)

Committee on Radioactive Waste Management (2005) '14th Plenary Meeting Minute', January 2005(Doc 935)

Committee on Radioactive Waste Management (2005) '23rd Plenary Meeting Minute', November 2005(Doc 1417)

Corr Wilbourn Research and Development (2002) *A Report on the Foundation Discussion Workshops Conducted to Inform the GM Public Debate*. London: Corr Wilbourn Research and Development.

Corr Wilbourn Research and Development (2003) *Qualitative Research on a Series of Reconvened Group Discussions for the 'Narrow but Deep' Strand of the GM Public Debate*. London: Corr Wilbourn Research and Development.

Demeritt, D., Dyer, S. and Millington, J.D.A. (2009) 'Pest or Panacea? Science, Democracy, and the Promise of Public Participation', *Environment, Politics and Development Working Paper Series,* no. 10. London: Department of Geography, King's College London. Available from http://www.kcl.ac.uk/sspp/departments/geography/research/epd/Demeritt10.pdf

Department for Environment, Food and Rural Affairs et al. (2002) *Managing Radioactive Waste Safely: Summary of Responses to the Consultation September 2001–March 2002*. (A consultation report published jointly by the UK Department for Environment, Food and Rural Affairs, the National Assembly for Wales, the Scottish Executive and the Department of Environment Northern Ireland)

Department of Trade and Industry (2000) *Excellence and Opportunity: A Science and Innovation Policy for the 21st Century*. London: HMSO.

Department of Trade and Industry (2003) *Our Energy Future–Creating a Low Carbon Economy*. London: TSO (The Stationery Office).

Dorfman, P. (ed.) (2008) *Nuclear consultation: public trust in government*. London, Nuclear consultation working group.

Dryzek, J. (2000) *Deliberative Democracy and Beyond*. Oxford: Oxford University Press.

Durant, J. and Lindsey, N. (2000) *The 'Great GM Food Debate'- A Survey of Media Coverage in the First Half of 1999*. Parliamentary Office of Science and Technology Report no. 138. London: House of Commons. Available from http://www.parliament.uk/documents/post/report138.pdf.

Elster, J. (1998) *Deliberative Democracy*. Cambridge: Cambridge University Press.

Eriksen, E.O. and Weigård J. (2003) *Understanding Habermas: Communicative Action and Deliberative Democracy*. London and New York: Continuum Press.

European Environment Agency (2001) *Late lesson from early warnings: The precautionary principle 1898-2000*, Copenhagen, Denmark: European Environment Agency.

European Environment Agency (2013) *Late lessons from early warnings: science, precaution,*

innovation, Copenhagen, Denmark: European Environment Agency.

Faulkland Associates (2006) *Evaluation CoRWM Final Evaluation Statement.* CoRWM Doc 2071.

Fiorino, D.J. (1990) 'Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms', *Science, Technology, & Human Values*, 15(2), pp. 226-243.

Fishkin, J.S. and Laslett, P. (2003) *Debating Deliberative Democracy.* Oxford: Blackwell.

Fraser, N. (1990) 'Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy', *Social Text*, no. 25/26, pp. 56-80.

Fraser, N. (1992) 'Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy' In Calhoun, C (ed.) *Habermas and the Public Sphere.* Massachusetts, Cambridge: The MIT Press. pp. 109-142.

Friends of the Earth (2007) *Planting Prejudice: How UK Government Support for GM Undermines Sustainable Farming Policies*. London: Friends of the Earth, England Wales and Northern Ireland.

Funtowicz, S.O. and Ravetz, J.R. (1992) 'Three Types of Risk Assessment and the Emergence of Postnormal Science'. In Krimsky, S and Golding, D (eds.) *Social Theories of Risk.* New York: Greenwood Press. pp. 251–273.

Giddens, A. (1984) *The Constitution of Society: Outline of the Theory of Structuration*, Berkeley and Los Angeles: University of California Press.

Giddens, A. (1990) *The Consequences of Modernity.* Stanford, CA: Stanford University Press.

Giddens, A. (1993) *New Rules of Sociological Method*, 2nd Edn. Stanford, CA: Stanford University Press.

Greenpeace (2007) *Talking Nonsense – The 2007 Nuclear Consultation.*

Grin, J. (2006) 'Reflexive Modernization as a Governance Issue, or Designing and Shaping Restructuration'. In Voss, J.P., Bauknecht, D. and Kemp, R. (eds.) *Reflexive Governance for Sustainable Development*. Cheltenham: Edward Elgar, pp. 57-81.

Grove-White, R. (2006) 'Britain's genetically modified crop controversies: The agriculture and environment biotechnology commission and the negotiation of 'uncertainty'', *Community Genetics,* 9, pp.170-77.

Harbermas, J. (1996) *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy.* (Translated by Rehg, W.) Cambridge, MA: MIT Press.

Hendriks, C. (2002) 'Institutions of Deliberative Democratic Processes and Interest Groups: Roles, Tensions and Incentives', *Australian Journal of Public Administration*, 61(1), pp. 64–75.

Hendriks, C. (2004) 'Public Deliberation and Interest Organizations: A Study of Responses

to Lay Citizens Engagement in Public Policy'. (Unpublished PhD Thesis at the Australian National University)

Hendriks, C. (2009) 'The Democratic Soup: Mixed Meanings of Political Representation in Governance Networks', *Governance: An International Journal of Policy, Administration, and Institutions*, 22(4), pp. 689–715.

HM Treasury, Department for Trade and Industry and Department for Education and Skills (2004) *Science & Innovation Investment Framework 2004-2014*. Available from http://www.hm-treasury.gov.uk/d/spend04_sciencedoc_1_090704.pdf

Horlick-Jones, T., Rowe, G. and Walls, J. (2007) *The GM Debate: Risk, Politics and Public Engagement*. London: Routledge.

House of Commons Environmental Audit Committee (2003) *Energy White Paper– Empowering Change?* Eighth Report of Session 2002-03. London: HMSO.

House of Commons Environment, Food and Rural Affairs Committee (2003) *Conduct of the GM Public Debate,* Eighteenth Report of Session 02–03. London: HMSO.

House of Lords Select Committee on the European Communities (1998) *EC Regulation of Genetic Modification in Agriculture,* Second Report of Session 98-99. London: HMSO.

House of Lords Select Committee on Science and Technology (1999) *Management of Nuclear Waste*. London: HMSO

House of Lords Select Committee on Science and Technology (2000) *Science and Society*. London: HMSO.

House of Lords Select Committee on Science and Technology (2004) *Radioactive Waste Management*. London: HMSO.

Irwin, A. (2006) 'The Politics of Talk: Coming to Terms with the 'New' Scientific Governance'. *Social Studies of Science,* 36(2), pp. 299-320.

Jasanoff, S. (1987) 'Contested Boundaries in Policy-Relevant Science', *Social Studies of Science*, Vol. 17 (2) pp. 195-230.

Jasanoff, S. (1997) 'Civilization and madness: the great BSE scare of 1996', *Public Understanding of Science,* 6, pp. 221-232.

Jasanoff, S. (2003) 'Technologies of Humility: Citizen Participation in Governing Science'. *Minerva*, 41(3), pp. 223–244.

Keane, J. (2000) 'Structural Transformations of the Public Sphere'. In Kenneth, L.H. and Van Dijk, J. (eds.) *Digital Democracy: Issues of Theory and Practice*. London: Sage Publications. pp. 70-89.

Kelly, J. (2002) 'Public Attitudes to the Commercialisation of GM Crops'. A Report on Desk Research for COI Communications, December 2002.

Kemp, R.V., Bennett, D.G., and White, M.J. (2006) 'Recent Trends and Developments in Dialogue on Radioactive Waste Management: Experience from the UK'. *Environment International*, 32(8), pp. 1021–1032.

Kemp, R. and Loorbach, D. (2006) 'Transition Management: A Reflexive Governance Approach. In Voss, J.P., Bauknecht, D. and Kemp, R. (eds.) *Reflexive Governance for Sustainable Development*. Cheltenham : Edward Elgar, pp. 103-130.

Kickert, W.J.M., Klijn, E-H. and Koppenjan, J.F.M (eds.) (1997) *Managing Complex Networks: Strategies for the Public Sector*. London: Sage Publications Ltd.

Konig, A. (2006) 'Safe Foods: Improving Decision-making on Food Safety', Food Quality and Safety Research, Wageningen: Institute of Food Safety.

Leach, M., Scoones, I. and Wynne, B. (eds.) (2005) Science and Citizens: Globalization and the Challenge of Engagement. London: Zed Books.

Lehtonen, M., and Martiskainen, M. (2010) *Pathways towards the nuclear revival in Finland, France, and the UK,* Paper presented at the Sussex Energy Group conference "Energy transitions in an interdependent world: what and where are the future social science research agendas?' 25-26 February 2010, University of Sussex, UK.

Levidow, L. (2007) 'European Public Participation as Risk Governance: Enhancing Democratic Accountability for Agbiotech Policy?', *East Asian Science, Technology and Society: an International Journal,* 1(1), pp. 19–51.

Levine P., Fung, A. and Gastil, J. (2005) 'Future Directions for Public Deliberation', *Journal of Public Deliberation*, 1(1), Article 3. pp. 1-13.

Levitt, R. (2003) 'GM Crops and Foods. Evidence, Policy and Practice in the UK: A Case Study', ESRC UK Centre for Evidence Based Policy and Practice, Working Paper no. 20.

Lidskog, R. and Andersson, A-C. (2002) *The Management of Radioactive Waste A Description of Ten Countries*. Stockholm, Sweden: Swedish Nuclear Fuel and Waste Management Co.

Löfstedt, R. and Holrick-Jones, T. (1999) 'Environmental politics in the UK: politics, institutional change and public trust' in Cvetkovich, G. and Lofstedt, R.(eds) *Social Trust and Risk Management,* Earthscan, London, pp.73-88.

Lövbrand, E., Pielke, R. Jr. and Beck, S. (2011) 'A Democracy Paradox in Studies of Science and Technology', *Science, Technology, & Human Values*, 36(4), pp. 474-496.

Luskin, R.C. and Fishkin, J.S. (2002) 'Deliberation and "Better Citizens"'. A research paper available from the Center for Deliberative Democracy at Stanford University Available from (http://cdd.stanford.edu/research/papers/2002/bettercitizens.pdf)

Lynch, M. (2000) 'Against reflexivity as an academic virtue and source of privileged knowledge', *Theory, Culture & Society,* 17(3), pp. 26–54.

GM Nation? Steering Board (2003) 'GM Nation? The Findings of the Public Debate'.

London: Department of Trade and Industry.

GM Science Review Panel (2002) '1st Panel Meeting Minute'. December 10, 2002.

GM Science Review Panel (2003) '2nd Panel Meeting Minute'. February 18, 2003.

GM Science Review Panel (2003) 'GM Science Review: First Report'. London: Department of Trade and Industry.

GM Science Review Panel (2004) 'GM Science Review: Second Report'. London: Department of Trade and Industry.

MacKerron, G. (2004) 'Nuclear Power and the Characteristics of 'Ordinariness'–the Case of UK Energy Policy', *Energy Policy,* 32(17), pp. 1957–1965.

Mackerron, G. and Berkhout, F. (2009) 'Learning to Listen: Institutional Change and Legitimation in UK Radioactive Waste Policy', *Journal of Risk Research,* 12(7–8), pp. 989–1008.

Mansbridge, J. (1999) 'Everyday Talk in the Deliberative System'. In Macedo, S. (ed) *Deliberative Politics.* NY: Oxford University Press. pp. 211-239.

Marsh, D. and Furlong, P. (2002) 'A Skin Not a Sweater: Ontology and Epistemology in Political Science'. In Marsh, D. and Stoker, G. (eds.) *Theory and Methods in Political Science,* 2nd Edition, New York: Palgrave Macmillan. pp. 17-41.

Morton, A., Airoldi, M. and Phillips, L.D. (2009) 'Nuclear Risk Management on Stage: A Decision Analysis Perspective on the UK's Committee on Radioactive Waste Management'. *Risk Analysis,* 29(5), pp. 764-779.

Newman, J. (2001) *Modernising Governance: New Labour, Policy and Society.* London: Sage Publications Ltd.

Office of Science and Technology (1997) *The Use of Scientific Advice in Policy Making.* London: Department of Trade and Industry.

Office of Science and Technology (1998) *Memorandum to the 'Scientific Advisory System: Genetically Modified Foods' Inquiry by the House of Commons Science and Technology Committee.* London: Department of Trade and Industry.

Office of Science and Technology (2000) *Guidelines 2000: Scientific Advice and Policy Making.* London: Department of Trade and Industry.

Office of Science and Technology (2001) *Code of Practice for Scientific Advisory Committees.* London: Department of Trade and Industry.

Parkinson, J. (2006) *Deliberating in the Real World: Problems of Legitimacy in Deliberative Democracy.* NY: Oxford University Press.

Pellizzoni, L. (2001) 'The Myth of the Best Argument: Power, Deliberation and Reason', *British Journal of Sociology,* 52(1), pp. 59–86.

Pellizzoni, L. (2003) 'Knowledge, Uncertainty and the Transformation of the Public Sphere', *European Journal of Social Theory,* 6(3), pp. 327–355.

Performance and Innovation Unit (2002) *The Energy Review,* A Performance and Innovation Unit Report, February 2002. London: Cabinet Office.

Phillips, L., Bridgeman, J. and Ferguson-Smith, M. (2000) *The BSE Inquiry: The Report.* London: HMSO.

Pierre, J. and Peters, B.G. (2000), *Governance, Politics and the State.* Basingstoke and London: Macmillan Press Ltd.

Renn, O. (1998) 'The Role of Risk Communication and Public Dialogue for Improving Risk Management', *Risk Decision and Policy,* 3(1), pp. 5-30.

Renn, O. (2004) 'The Challenge of Integrating Deliberation and Expertise: Participation and Discourse in Risk Management'. In McDaniels, T. and Small M.J. (eds.) *Risk Analysis and Society: An Interdisciplinary Characterization of the Field.* Cambridge: Cambridge University Press. pp. 289-366.

Renn, O. (2006) *Risk Governance: Towards an Integrative Approach.* IRGC White Paper no. 1. Geneva: International Risk Governance Council (IFGC).

Renn, O. and Roco, M.C. (2006) 'Nanotechnology and the Need for Risk Governance', *Journal of Nanoparticle Research,* 8(2), pp. 153–191.

Renn, O., Webler, T. and Wiedemann, P. (1995) *Fairness and Competence in Citizen Participation: Evaluating Models for Environmental Discourse.* Dordrecht and Boston: Kluwer Academic Publishers.

Rhodes, R.A.W. (1997) *Understanding Governance: Policy Networks, Governance, Reflexivity, and Accountability.* Buckingham: Open University Press.

Rowe, G., Horlick-Jones, T., Walls, J. and Pidgeon, N. (2005) 'Difficulties in Evaluating Public Engagement Initiatives: Reflections on an Evaluation of the UK GM Nation? Public Debate about Transgenic Crops'. *Public Understanding of Science*, 14(4), pp. 331–352.

Royal Commission on Environmental Pollution (1998) *Setting Environmental Standards, 21st Report.* London: HMSO.

Royal Society (2005) *The Royal Society Response to the Committee on Radioactive Waste Management Consultation: How Should the UK Manage Radioactive Waste*?. Royal Society Policy document 13/05, June 2005.

Royal Society (2006) *The Long-term Management of Radioactive Waste: the Work of the Committee on Radioactive Waste Management.* Royal Society Policy document 01/06, January 2006.

Radioactive Waste Management Advisory Committee (1981) *Second Annual Report.* London: HMSO.

Saward, M. (2003) 'Enacting Democracy', *Political Studies,* 51(1), pp.161–179.

Schneider, S.M. (1997) 'Expanding the Public Sphere through Computer Mediated Communication: Political Discussion about Abortion in a Usenet Newsgroup'. (Unpublished PhD Thesis at the MIT)

Shulman, S.W., Schlosberg, D., Zavestoski, S. and Courard-Hauri, D. (2003) 'Electronic Rulemaking: A Public Participation Research Agenda for the Social Sciences', *Social Science Computer Review*, 21(2), pp. 162-178.

Smith, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan. Google eBook, Available from http://books.google.co.uk/books?id=C5dNAAAAcAAJ&printsec=frontcover&dq=adam+smith+1776&hl=en&sa=X&ei=6j2OULW9HqTliQLL_YD4DA&ved=0CCwQ6AEwAA#v=thumbnail&q&f=false

Steele, J. (2001) 'Participation and Deliberation in Environmental Law: Exploring a Problem-solving Approach', *Oxford Journal of Legal Studies*, 21(3), pp.415-442.

Stern, P. and Fineberg, H. (eds.) (1996) *Understanding Risk: Informing Decisions in a Democratic Society*. Washington D.C.: National Academy Press.

Stirling, A. (1998) 'Risk at a Turning Point?', *Journal of Risk Research*, 1(2), pp.97–109.

Stirling, A. (2005) 'Opening Up or Closing Down: Analysis, Participation and Power in the Social Appraisal of Technology'. In Leach, M., Scoones, I. and Wynne, B. (eds.) *Science and Citizens: Globalization and the Challenge of Engagement*. London: Zed Books, pp. 218–231.

Stirling, A. (2006) 'Precaution, Foresight and Sustainability: Reflection and Reflexivity in the Governance of Technology'. In Voss, J.P., Bauknecht, D. and Kemp, R. (eds.) *Reflexive Governance for Sustainable Development*. Cheltenham: Edward Elgar, pp. 225-272.

Stirling, A. (2008) '"Opening Up" and "Closing Down": Power, Participation, and Pluralism in the Social Appraisal of Technology', *Science and Technology & Human Values*, 33(2) pp. 262-294.

Smith, A. and Stirling, A. (2007) 'Moving Outside or Inside? Objectification and Reflexivity in the Governance of Socio-technical Systems'*, Journal of Environmental Policy and Planning*, 9(3-4). pp. 351-373.

Sewell Jr., W.H. *(*1992) 'A Theory of Structure: Duality, Agency, and Transformation', *American Journal of Sociology,* 98 (1), pp. 1-29.

Toke, D. and Marsh, D. (2003) 'Policy Networks and the GM Crops Issue: Assessing the Utility of a Dialectical Model of Policy Networks', *Public Administration*, 81(2), pp. 229–251.

UK CEED (1999) 'Executive Summary of the National Consensus Conference on Radioactive Waste Management'. Available from http://www.ukceed.org/engagement/consensus-conference/consensus-conference-executive-summary

UK Agriculture and Environment Biotechnology Commission (2001) *Crops on Trial.* London: UK Agriculture and Environment Biotechnology Commission.

UK Agriculture and Environment Biotechnology Commission (2002) *Sub Group Meeting Minute*, September 23, 2002.

Van Zwanenberg, P. and Millstone, E. (2005) *BSE: Risk, Science and Governance.* Oxford: Oxford University Press.

Voss, J-P. (2007) 'Designs on Governance: Development of Policy Instruments and Dynamics in Governance'. (Unpublished PhD Thesis at the University of Twente)

Voss, J-P. and Kemp, R. (2006) 'Sustainability and Reflexive Governance: Introduction'. In Voss, J-P., Bauknecht, D. and Kemp, R. (eds.) *Reflexive Governance for Sustainable Development*. Cheltenham: Edward Elgar. pp. 3-30.

Warren, M.E. (1993) 'Can Participatory Democracy Produce Better Selves? Psychological Dimensions of Habermas's Discursive Model of Democracy'. *Political Psychology*, 14(2), pp. 209-234.

Watson, J. (2007) 'Can New Nuclear Power Strengthen Energy Security?', *Sussex Energy Group Policy Briefing,* no. 2, December 2007.

Wilsdon, J. and Willis, R (2004) *See-through SCIENCE: Why public engagement needs to move upstream. London.*

World Health Organization (WHO) and Food and Agriculture Organization (FAO) (2006) *Food Safety Risk Analysis: A guide for National Food Safety Authorities*. FAO Food and Nutrition Paper, no. 87. Rome: WHO and FAO.

Wynne, B. (1991) 'Knowledges in Context', *Science, Technology and Human Values,* 16(2), pp. 111-121.

Wynne, B. (1993) 'Public Uptake of Science; A Case for Institutional Reflexivity', *Public Understanding of Science,* 2(4), pp. 321–330.

Wynne, B. (2002) 'Risk and Environment as Legitimatory Discourses of Technology: Reflexivity Inside Out?', *Current Sociology*, 50(3), pp.459–477.

Wynne, B. (2006) 'Public Engagement as a Means of Restoring Public Trust in Science–Hitting the Notes, but Missing the Music?', *Community Genetics,* 9(3), pp.211–220

Wynne, B. (2007) 'Dazzled by the Mirage of Influence?: STS-SSK in Multivalent Registers of Relevance', *Science, Technology, & Human Values*, 32(4), pp. 491-503.

Yin, R.K. (2003) Case Study Research: Design and Methods. 3rd ed. London: Sage Publications.

Young, I.M. (1997) 'Difference as a Resource for Democratic'. In Bohman, J. and Rehg, W. (eds.) *Deliberative Democracy: Essays on Reason and Politics*. Cambridge, MA: The MIT press.

APPENDIX I INTERVIEWEE SELECTION

Bearing in mind that the focus of the study was to explore divergent views on the division of labour in macro deliberation, all those selected for interview had participated directly in either the GM Dialogue or CoRWM, playing a certain role (roles) within each programme respectively. People who had been involved across different events were preferred, since it was hoped they had been aware of various issues and understood the detailed narrative of each event as well as those across different events. In practical terms, it was also an economical approach to interview those who had been involved in more than one event.

In addition to the events in which prospective interviewees had participated, I also considered the roles they had played – e.g. leader, designer, organiser, deliberator, sponsor – in the operation of the their respective programmes. While conducting a document analysis, I found that some significant themes emerged – division of labour; integration and relationship; principles underlying design and implementation of the events and the whole programme; and discrepancy. These emerging themes also formed an important guide in my consideration of people to approach with a view to interviewing them. Accordingly, I made a list of interview candidates in respect of both GM Dialogue and CoRWM participants with a rationale for the selection of each individual.

Although the initial list was not fully accessed due to practical difficulties, during uncovering meaningful implications in terms of commonality and disparity across different interviews, I was convinced that the available access to the candidates was enough to support my argument. Given that the research aim was to present divergent views and their influence in the deliberation process rather than depict all idiosyncratic views, neither a large number of interviewees nor the same number of participants from the GM Dialogue and CoRWM was necessary. Instead, I obtained meaningfully divergent views from various people in respect of their different roles and perspectives with the aid of the triangulation technique established in the methodology chapter, Chapter 3 Research Design. Indeed, I approached the study with the assumption that it was not the range of perspectives themselves, but the sensitivity and detailed nuance of their meanings and inter-relations that constituted and illuminated the concept of reflexivity and division of labour in macro deliberation.

List of interviewees and rationale for each selection

Detailed information on the interviewees selected for this study is presented below. A total of 19 people participated in personal in-depth interviews. One was interviewed by telephone and the remainder through face-to-face discussion. A few were contacted more than once in order to follow up and seek further information. One participant is represented anonymously in view of the sensitive concerns expressed in the interview. Relevant information on institutional affiliations and/or specialties regarding the arguments of this thesis is presented in the text of the thesis with direct quotations from interviews. In addition to such bio-data, more importantly here, the following provides details of the aspect of each programme in which interviewees participated. Interview locations and dates are given in brackets.

Tables A1.1 and A1.2 below show basic interviewee information – i.e. name, groups/events involved in, and rationale for selection – in respect of GM Dialogue and CoRWM participants respectively. These details were compiled based on interviewee selection criteria such as events participated in and roles adopted. Accordingly, the rationale for the selection of each interviewee also informed the guide I developed to determine the specific aim of each interview and formulate the questions to be asked to achieve it.

GM Dialogue

- Ian Coates, leader of Prime Minister's Strategy Unit Team of the Economic Study (Guildford, 30 November 2009)
- Robin Grove-White, AEBC member and Steering Board member of GM Nation? (Anglesey, 19 and 20 October 2009)
- Paul Rylott, AEBC member and Steering Board member of GM Nation? (Suffolk, 24 November 2009)
- Andy Stirling, Science Review Panel member (Brighton, 4 December 2009)
- Sue Mayer, AEBC member (London, 14 December 2009)
- Simon Hughes, COI (London, 12 June 2009)
- David Corr, Corr Wilbourn Research and Development (London, 26 May 2009)

- Anonymous Evaluation Team member (location withheld, 31 March 2008 and 11 December 2009)

Table A1.1 Rationale for Selection of GM Dialogue Interviewees

	Name	AEBC and three strands involvement				Rationale
		AEBC	GM Nation?	Science Review	Economic Study	
1	Ian Coates				v	1) Leader of the Strategy Unit team, who led the Economics study strand that comprised three Advisory expert groups. 2) An economist; significantly involved throughout the whole Economic study strand as a designer and organiser as well as participant, producing the contents of the report of analysis. 3) His experience as a leader of the leading team was perhaps different from the two chairs of the other strands. The members of the other two groups were recruited from outside the government, while the Strategy Unit team for Economic study strand was composed of civil servants in the Cabinet Office. The team appointed three Advisory groups composed of individual experts whose roles were only advisory rather than decision making. This was clearly stated in the final report.
2	Robin Grove-White	v	v		v	1) Member of the AEBC and Steering Board. According to AEBC meeting minutes, he was heavily involved and played a significant role in the inaugural stage of the GM Dialogue and design of the GM Nation? strand. He could thus have a different perspective on the GM Dialogue and GM Nation? strands from those of the chair or secretariat. 2) Participant of an event in the Economic study strand. 3) An academic and former director of Greenpeace.
3	Paul Rylott	v	v		v	1)Member of the AEBC, Steering Board, and Advisory team of Economic study strand. 2) From a multinational pharmaceutical company. 3) As a member of Advisory expert group, involved as an advisor and participant in many activities run under Economic strand. Therefore, he was in a position to share his experience of and opinion about the process of designing and implementing the strand. His perspective could be compared with those of the team leader (Ian Coates) and other members. 4) As he was a member of the AEBC, his perspective on interaction and inter-understanding between AEBC and Economic study strand could be compared with that of others.
4	Andy Stirling			v		1) Member of the Science Review panel. 2) One of the few social scientists on the panel, while the majority had backgrounds in the natural sciences in fields broadly related to biology. He could thus contribute his views on the relationship between natural and social sciences as it had emerged in the expert deliberations. (There has been some debate around the role of scientific knowledge in public risk deliberation as a counterpart to social issues. This matter was

						manifested as a conflict among designers in the GM Dialogue (such as the BA's argument concerning the relationship between science and social issues) as well as the CoRWM (David Ball's critique of the lack of scientific input). In particular, the Science review strand was designed to assess current scientific knowledge around GM crops. However, according to the composition of the leading group, it seemed that natural science was considered to be the only legitimate source of scientific knowledge to be input into this deliberation.
5	Sue Mayer	v			v	1) Member of the AEBC. 2) Director of GeneWatch UK. 3) Participated in an event organised under the Economic Study strand as a relevant NGO representative.
6	Simon Hughes		v			1) Director of COI Live events team. 2) Able to narrate the inaugural stages of the GM Dialogue and GM Nation? strand. 2) Able to share his experiences of working with the AEBC and the Steering Board regarding tasks, roles, conflicts, communication etc. 3) Able to share his experience of the COI, which was a controversial participant as it was a government body and thus contradicted the principle of independence from government. 4) His GM Nation? duties, which were to develop a framework and organise events with COI subcontractors. As he was a kind of event supervisor, he knew the details of public meetings, for example, how they recruited participants, what data they used most, what principle they most tried to adhere to, etc. 5) His experience and opinions could be compared with others who participated in event design and organisation.
7	David Corr		v			1) Co-director of Corr Wilbourn Research and Development, which, as a COI subcontractor, conducted two events under the GM Nation? strand(Foundation workshop and Narrow-but-deep). 2) Able to share his experience of working with the AEBC, Steering Board, and COI regarding tasks, roles, conflicts, communication, etc.
8	Anonymous Evaluation Team member		v			1) An official GM Nation? strand evaluation team member. The team had observer status from the inaugural stage. Therefore, he was able to provide a different perspective on the GM Nation? process from those of other actors participating directly in design, organisation and deliberation; which could be compared with other actors' opinions and the official GM Nation? report.

CoRWM

- David Ball, resigned committee member (London, 17 November 2009)
- Fred Barker, committee member (Bristol, 5 November 2009)
- Keith Baverstock , dismissed committee member (Eastbourne, 1 December 2009)
- Andrew Blowers, committee member (Bedford , 25 November 2009)
- David Collier, CoRWM official evaluator from Faulkland Associates Ltd. (London, 3 November 2009)
- David Lowry, independent research consultant specialising in UK and EU nuclear and environment policy (London, 17 November 2009)
- Malcolm Lynden, participant in CoRWM Nuclear Site Stakeholder Round Table, local government councillor for Oldbury on Severn (Bristol, 23 November 2009)
- Gordon MacKerron, chair of committee (Brighton, 27 November 2009)
- Adam Scott, secretary of committee from Defra (London, 29 October 2009)
- Sam Usher, CoRWM programme manager from AMEC NNC (telephone Interview, 8 January 2010)
- Pete Wilkinson, committee member (London, 3 November 2009)

Table A1.2 Rationale for Selection of CoRWM Interviewees

	Name	Rationale
1	David Ball	1) Committee member who particularly contributed to the draft of the working group on the decision-making process. 2) Resigned in May 2005, arguing that the CoRWM was not organised on scientific principles and also in protest at the sacking Keith Baverstock. He was therefore able to provide a quite different perspective on the programme from those of the other committee members, particularly on the fundamental issue of its approach to the science–public/stakeholder input dichotomy.
2	Fred Barker	1) Committee member and first chair of the PSE working group. Although he resigned from this position, he continued to be heavily involved in the development of the PSE programme, which was the core CoRWM initiative. The minutes of the sixth meeting give the reasons for his resignation as "the heavy work load, group dynamics, and a feeling that his input would be better as a member of the PSE WG than constrained in the chair." Therefore, I would be able to enquire about the inaugural stage of the PSE programme with the company WS Atkins and other members of the PSE working group. 2) Knowledgeable about the process of designing and implementing the PSE programme as a member of the PSE working group. 3) Able to share his perspective on the issue of group dynamics as a reason for his resignation, that is, any conflict or tension within the committee and/or sub-committee over the way in which the CoRWM should work.
3	Keith Baverstock	1) Committee member who was dismissed. Therefore, able to contribute a different perspective on the issue of insufficient scientific input in the CoRWM process. 2) Able to share his experience of relationships and other group dynamics among committee members.

4	Andy Blowers	1) Committee member on the board of Nirex. 2) Chair of the Principles Working Group, which was responsible for developing the fundamental principles of the CoRWM. Therefore, he would be able to shed light on the origins of such principles (e.g. his paper *Doc 208: Deliberative Democracy*), how they were developed with others through the course of the programme, and how they were put into practice.
5	David Collier	1) Director of Faulkland Associates, which acted as a consultancy in the monitoring and evaluation of the CoRWM. 2) Lead evaluator and the author of the final evaluation report (Paul Haigh: the support evaluator). Although Faulkland Associates did not join the CoRWM until the seventh plenary meeting (end of phase one), its role was significant as a monitor and evaluator. Therefore, would be able to share his experience over the process as an observer, and shed light on the interaction and different perspectives of the participants in the CoRWM. 3) Able to shed light on the tension between the roles of advisor and objective evaluator. (he mentions the difficulty of the dual role of independent evaluator and advisor to the chair (Evaluation Report, p. 46)).
6	David Lowry	1) An academic and consultant in the area of radioactive waste management: he was not a committee member, but could have helpful insight into the process of the CoRWM, as he has built a career in this area (he also worked with some committee members on other occasions). Therefore, he would be able to contribute some detached or different observations and opinions on issues raised during the process. CoRWM was criticised for an unbalanced procurement list for allocating its work. In support of this argument, several members showed interest in bidding for management positions on the committee. The evaluation report (p. 14) also mentions "apparent lack of involvement of counter-experts that comment on nuclear issues from a sceptical perspective at public and stakeholder meetings." He would thus be able to illuminate this matter and other criticisms of the CoRWM.
7	Malcolm Lynden	1) Participant in the Nuclear Site Stakeholder Round Table. 2) A parish councillor. 3) Not only able to share his experience as a participant in the stakeholder discussion, but also his dual role as a local government councillor and a local resident. He was actually criticised by a local environmental group for his opinions and representative position.
8	Gordon MacKerron	1) Chair of the CoRWM. 2) His perspective as chair of the committee could be compared with those of other members: his perspective might also be different from those of other organisations and individuals who were involved in the programme. 3) In particular, he could share his experiences on the issue of relationships with other stakeholders and the government.
9	Adam Scott	1) Member of Defra committee secretariat. 2) Does not only have experience on overall matters. 3) Possibly has a different perspective from those of CoRWM members: able to share his opinion on the different perspectives among CoRWM members as a kind of observer. 5) Able to provide information on the relationship and any issues raised between the government and the committee.
10	Sam Usher	1) CoRWM project manager as representative of AMEC Nuclear Holdings Ltd. AMEC NNC was appointed as a manager of the programme after a year's leadership by WS Atkins. Although the former was not involved from the outset, due to on-going development during the course of the programme, it actually contributed to its design as well as implementation. 2) However, AMEC NNC must have had a different perspective from that of the committee: although the former was involved in the design and implementation of the programme, the committee was the decision maker, meaning that the role of AMEC NCC differed from that of the other somewhat. 3) AMEC NNC acted as an agency for the procurement of external individual experts and organisations, and had a particular perspective as a middle manager. Therefore, it would be able to provide information on how the principles of the programme were put into practice from design, and how the designer's and practitioner's perspectives differed; 4) and whether this led to confusion over roles or any conflict with the committee, which regarded itself as the ultimate designer, certainly of strategy.
11	Pete Wilkinson	1) Committee member. 2) Former director of Greenpeace and also Friends of the Earth. 3) Given his career as an NGO officer who had interests in the nuclear field, he would be able to provide a different perspective from those of other committee members, and would also be aware of the views of other NGOs not directly involved in the CoRWM process. 4) He officially expressed his opposition to deep geological disposal on many occasions; he would therefore be able to share his experience for dealing with a different opinion from that of other members of the committee.

In addition, I also engaged in extensive email communication and made many telephone calls while I was collecting data. The following is a list of people whose communications were particularly significant to this study. Although their contents are not quoted verbatim in the thesis, the information they provided contributed significantly to background knowledge for conducting the case studies and designing the interview guide.

- Max Wallis – Barry & Vale Friends of the Earth (emails November 2009)
- Renaud Wilson – Defra (emails March 2009)
- Richard Bowden – BERR (emails January, April and October 2008)
- David Sherlock – Defra (emails December 2007and October 2008)

APPENDIX II INTERVIEW QUESTIONS

Construction of interview questions

I analysed various published and unpublished documents. Resources I collected from the official websites of the two case study programmes comprised the minutes of meetings; background, sub, interim and final reports; and official evaluations and responses from the government. I also gathered newspaper articles and published critiques. The analysis of these documents provided guidance for designing the intensive interview guide.

I found that certain themes emerged from the document analysis, namely, division of labour; integration and relationship; discrepancy; and principles underlying the design and implementation of events as well as the whole programme. These four themes formed a basis for the development of the interview guide. Questions were thus formulated according to these same four themes for all interviews, and then adapted to suit each interviewee.

Although key issues under the four different themes formed the main and common research focus, each interviewee was associated with a different event, role, perspective, relationship etc. In order to explore the details of such disparity across various actors, the questions were revised according to the information from the document analysis to meet the requirements of specific events or situations that interviewees had directly experienced. Therefore, I referred the interviewee to a particular event or quotation from a relevant document. Accordingly, each set of questions contained both general and specific items.

I present below three sample interview guides. Although questions were categorised under the different themes for use in a semi-structured, in-depth interview, the order of questions during the actual exchange invariably differed from that presented in the guide. Rather, I led the discussion according to the interviewee's responses, considering the flow of the conversation and checking to ensure that I had not missed an important question.

The three example interview guides comprise that developed for Ian Coates, who led the Economic Study of the three strands of GM Dialogue; Andy Stirling, who was a panel member of the Science Review strand of GM Dialogue; and Gordon MacKerron, who

chaired CoRWM. Thus, these examples demonstrate differently customised questions according to the event and the role each interviewee adopted.

*Underlined questions denote those specifically tailored for the interviewee.

Example interview questions

EXAMPLE 1: Interview with Ian Coates (Economic strand of the GM Dialogue)

Division of labour

1. Could you tell me how you got involved in this programme?
2. If you were recruited, why do you think this was? Was it, for example, because of a particular skill or a particular viewpoint? Or did you volunteer and, if so, why?
3. What role did you play? What do you think your recruiters thought your role should be, and how do you think your role was perceived by others in the process?
4. Do you recall whether there was any kind of group that was naturally and informally formed amongst your team? Or how did you divide yourselves?
5. Who do you think are the important groups of actors engaged in the GM Dialogue?
6. How would you describe the roles they played? Do you think others would take a different view about these roles? If so, what are those views?
7. Did you experience any difficulty generally while you were working through the programme (or event)? (E.g. Communicating with others / a design issue / delivering events /practical issues like time, etc.)
8. Were you satisfied with your position and authority in playing your role? Did you or others with whom you were engaged perceive any kind of constraint?
   If so, what was that and its reason?

Integration and relationship

1. With whom did you communicate most in your time in the overall process?
2. How effective was the communication? What were the difficulties and benefits of communication with others within your group and with other groups during the event?
3. What were the difficulties you had and the values you appreciated working with different people in your group and also other groups of people?
4. There was an 'away day'. What do you think was the purpose of this and was it helpful?
5. Who were the stakeholders you worked with? Explain how your team worked with stakeholder groups? (E.g. individual information gathering or from a meeting with all stakeholders like a workshop?)
6. There were various groups of actors and also different events under the GM Dialogue. What do you think the reason for this was? Do you think efforts were made to integrate these diverse actors and activities and, if so, how well did this

work?

7. Do you think your group's work transferred well to the other groups or later processes? If not, what was the reason? And what would be a possible solution to this?

Principles underlying design and implementation of events and the whole programme

1. What do you think were the most important principles underlying this programme (or event), and what do you think they should be (or what should the outcome be)?
2. Do you think these principles mostly had a consensus amongst participants? Or do you remember any dissent over these principles?
3. How would you describe any unique feature of this programme (or event) compared with any other participatory programme or decision-making process on the same subject that you experienced, engaged in, or read about in the literature?
4. Do you think the overall programme or its components changed as it evolved? If so, what would be the reason do you think? Were such changes intentional and encouraged or considered a problem by the designer (or implementer/organiser)?
5. What would you say was the role of the GM Dialogue as a whole in GM crop policy making? What should it have been?
6. There were various events under this programme. What do you think their roles were?
7. There were some informal and private meetings among members with stakeholders and external experts. What is your view of this?
8. Informed by the hindsight of your experience of this exercise, what would you advise designers and practitioners of a future such exercise to do differently?

Discrepancy

1. How would you define 'the public' and 'science'? And what do you think are their respective roles (including the Economic study) in GM crop policy making?
2. What was the reason that integration did not really happen despite the recognition of its significance? Particularly mentioned was the integration with science review as on many occasions, scientific and economic considerations are associated with each other and thus "regular communication will be necessary."
3. What were the roles of the Strategy Unit, Advisory team, and Economic study? (Reference: in scoping note, "a prerequisite of a good debate is information" and providing this was the Economic study's main role in supporting the debate; and it was stated that, "the report does not draw definitive conclusions or put forward policy recommendation" (final report))
4. Do you recall any other institution that influenced or tried to intervene in the GM Dialogue process at any level?
5. What do you think were the roles of the AEBC and the Steering Board role in the GM Dialogue? How do you see them?
6. Your team reported some progress to the Steering Board. How about the Science review panel?
7. What do you think was the influence of the GM Dialogue (and the Economic study) on the policy?
8. Who was not involved in this stage; who should have been you think? And who had too much power or was too influential in the process?

9. Could you explain the process of forming expert advisory groups: e.g. the environment, product chain, and the industry and science group?
10. Who were the stakeholders you worked with? Explain how your team worked with stakeholder groups? (E.g. individual information gathering or from a meeting with all stakeholders, like a workshop?)
11. How do you recall the relationship with the government; was there any pressure? From whom?

EXAMLE 2: Interview with Andy Stirling (Science Review strand of the GM Dialogue)

Division of labour

1. Could you tell me how you got involved in this programme (and panel)?
2. If you were recruited, why do you think this was? Was it, for example, because of a particular skill or a particular viewpoint? Or did you volunteer and, if so, why?
3. What role did you play? What do you think your recruiters thought your role should be, and how do you think your role was perceived by others in the process?
4. Could you make a list of actors who played important roles in the GM Dialogue?
5. How would you describe the roles they played? Do you think there was anyone who should have been invited but was not there?
6. Do you recall whether there was any kind of group that was naturally and informally formed amongst the panel members? Or how did you divide yourselves?
7. The idea of sub-groups was suggested by the secretariat. What was the reason for this?
8. Did panel members think there were enough perspectives or expertise, or was there any feeling of lack in certain areas or too many from a specific area?
9. Do you think the panel was composed of well-balanced perspectives?
10. What was the reason for including new two members?
11. Did you experience any difficulty generally while you were working through the programme?

Integration and relationship

1. What were the values you appreciated working on the science review panel?
2. How was the relationship between the government and David King? Were you completely free from any type of political pressure?
3. The BA was commissioned to organise an open meeting even before the panel meeting started. Wasn't the panel involved in designing the open meeting at all? How was the relationship with the BA and also with OST?
4. Who were the panel stakeholders? Who was the most difficult group or appeared as the main party to be dealt with within the panel and outside the panel, and what were the reasons for that?
5. There was an 'away-day'. What do you think was the purpose of this and was it helpful?
6. What was the reason for emphasis on the integration of the three strands do you think?
7. Do you think your group's work transferred well to the other groups or later processes? If not, what was the reason? And what would be a possible solution to this?

Principles underlying design and implementation of events and the whole programme

1. What do you think were the most important principles underlying the GM Dialogue? And what do you think they should have been (and the same question in respect of the Science review and other two strands)?
2. What would you say was the role of the GM Dialogue as a whole in GM crop policy making? What should it have been?
3. How would you describe any unique feature of the GM Dialogue compared with any other participatory programme, or decision-making process on the same subject that you experienced, engaged in, or read about in the literature?
4. Do you think the overall programme or its components changed as it evolved? If so, what would be the reason do you think? What were the benefits and costs?
5. There were some informal and private meetings among members with stakeholders and external experts. What is your view of this? What was the reason for or purpose of informal and private meetings?
6. Informed by the hindsight of your experience of this exercise, what would you advise designers and practitioners of a future such exercise to do differently?

Discrepancy

1. How would you define 'the public' and 'science'? And what do you think are their respective roles in GM policymaking?
2. Who do you think should be invited to represent the public in GM policy making? And what should be their role?
3. Do you personally think there is a difference in roles between the public and other stakeholders? If so, what is it? And did the panel consider them separately? For example, 1) the work plan paper of the third panel meeting states: "Overall, our objective is critically to review the current state knowledge focussing on peoples [both scientists' and the public's] interest and concerns about GM;" 2) the panel received comments from individual citizens and organisations through the website. Did the panel treat them differently?
4. Do you recall any other institution that influenced or tried to intervene in the GM Dialogue process at any level?
5. What was the feeling among panel members about the FSA's approach? For example, in the third meeting, regarding FSA matters, David King mentioned that the "FSA is at arm's length from government… It was better that the Agency was not directly engaged with the review."
6. What was the statutory advisory committee's role? In terms of the ACRE and ACNFP,
   were the panel happy with the initial work done by the ACRE?
6. What was David King's general view on issues such as public participation, science and GM compared with the views of other members of the government, particularly Howard Dalton, Margaret Beckett and Michael Mitchell?
7. What was members' feeling about his position? (He remarked during the panel meeting that if the panel member was saying that the review was not an objective process, it was an attack on him as chairman and also the panel).
8. Could you explain about the moment of discussion on the freedom of the voice and the threat to undermine research in the meeting on7th June 2003?
9. Phil Dale conveyed the Steering Board's thoughts on the Science Review to the panel: how about the other way?

10. What was the decision-making process within the panel? ("proposal that uncertainty should be distinct topic was rejected. " From the minutes of the second meeting).

EXAMPLE 3: Interview with Gordon MacKerron (CoRWM)

Division of labour

1. Could you tell me how you got involved in this programme?
2. If you were recruited, why do you think this was? Was it, for example, because of a particular skill or a particular viewpoint? Or did you volunteer and, if so, why?
3. What role did you play? What do you think your recruiters thought your role should be, and how do you think your role was perceived by others in the process?
4. Who do you think were the important groups of actors engaged in the CoRWM?
5. How would you describe the roles they played? Do you think others would take a different view about these roles? If so, what are those views?
6. Do you recall whether there was any kind of group that was naturally and informally formed among the committee members? If not, how did you divide yourselves?
7. Did you experience any difficulty generally while you were working through the programme (or event)? (E.g. communicating with others / design issues / delivering events /practical issues like time, etc.)
8. Were you satisfied with your position and authority in playing your role? Did you or others with whom you engaged perceive any kind of constraint?
   If so, what was that and its reason?

Integration and relationship

1. With whom did you communicate most in your time in the overall process?
2. What values did you appreciate in working for the CoRWM?
3. What was the relationship with the government like? Were you completely free from any type of political pressure? With whom did you talk most in your communication with the government (Robert Jackson only or ministers directly)?
4. Who among the stakeholders was the most difficult group or appeared to be the main party to be dealt with by the CoRWM?
5. There was an 'away-day'. What do you think was the purpose of this and was it helpful?
6. Integration was not an idea that was focused on from the beginning. Rather, its importance was realised as the programme progressed and working groups were formed. What was the initial issue that prompted this recognition?
7. There were various groups of actors and also different events in the CoRWM. Do you think efforts were made to integrate these diverse actors and activities and, if so, how well did this work?
8. Do you think your group's work transferred well to the other groups or later processes? If not, what was the reason? And what would be a possible solution for this?

Principles underlying design and implementation of events and the whole programme

1. What do you think were the most important principles underlying the CoRWM?

2. How would you describe any unique feature of the CoRWM compared with any other participatory programme or decision-making process on the same subject that you experienced, engaged in, or read about in the literature?
3. Do you think the overall programme or its components changed as it evolved? If so, what would be the reason do you think? What were the benefits and costs?
4. What would you say was the role of the CoRWM as a whole in radioactive waste management policy making? What should it have been? (the same question to the committee).
5. There were some informal and private meetings among members with stakeholders and external experts. What is your view of this? What was the reason for or purpose of informal and private meetings? "The Chair reported a number of informal meetings that he or other Members had had during February…These were informal contacts not decision-making meetings…" (Minutes of CoRWM plenary meeting)
6. Informed by the hindsight of your experience with this exercise, what would you advise designers and practitioners of a future such exercise to do differently?

Discrepancy

1. How would you define 'science' and its role in radioactive waste management policy making?
2. Who do you think should be invited to represent the public in radioactive waste management policy making? And what should be their role?
3. Do you think there is a difference between the role of the public and that of other stakeholders? If so, what were the different roles of the public and other stakeholders in the CoRWM process, and what should they have been?
4. Do you recall any other institution that influenced or tried to intervene at any level in the CoRWM process?
5. How would you describe the characteristics of the NDA? (As it was also a stakeholder group associated with individual committee members and the government, and people had different views on it).
6. Were there any complaints or worries about members' interests regarding procurement?
7. What do you think was the most serious criticism of the CoRWM from both the inside and outside?
8. What were the respective roles of the House of Lords and the Defra advisory group from Phase Three and onwards?