The European Commission and European Technology Platforms: Managing Knowledge and Expertise in the Development of Research and Technology Policy

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Abstract

This thesis provides a theoretical and empirical analysis of European Technology Platforms (ETPs) and the important and interesting questions their emergence and impact raises about the nature and character of policymaking and governance in the EU; in particular, the role of knowledge and expertise in policymaking and the emerging threat of technocratic models of governance. The thesis seeks to examine whether ETPs are a manifestation of technocratic forms of policymaking, or represent a mechanism for assisting the European Commission to manage and control the increasing need for knowledge and expertise in policy formulation. The theoretical analysis focuses on policymaking approaches that place stakeholders, knowledge and expertise at the epicentre of policymaking (policy networks, epistemic communities, advocacy coalitions and technocracy) and the emergence of counter arguments that emphasize the complex interrelationship between institutions and actors in the process (new institutionalism). It examines whether either of these competing approaches can accurately describe and explain the role of ETPs in policymaking. The empirical analysis questions whether ETPs form part of a well-established knowledge process that has evolved out of the unique institutional architecture of the EU manifested in what has been described as the 'Community Method' based on the legacy of Jean Monnet. The thesis finds that through the development of ETPs the Commission has developed an effective mechanism for gathering the necessary knowledge, expertise and stakeholder support on which to legitimise policy proposals and shape member state preference. Furthermore, through ETPs, the Commission is able mobilise competing stakeholder interests within a deliberative policy forum to provide an effective safeguard against expert domination in the highly complex and technical areas of policy that have become the cornerstone of a modern knowledge-based economy.

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John Robert Moodie

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ACARE	Advisory Council for Aeronautics Research in Europe (ETP)
ACFA	Advisory Committee for Fisheries and Aquaculture
ARTEMIS	Advanced Research and Technology for Embedded Intelligence and Systems (ETP)
AT	Austria
BE	Belgium
BG	Bulgaria
BRITE	Basic Research in Industrial Technologies for Europe
BRITE/EURAM	Research in Industrial and Materials Technology
CH	Switzerland
CIP	Competitiveness and Innovation Programme
CN	China
COM	Commission
CoR	Committee of the Regions
COREPER	Committee of Permanent Representatives
COST	Cooperation in Science and Technology
CREST	Scientific and Technical Research Committee
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
DG	Directorate General
EBTP	European Biofuels Technology Platform (ETP)
EC	European Commission
ECSC	European Coal and Steel Community
ECTP	European Construction Technology Platform (ETP)

EE	Estonia
EEC	European Economic Community
EEN	Enterprise Europe Network
EESC	European Economic and Social Committee
EFPIA	European Federation of Pharmaceutical Industries and Associations
EFCS	European Fund for Coal and Steel
EL	Greece
eMobility	Mobile and Wireless Communications (ETP)
ENIAC	European Nanoelectronics Initiative Advisory Council (ETP)
EP	European Parliament
EPoSS	European Platform on Smart Systems Integration (ETP)
EPSO	Plants for the Future (ETP)
ERA	European Research Area
ERA-NETS	Networking of National Research programmes in the European Research Area
ERC	European Research Council
ERRAC	European Rail Research Advisory Council (ETP)
ERT	European Round Table of Industrialists
ERTRAC	European Road Transport Research Advisory Council (ETP)
ES	Spain
ESA	European Space Agency
ESPRIT	European Strategic Programme in Information Technologies
ESTA	European Science and Technology Assembly
ETAN	European Technology Assessment Network
ESTEP	European Steel Technology Platform (ETP)
ESTP	European Space Technology Platform (ETP)

ETP(s)	European Technology Platform(s)
ETIP(s)	European Technology and Innovation Platform(s)
ETPIS	European Technology Platform on Industrial Safety (ETP)
ETP SMR	European Technology Platform on Sustainable Mineral Development (ETP)
ETSI	European Telecommunications Standards Institute
EU	European Union
EuMaT	Advanced Engineering Materials and Technologies (ETP)
EURAB	European Research Advisory Board
EURATOM	European Atomic Energy Community
EUREC	European Renewable Energies Centres Agency
EUREKA	European Research Co-ordinating Agency
EUROP	European Robotics Platform (ETP)
FABRE	Farm Animal and Breeding ETP (ETP)
FAST	Forecasting Assessment in Science and Technology
FI	Finland
Food	Food for Life (ETP)
FP(s)	Framework Programmes(s)
FP5	Framework Programme 5 for Research and Technology
FP6	Framework Programme 6 for Research and Technology
FP7	Framework Programme 7 for Research and Technology
FP8	Framework Programme 8 for Research and Technology
FR	France
FTC	Future Textiles and Clothing (ETP)
FTP	Forest Based Sector Technology Platform (ETP)
GAH	Global Animal Health (ETP)
GDP	Gross Domestic Product

HEI	Higher Education Institute
HFP	Hydrogen and Fuel Cell Platform (ETP)
HR	Croatia
HU	Hungary
IBM	International Business Machines
ICT	Information and Communication Technology
IE	Ireland
IMI	Innovative Medicines Initiative (ETP)
IO	International Organisation
ISI	Integral Satcom Initiative (ETP)
IPM	Interactive Policy Making Initiative
IP(s)	Integrated Project(s)
IRDAC	Industrial Research and Development Advisory Committee
IS	Iceland
IST	Information Society Technologies
IT	Italy
ITPS	Institute for Prospective Technological Studies
ITRE	Committee on Industry, Research and Energy
ITTF	Information Technology Task Force
JP	Japan
JRC	Joint Research Council
JTI(s)	Joint Technology Initiative(s)
LT	Lithuania
LU	Luxembourg
LV	Latvia
MANUFACTURE	Future Manufacturing Technologies (ETP)

MEP	Member of the European Parliament
MT	Malta
NanoMedicine	Nanotechnologies for Medical Applications (ETP)
NEM	Networked and Electronic Media (ETP)
NESSI	Networked European Software and Services Initiative (ETP)
NGO	Non-Governmental Organisation
NL	Netherlands
NMP	Nanotechnologies and Nanosciences, Knowledge-Based Multi-Functional Materials and New Products and Processes
NO	Norway
NoE	Networks of Excellence
Phototonics 21	Phototonics for the 21st Century (ETP)
Photovoltaics	European Photovoltaics Technology Platform (ETP)
PL	Poland
PET	Planning Exercise in Telecommunications
PT	Portugal
PTT	Post Telephone & Telecommunications
QMV	Qualified Majority Voting
RACE	Research in Advanced Communications for Europe
RHC	Renewable Heating and Cooling (ETP)
RO	Romania
R&TD	Research and Technological Development
RU	Russian Federation
SCAR	Standing Committee for Agricultural Research
SE	Sweden
SEA	Single European Act
SI	Slovenia

SK	Slovakia
SmartGrids	European Technology Platform for the Electricity Networks for the Future (ETP)
SME	Small or Medium-Sized Enterprise
SNETP	Sustainable Nuclear Technology Platform (ETP)
SRA	Strategic Research Agenda
SVD	Strategic Vision Document
STOA	Science and Technology Options Assessment
STREP	Specific Targeted Research Project
SusChem	Sustainable Chemistry (ETP)
TPWind	European Technology Platform for Wind Energy (ETP)
TR	Turkey
UK	United Kingdom
UKREP	UK Representative
US	USA
Waterborne	Waterborne TP (ETP)
WSSTP	Water Supply and Sanitation Technology Platform (ETP)
ZEP	Zero Emission Fossil Fuel Power Plants (ETP)

Chapter 1

Introduction, Theoretical Framework and Methodology

Introduction

This thesis provides a theoretical and empirical analysis of European Technology Platforms (ETPs) and the important and interesting questions their emergence and impact raises about the nature and character of policymaking and governance in the EU. In particular, it will examine how the European Commission has responded to the increasing need for knowledge and expertise in the formulation of policy in the highly complex area of European research and technology policy.

European research and technology has emerged as one of the most important areas of policymaking in the EU. It is a highly complex area in which knowledge and expertise play a vitally important part in the policymaking process. This is a policy area where the Commission is increasingly reliant on the specialist knowledge of expert groups and stakeholders in relation to the formulation of policy. The significance of this development is that it is generating a gap in the distribution of knowledge between the expert and the generalist politician, administrator and citizen who do not possess the technical background and information to make decisions in sophisticated areas. This unevenness in the distribution of knowledge is a cause for concern and the research will analyse the mechanisms that the Commission has adopted to address this problem.

The increasing role of expert groups in the formulation of policy, such as ETPs, raises questions about the technocratic nature of governance in the EU and the degree and extent to which the process is becoming dominated by experts. Through an examination and analysis of ETPs, the thesis will attempt to answer the central question: are ETPs a manifestation of an emerging technocratic model of policymaking in the EU (rule by experts), or do they represent an attempt by the Commission to manage and control expertise as a means of acquiring the knowledge and stakeholder support they require to legitimise policy and shape member state preferences?

The theoretical analysis of the thesis focuses on policymaking approaches that place stakeholders, knowledge and expertise at the epicentre of policymaking (policy networks, epistemic communities, advocacy coalitions and technocracy) and contrasting approaches that emphasize the complex interrelationship between institutions and actors in the process (new institutionalism). In particular, it assess recent literature that has identified a proactive role for the Commission in the formulation of deliberative policy forums in complex areas of policy. It will examine the extent to which these models have evolved out of the unique institutional architecture of the EU and the 'Community Method' of policymaking bequeathed by Jean Monnet that has become the subject of much critique regarding its technocratic characteristics. It examines whether any of these competing approaches accurately capture and describe the formulation and make-up of ETPs and what their role in the policymaking process reveals about contemporary governance and policymaking in the area of European research and technology policy.

The Emergence of Research and Technology Policy

Scientific research, technological development and innovation are now widely considered to be the cornerstone of a modern knowledge-based economy. World-leading scientific research capability, coupled to a well-developed innovation infrastructure and a capacity to commercialise research effectively, is widely understood to be the key to the development of sustainable economic growth and competitiveness. There is a general consensus at the European and national level that these assets are the key to the creation of high value- added businesses and jobs in new technology-driven sectors and to solving societies' socio-economic problems. It is within this context that the EU has emerged as a key arbiter of policy and allocator of resources in research and technology, an area of policy that has become central to achieving the main goal of the Lisbon Strategy: to make Europe the most competitive and dynamic knowledge-based economy in the world (European Council 2000).

The importance of research and technology is very much reflected in the member state commitment and support for the 2000 Commission Communication *Towards a European Research Area.* This Communication outlined in no uncertain terms that a failure to act by increasing investment and facilitating greater

collaboration in research and technology policy at the European level would have severe consequences:

> 'Even more so than the century that has just finished the XXIst century we are now entering will be the century of science and technology. More than ever, investing in research and technological development offers the most promise for the future…In Europe, however, the situation concerning research is worrying. Without concerted action to rectify this, the current trend could lead to a loss of growth and competitiveness in an increasingly global economy. The leeway to be made up on the other technological powers in the world will grow still further. And Europe might not successfully achieve the transition to a knowledge-based economy.' (COM 2000a: 4)

In addition to an aspirational commitment to expending 3% of GDP on research as part of the goals of the Lisbon Agenda, the Member States responded to this Communication by entering into a commitment to examine the potential for a significant increase in the budget allocated to the Framework Programme for Research and Development (FP). This eventually resulted in an increase in the budget from €17 883 Million in FP 6 (2002 – 2007) to €50 521 Million in FP7 (2007 – 2013), making this the third largest budget area in the EU after agriculture and regional policy. Despite these developments, research and technology policy remains an area that is neglected and under-researched by the academic community with only three substantial contributions to the literature in this area in the past 10 years (Edler *et al.* 2003; Mulder *et al.* 2006; Delanghe *et al.* 2009).

This thesis redresses this imbalance in the literature and makes a significant contribution to the debate in the area of European research and technology policy, by identifying and analysing the latest important developments in the area, such as, the major increase in the budget and the emergence of new support and policymaking mechanisms in the form of ETPs. Much of the existing literature in this area is somewhat dated and mainly prescriptive and normative in both its tone and aims (Layton 1969; Williams 1973; Sharp & Shearman 1987; Sandholtz 1992a; Kassim & Menon 1996; Hayward 1995; Krige & Guzzetti 1995). Much of this literature stresses

the need for greater investment in research and technology, or the need to reduce fragmentation by providing better coordination between national regional and European programmes. Other contributions look at innovation and the need to increase links between stakeholders, particularly research and industry, to ensure European research makes it to the market place. There has, however, been little in the way of analysis of the way in which policy has been formulated and the complex interaction between EU institutions and key stakeholders in European research and technology policymaking.

The only academic work to examine and analyse, in significant detail, the policy and decision-making process in the area of research and technology policy remains John Peterson and Margaret Sharp's (1998) *Technology Policy in the European Union,* which is 12 years old and requires updating. While the policy and decision-making process in this area is very complex, it is rather surprising that it has not been subject to more academic discussion from a policy analysis perspective given the complex interaction between the Commission and a wide range of stakeholders, and the role of knowledge and expertise in the process. Indeed, what makes this policy area particularly interesting is the fact that it emerged organically and not as a policy competence defined, from the outset, by treaty definition. Where major initiatives, such as the development of the Single Market and Economic and Monetary Union were aspirations outlined in the Treaty of Rome, research and technology policy was given treaty definition retrospectively in the Single European Act. This represents an interesting example of how the Commission, acting entrepreneurially, was able to develop a new policy competence through knowledge and stakeholder support.

At the very heart of expansion of EU competence in this policy area has been the entrepreneurial role of the European Commission. Throughout the thesis references are made to EU institutions/stakeholders acting 'entrepreneurially'; this word is used to refer to institutions/stakeholders proactively seeking opportunities to advance their own competence and interests. For example, given the complexity and specialist nature of research and technology the Commission has adopted a strategy of involving a range of actors, including scientists, industrialists, civil servants, academics and politicians, in the consultation and formulation of European R&D policy to build

knowledge and stakeholder legitimacy in an attempt advance EU competence in the area. The latest manifestation of this approach has been in the Commission initiative and financial support for the development of European Technology Platforms.

The emergence of European Technology Platforms represents a significant development in the way in which policy is formulated in the area of research and technology, an important development that has gone relatively unnoticed by the academic community. As noted above, the European Commission has been active in the formulation of networks to develop and implement collaborative projects at the European level pre-defined by the Framework Programme in research and technology (FP). However, what distinguishes ETPs from these expert groups and stakeholders is that they have been formed to contribute directly to the formulation of policy in identifying strategic future research and technological priorities to be outlined in the FP. As the emergence of ETPs is a fairly recent phenomenon, there is no academic literature on their formulation and the impact they have had on the policymaking process; there is, therefore, a need to analyse the implications of these developments in relation to policy and decision-making at both the theoretical and empirical level. The aim of this research is to address these recent omissions in relation to the academic debate about the nature of governance in the area of research and technology policy.

European Technology Platforms

ETPs form an integral part of the European Commission's plan to develop a European Research Area. This aims to reduce fragmentation and duplication through fostering greater collaboration between stakeholders and increasing coordination of regional, national and European research and technology programmes (COM 2000). What makes ETPs particularly interesting and worthy of study is that they have not formed spontaneously through stakeholder interaction, like other expert groups in the area, but were the brainchild of the European Commission. Indeed, the concept of ETPs was a policy initiative implemented by Commissioner for Research, Philip Busquin, as one of his first acts upon taking office (Interview 2008ii). Busquin had been influenced by the newly formed Advisory Council for Aeronautics Research in Europe (ACARE) that was designed to bring all key stakeholders in the aeronautics industry to

define future priorities in a Strategic Research Agenda (SRA). ACARE, formed in 2001, is regarded as the first ETP and formed the basis for the ETP model that would eventually be developed by the Commission (Interview 2008xx).

The first reference to ETPs was made in the Commission Communication entitled '*Industrial Policy in an Enlarged Europe*' published in December 2002 (COM 2002). ETPs were seen by the Commission as a mechanism for identifying long-term policy priorities in key areas of research and technology vital to economic and society changes, and increasing cooperation between a wide-range of stakeholders to ensure research made it to the market place (COM 2002a). The concept of ETPs was formally introduced by the Commission in a 2004 document entitled '*Technology Platforms: From Definition to Implementation of a Common Research Agenda*'. In 2010 there are now 36 ETPs in existence in a wide range of key research and technology sectors (see Table 5.2).

Described by the Commission as 'informal discussion networks', ETPs bring together a wide range of stakeholders. The thesis uses the EU definition of 'stakeholder': 'any person or organisation with an interest in or affected by EU legislation and policymaking is a "stakeholder" in that process'. (COM 2010). For the purposes of stylistic flow, the contemporary term, 'stakeholder', will also be used in a historical context throughout the thesis to refer to persons or organisations who have actively participated in the EU policymaking process. ETPs are made up of a wide range of stakeholders, including key industrial players, small and medium enterprises, the financial world, national and regional public authorities, the research community, universities, non-governmental organizations and civil society (COM 2006b: 6). The Commission's main reason for bringing these stakeholders together was to contribute to the formulation of FP7 through the development of Strategic Research Agendas (SRAs) that identified long-term R&D policy priorities in areas of research and technology vitally important to Europe's future economic growth and competitiveness in an increasingly globalised economy.

ETPs are playing an important role in the evolution of research and technology policy and the formulation and implementation of FP7. ETP SRAs have been used by the Commission in the formulation of individual Work Programmes in the specific

themes of the Cooperation Pillar of FP7 (see Figure 6.3 for FP7 thematic areas). This is openly acknowledged by the Commission who have noted that ETPs are playing a central role in shaping European research and technology programmes (COM 2006a). Despite a central role in the development of FP7, no significant academic literature has emerged examining and analysing ETPs, their make-up and impact on the policymaking process.

ETPs represent something different from existing expert groups in the area of research and technology policy in that they have been designed to represent a whole policy sector and embrace all stakeholders within it, rather than a single group or policy issue within a sector. More significantly, ETPs have been formulated by the Commission to contribute knowledge, expertise and ideas directly to the formulation of FP research priorities. Indeed, it is the proactive role of the Commission in their formulation, funding and design that raises interesting questions about the interrelationship between EU institutions and stakeholders in the policymaking process. There is, therefore, a clear need to examine the emergence of ETPs in relation to the existing theoretical academic debate, in order to assess what these developments reveal about the nature of governance in the area of European research and technology policy.

Theoretical Framework

The EU is in a state of being and becoming so it is difficult to develop theoretical models that capture more than a snapshot of the policymaking process at any given moment in time (Peterson 1995b; Richardson 1996b). The theoretical landscape is further complicated by the EU's unique institutional architecture and the complex interrelationship that has developed between the Commission, the member states and the large web of non-governmental stakeholders in the policymaking process. This complexity is further compounded by the emergence of knowledge and expertise and its growing impact on all levels of modern governance.

The development of a European policy dimension in research and technology and the emergence of ETPs in the formulation of policy raise interesting questions about the nature of policymaking in the EU. In order to understand these

developments, it is important to locate them within the theoretical debate. The theoretical framework that underpins this analysis will focus on two interwoven themes connected to academic theories of governance in the EU, with particular reference to multi-actor participation and the complex interaction with the EU's unique institutional structure and the influence the latter has on the policymaking process. This, in turn, connects with themes relating to the increasingly important role of knowledge and expertise in complex and highly sophisticated policy areas and the concomitant debate about the technocratic nature of EU governance.

The attempt to describe, categorise, analyse and predict the present and future direction of the EU has been the subject of intense academic scrutiny and debate. From its genesis, the main focus of this debate has been whether the EU represented a new system of supranational governance, without the trappings of government (neo-functionalism - Haas 1958, 1961, 1964; Lindberg & Scheingold 1970), or, was simply another international organisation established to broker national interests (state-centrism/intergovernmentalism - Hoffman 1966; Millward 1984, 1992; Moravcsik 1993). While these approaches have been the subject of much critical scrutiny, they remain an important influence on the academic debate because they both continue to offer two competing, yet plausible, macro theoretical explanations regional integration.

The recent emergence of new areas of policy competence, such as research and technology, with an entrepreneurial Commission at the epicentre of a multi-actor based policy process has generated the development of a range of new academic approaches that focus on new complex forms of governance rather than trying to establish a macro-theory of regional integration (Marks *et al* 1996; Kohler-Koch & Eising 1999; Hooghe & Marks 2001; Jachtenfuchs 1995, 1997, 2001). These new narrowly focused approaches have developed a range of new descriptions, categories, concepts and metaphors built around the idea of an emerging process of governance. These approaches are based on the idea that a new system of governance has emerged that involves a wide range of interdependent stakeholder and is shared across multiple levels of governance at the sub-national, national and supranational level and that policy and decision-making cannot be solely explained by recourse to

member state interests. This rapidly expanding system of governance at the European level, particularly in complex areas such as research and technology policy has, in turn, raised issues about the role of expertise in the process and has triggered an emerging debate about the technocratic nature of this new policy environment.

The increasing role of a wide number of expert groups and stakeholders in the formulation of research and technology policy, such as ETPS, places this thesis firmly within the academic literature on an emerging system of governance at the EU level. The idea central to governance approaches is that policymaking involves a wide-range of interdependent stakeholders. In response to these developments a number of actor-based models, originally developed to describe policymaking at the national and international levels, have been applied to an analysis of European policymaking. These approaches start from the premise that it is actors, rather than states or institutions that are the major agents of policy change. These actor-based models include policy communities (Richardson & Jordan 1979/Marsh & Rhodes 1992), issue networks (Heclo 1978), epistemic communities (P Haas 1989, 1992) and advocacy coalitions (Sabatier 1988, 1998; Sabatier & Jenkins-Smith 1999) and they identify the central role of expert groups/stakeholders, knowledge and ideas in the policymaking process. This thesis identifies and examines the key tenets of these approaches (Chapter 2) and then analyses them against an empirical analysis of ETPs (Chapter 5) in order to assess whether any of these models can capture and describe what ETPs represent.

The advance of EU policy competence in the area of research and technology lends support to a growing body of academic literature that emphasises a prominent role of an entrepreneurial and agenda-setting Commission in using knowledge-driven expertise and stakeholder support to develop policy proposals (Sandholtz & Zysman 1989; Cram 1994, 1997 Green-Cowles 1995; Ross 1995; Pollack 1994, 1997; Princen & Rhinard 2006; Princen 2007; Boswell 2008). Indeed, the central role of the Commission in the formulation of ETPs has a resonance with new institutional approaches that identify a key role for institutions in policymaking and their capacity to shape stakeholder involvement in the process (Bulmer 1994, 1998; Hall & Taylor 1996; Pierson 1996; Armstrong & Bulmer 1998; Aspinwall & Schneider 1998; 2001).

New institutional approaches have generated fresh academic thinking about the interaction between the Commission and stakeholders in EU policymaking. This has manifested itself in the emergence of a new body of literature that focuses on the role of the Commission in the development of deliberative policy forums as a means of managing complex areas of policy (Richardson 1996b; Joegres & Neyer 1997; Joerges 2001). What distinguishes the deliberative forum approach from the new institutional approach is the involvement of multiple stakeholders in a policymaking process based on deliberation and reciprocal persuasion aimed at arriving at a policy consensus (Majone 1989).

The way in which the Commission has developed the forum model in these complex areas has implications for the nature of governance in the EU; in particular, the way in which the Commission uses this approach to manage knowledge and expertise in policy formulation. The institutionalisation of these forums provides the Commission and stakeholders with the capacity, based on wide ranging knowledge and expertise, to develop strategic policy agenda's. The analysis of this newly emerging forum model brings together key components from both new institutional and actor-based approaches and provides a means of reconciling them by establishing a central role for both institutions and stakeholders in the policymaking process. The main features of new institutional and deliberative policy forum approaches will be analysed, along with the actor-based models identified above, to assess what light they can throw on an empirical analysis of ETPs.

Any analysis of the agenda-setting role of the Commission and the increasing role of expert groups and stakeholders in policymaking cannot be divorced from a broader debate that has emerged analysing the technocratic nature of the EU policy process (Featherstone 1994; Wallace & Smith 1995; Radaelli 1999a/1999b; Harcourt & Radaelli 1999; Tsakatika 2002). Indeed, one of the important aspects of the analysis in this thesis is the attempt to try and connect the theoretical discussion (Chapter 2) with the conceptual critique that the EU institutional framework and 'Community Method' is essentially technocratic in design and implementation (Chapter 3). There is general academic agreement that the institutional framework bequeathed by the EU's Founding Fathers, in particular Jean Monnet, has left a technocratic legacy that

contributes to the 'democratic deficit' that exists in the EU today (Featherstone 1994; Tsakatika 2002). In order to gain an insight into the contemporary conceptual and empirical analysis it is important to provide a clear definition of the concept of technocracy and its relevance in analysing the 'Community Method' of policymaking developed by Monnet (Ridley 1966; Meynaud 1969; Putnam 1977; Monnet 1978; Fischer 1990).

One of the reasons for focusing this discussion on research and technology policy is that no other policy area is so dependent on the role of knowledge and expertise in assisting decision-makers to understand the complexity and highly sophisticated nature of scientific knowledge and its implications for society (Williams 1989; Peterson & Sharp 1998; Radaelli 1999a). Indeed, given the highly complex and technical nature of the area, if the concept of technocracy is to have any resonance as an analytical tool it will be in the area of research and technology policy. The thesis analyses these broader issues in relation to the current theoretical debate and the emergence of ETPs. An empirical analysis of the Commission's entrepreneurial role in the development of ETPs provides the basis for a reanalysis of the various approaches discussed above that have evolved in relation to an analysis of the EU as a new model of governance. In particular, the complex inter-relationship between the Commission and key stakeholders in an area that is critical to Europe's future capacity to compete in the global economy. It also provides an opportunity to analyse the theoretical debate within the context of academic discussion about the relevance of technocracy as a concept in analysing the EU.

Methodology

An examination of the emergence of ETPs and their impact on the nature and character of governance in the EU is best understood through the use of qualitative analysis; this is the methodological approach adopted in this thesis. Qualitative methods are 'most appropriately employed where the goal of the research is to explore people's subjective experiences and the meanings they attach to those experiences...Qualitative methods, therefore, are good at capturing meaning, process and context.' (Devine 2002: 199)

It is important to understand, however, that a qualitative approach to analysis is not without its weaknesses. A number of criticisms have been levied against this type of approach; for example, qualitative research is often dismissed as being unrepresentative and unreliable, lacking in objectivity with too much bias in the design of the research and collection and interpretation of data. Qualitative research is also considered neither replicable nor comparable and therefore it is regarded as difficult to make generalisations and inferences from qualitative studies (Devine 2002: 204-207; also see Fielding 1993 & Silverman 1997).

Many of these criticisms are rooted in a positivist perspective that scientific approaches can establish objective universal truths. Qualitative approaches are grounded in an interpretive epistemology that argues that research cannot be divorced from social reality and the beliefs, values and concepts people create to understand the world (Devine 2002). It is, however, important to recognise both the limitations and pitfalls of this type of approach; for example, the need to ensure that in the use of a qualitative analysis the interpretation of the data is controlled by the self-discipline of critical reflection and evaluation. This is particularly important in light of the fact that the analysis will be peer reviewed. It also involves an understanding that we can learn from mistakes. This approach has been most eloquently outlined by Karl Popper in his preface to '*Conjectures and Refutations: The Growth of Scientific Knowledge*' (Popper 1963). He outlined the approach in the following way:

> 'They way in which knowledge progresses, and especially our scientific knowledge, is by unjustified (and unjustifiable) anticipations, by guesses, by tentative solutions to our problems, by conjectures. These conjectures are controlled by criticism; that is, by attempted refutations, which include severely critical tests. They may survive these tests; but they can never be positively justified: they can neither be established as certainly true nor even as 'probable' (in the sense of the probability of calculus). Criticism of our conjectures is of decisive importance: by bringing out our mistakes it makes us understand the difficulties of the problem we are trying to solve. This is how we become better acquainted with our problem, and able to propose

more mature solutions: the very refutation of a theory – that is, of any serious tentative solution to our problem – is the step forward that takes us nearer the truth. And this is how we can learn from our mistakes.' (Popper 1963: vii)

Popper acknowledges the influence of the Socratic doctrine of fallibility in relation to his theory of knowledge; the search for knowledge and understanding (truth) must be underpinned by a persistent search for error (Popper 1963: 16). For Popper, wisdom is based on the Socratic notion of an awareness of our limitations and that knowing how little we know should permeate all levels of analysis (Popper 1963). It is an approach that Popper encouraged not just in the study of politics, but in its practice (Popper 1963). For Popper the Platonic ideal of a state based on essential truth and the science of immutable tendencies was deeply flawed and he argued in volume one of his book '*The Open Society and its Enemies*' (1945) that this idea had cast a utopian spell on both the analysis and practice of politics. He contrasts this idea with the Socratic notion of the search for, and love, of knowledge. In the application of these ideas to contemporary politics he drew a distinction between utopian engineering and social engineering. For the utopian social engineer the problem of politics is set within the context of historical trends and tendencies with its emphasis on immutable laws and he contrasts this with a piecemeal approach to political action (social engineering):

'The social engineer does not ask any questions about historical tendencies or the destiny of man. He believes that man is the master of his own destiny and that, in accordance with our aims, we can influence and change the history of man just as we have changed the face of earth. He does not believe that these ends are imposed upon us by our historical background or by the trends of history, but rather that they are chosen, or even created, by ourselves just as we create new thoughts or new works of art or new houses or new machinery. As opposed to the historicist who believes that intelligent political action is possible only if the future course of history is first determined, the social engineer believes that a scientific basis of

politics would be a very different thing; it would consist of the factual information necessary for the construction or alteration of social institutions, in accordance with our wishes and aims.' (Popper 1945: 22).

For the piecemeal social engineer the issue is about a technical rational assessment of the issues with the aim of identifying and creating outcomes based on practical information in the construction and alteration of political institutions. It is an approach that involves short term practical aims. The emphasis is upon the appropriateness of an institution and its efficiency in dealing with contemporary issues and problems. Popper regards this approach as methodologically sound and the only rational way of approaching political action without the inherent dangers of the utopian model (Popper 1945).

For Popper, the key to the piecemeal engineering approach is that it is easier to reach a consensus about action required to combat the immediate problems faced by society, rather than raising expectations about some ideal good and the means of achieving it. It is interesting to note that Popper provides a fascinating example of how the incremental approach might be applied to the reconstruction of post-war Germany. In a footnote to chapter nine in volume one of '*The Open Society and its Enemies*' he writes:

'The fringe of the aggressor country, including its sea-coast and its main (not all) sources of water power, coal, and steel, could be severed from the state, and administered as an international territory, never to be returned. Harbours as well as the raw materials could be made accessible to the citizens of the state for their legitimate economic activities, without imposing an economic disadvantages un them, on the condition that they invite international commissions to control the proper use of these facilities.' (Popper 1945: 289).

While there is no evidence that Jean Monnet, in developing his idea for a European Coal and Steel Community (ECSC), was aware of this footnote, given the impact of the publication of '*The Open Society and its Enemies*' in America and Europe at this time it is reasonable to assume he would have been aware of Popper's work. Furthermore, the close connections that he developed with the American academic and political communities during his war-time secondment to the United States (representing the British Supply Council), which he assiduously cultivated in the support of the European project in the immediate post-war period, would have further drawn his attention to the significance of this publication.

Popper's epistemological approach will inform the analysis of ETPs and their impact on the nature and character of governance in the EU; in particular, whether ETPs represent an incremental approach to policymaking based on critical analysis in highly complex areas of policy.

This thesis has adopted two main qualitative methods to guide the analysis:

- Desk-based analysis of primary and secondary sources;
- Semi-structured interviews with key stakeholders involved in European research and technology policymaking.

The empirical chapters of this thesis, examining the development and make-up of ETPs (Chapter 5) and their role in the formulation of FP7 (Chapter 6), were based on a qualitative analysis of primary documentation and semi-structured interviews, and the results of a quantitative ETP stakeholder survey developed by a Brussels-based consultancy firm, Idea Consultants, on behalf of the European Commission (COM 2008a). A number of methods and sources were used in order to cross reference key findings and increase the validity of interpretations.

A number of key sources have been used throughout the thesis. The European Union prides itself on its openness and transparency, which manifests itself in easy-to-use online databases. The Cordis and DG Research databases are an excellent source of information and were very important in the preparation of this thesis. They provide up-to-date policymaking documents and information relating to FP7 and the

consultation process; including, Commission Communications, Memorandums, White/Green Papers, FP Work Programmes, European Council and European Parliament documents, and the position papers of the various member states and key stakeholders involved in the process. The Cordis database was particularly useful in providing past and up-to-date information on all Framework Programmes, in particular, FP7.

All ETPs currently in existence can be found online at their individual websites (a list of existing ETPs can be viewed in Table 5.2). These websites can be accessed through the Cordis database that has a number of web pages specifically focusing on ETPs. Individual ETP websites differ in quality and user-friendliness, but all provide access to key ETP documents, including Action Plans, Strategic Research Agendas and Implementation Plans. They were particularly useful in providing the information necessary for an analysis of the governance structures of ETPs (outlined in Figure 5.9), membership (see Figures 5.4 and 5.5 for breakdown of ETP membership) and the policy content of SRAs that was required to assess the impact of the SRAs on the individual FP7 Work Programmes.

Between March 2008 and September 2008, I was based in Brussels working as intern at the office of the North East England Regional Development Agency (One NorthEast). The significance of this period of internship was that it gave me the opportunity to research a wide range of EU policy areas, including research and technological development. During this period of placement I had responsibility for improving regional intelligence on European research and technological development, and, in particular, providing up-to-date information to regional stakeholders on FP7 and the publication and contents of thematic work programmes relevant to stakeholder interests. On behalf of the region, I attended information days related to particular thematic areas of FP7, coordinated by DG Research, and prepared briefs which were fed into the regional information database. I was involved in coordinating and making appointments for lobbying visits to DG Research and ETPs on behalf of regional stakeholders. I was also involved in a number of activities relating to the European Structural Funds (ESF), in particular, Interreg, including arranging and attending partnership meetings. Part of my role was liaising with the Enterprise Europe

Network (EEN) which is an important source of disseminating FP7 and innovation information at the regional level and which is jointly funded by the European Commission and the Regional Development Agency.

This range of activity brought me into regular contact with Commission officials in DG Research, Regio and Enterprise and ETP members. This provided an interesting insight into the interaction between EU institutions, including different Commission DGs, and national/regional governmental and non-governmental stakeholders. This was particularly important in assisting me in placing research and technological development within the wider context of the EU policymaking process. The work placement, however, cannot be regarded as a period of ethnographic research or participatory observation as I was not working directly in the Commission or with an ETP.

The main significance of the work placement is that it gave me the opportunity to widen my contact base of potential interviewees. An important part of the research method adopted for this thesis was qualitative interviewing Commission officials, ETP members and other key stakeholders in the European research and technology policymaking process. Elite interviewing is a technique often utilised within political science when researching the policy and decision-making process (Mischler 1986; Scheurich 1995; Kvale 1996; Silverman 2001). Potential interviewees were primarily identified through an examination of Commission and ETP documentation. As my thesis is centred on the Commission and ETPs, and the relationship and interaction between the two, I focused my interviews on Commission officials and ETP members, rather than member state officials or MEPs. Once access to these actors had been gained a snowball effect would often ensue in which interviewees would introduce me to, recommend and provide contact details of other potential respondents. This was particularly the case in the European Commission where a strong networking culture exists. They were also helpful in identifying and providing copies of relevant documents they thought relevant to my research. Gaining access to Commission proved easier than ETP members. Many ETP members were not based in Brussels or lacked the time to spare; while some rejected the opportunity as they were suffering from interview fatigue after being inundated with requests for interviews. These

factors explain why the number of ETP members interviewed is substantially fewer than Commission officials.

During my period Brussels in 2008, forty nine face/telephone interviews were conducted in total, including 28 with Commission officials, 20 with ETP members, one with a National Research Office official. On a return visit to Brussels in 2010 I conducted three further interviews with industry representatives and in the UK conducted two interviews with consultants specialising in the European Framework Programme. This thesis also includes the thoughts and views of stakeholders interviewed back in 2005 as part of my MA Dissertation looking at the consultation process undertaken by the European Commission for the formulation of FP7. This consisted of nine face to face/telephone interviews, including, one former Commissioner, two Commission officials, one former member of the European Parliament, two UK Government Officials and three consultants specialising in the European Framework Programme for research and technology. In total, 63 interviews were completed for this research.

The decision to base the interviews on a semi-structured approach was informed by May's (1997: 109) view that this type of interview offers a deeper understanding of peoples 'experiences, opinions, aspirations and attitudes and feelings'. This is one of the reasons, as Burnham *et al.* (2004: 205) point out, that interviewing is regarded as the most effective method available to academics seeking to obtain information about decision-making and the policymaking process. Indeed, semi-structured interviews provided an effective mechanism to gain the views and opinions of the key stakeholders involved in the process. One of the central problems faced in using qualitative interviews as a research method is interviewee bias and inferring objective consequences from subjective perceptions (Fielding 1993). In order to ensure the validity of interviews the data was triangulated with other sources including primary documentation and the views of other interviewees.

To further test the validity of interviewees a core set of key questions was put to each one, but these questions were adaptable depending on the interviewee's background and level of knowledge and involvement in the policymaking process. The interviews were not hindered by a tight and rigid framework, therefore, respondents

could talk openly and bring up other new areas of discussion that had been unasked by the interviewer. As a consequence, new lines of enquiry developed that opened up new areas of questioning. Each interview involved a confidentiality agreement at the outset to protect the identity of the interviewee, and this allowed them to open up and provide more information.

As part of this research I designed a stakeholder survey that was prepared to assist in establishing the views of ETPs members on the make-up and design of ETPs and their role and influence in the formulation of FP7. However, it was pointed out to me in one of my first interviews with a Commission official that they had recently commissioned an evaluation of ETPs. This evaluation was based on a comprehensive and wide-ranging survey of stakeholders involved in ETPs. One Commission official gave me access to a copy of the survey and it quickly became apparent that there was a high level of similarity between the key questions in my own survey and that of the survey produced by the consultancy firm. The Commission official expressed concern about stakeholder survey fatigue and this might limit the response to my own survey. The Official pointed out their evaluation had already been sent out to stakeholders and the results would be made widely available in the public domain in September 2008. In view of this development there appeared little point in duplicating the survey.

Structure of Thesis

Following the introduction, Chapter 2 focuses on identifying a theoretical point of reference from which ETPs can be analysed and an assessment can be made about what they represent and where they are located in relation to the current theoretical debate about the nature and character of policymaking and governance in the EU. This analysis is set within the context of two dominant theoretical approaches, the state-centric/intergovernmental model and neo-functionalism that have been particularly influential in informing this academic discussion and shaping the contemporary debate. The chapter then examines governance approaches to the EU before providing an in-depth analysis of actor-based models (focusing on policy communities, issue networks, epistemic communities and advocacy coalition models), the contribution of a new-institutional analysis to this debate and the emergence of a deliberative forum approach.

Chapter 3 assesses the important role of knowledge and expertise in the policymaking process and the Commission's increasing reliance upon expert groups, such as ETPs, in the formulation of policy in highly complex areas such as research and technology. The chapter examines the debate about the technocratic nature of policymaking in the EU and the argument surrounding the idea of a democratic deficit. It focuses on how this debate is inextricably linked with the idea that the EU has been built upon technocratic foundations based on a unique supranational institutional structure and the Community Method of policymaking bequeathed by the EU's Founding Father, Jean Monnet. This debate is examined in relation to the concept of technocracy and analyses whether it has a continuing resonance with regard to the contemporary discussion of the nature of governance in the EU. The chapter argues that the concept of technocracy is not a useful tool in helping to describe and explain EU decision-making or the method of policymaking developed by Jean Monnet. The Monnet Method rather reflected a deliberative approach to policymaking in which stakeholders with competing interests were required to reach a consensus around a given problem through debate and discussion.

Chapter 4 examines and analyses the emergence and evolution of European research and technology policy between 1950 and 2000. It focuses on the central role of an entrepreneurial Commission and its ability to exploit periods of uncertainty to expand its competence in an area of policymaking traditionally the preserve of the nation state. The chapter focuses on the way the Commission uses the Community Method to engage stakeholders and develop a consensus around knowledge-driven, evidence-based policy proposals capable of shaping the preferences of other EU institutions and the member states. The chapter finds that the Commission has been increasingly moving towards more deliberative forms of policymaking based on the Community Method as a means of increasing stakeholder participation in a policymaking area that has traditionally been closed and dominated by a small number of key stakeholders.

Chapter 5 offers an empirical analysis of the emergence and formulation of ETPs. The chapter begins with a contextual overview identifying the motives and aims behind the Commission's support for their establishment. It then proceeds to provide

a detailed examination of the structure and membership of ETPs and an analysis of the policy formulation procedures developed for the preparation of the SRAs. The key features of ETPs are analysed in relation to the various theoretical approaches examined in Chapter 2, in order to identify the nature and character of ETPs. The chapter finds that through ETPs the Commission has developed a deliberative forum approach to policymaking. This approach is firmly grounded in the Community Method developed by Jean Monnet and is designed as a mechanism for gathering knowledge, expertise and stakeholder legitimacy and to act as a safeguard against technocracy.

Chapter 6 examines the role and impact of ETPs in the research and technology policymaking process. The chapter begins with an overview of the Commission's comprehensive consultation process for the development of FP7 and identifies the main internal and external sources of information used by the Commission to assist in the formulation of policy. The chapter locates ETPs within this process and provides an assessment of these different sources, including an analysis of their contribution and influence on the process. The chapter argues that ETPs were a vital source of knowledge for the Commission in the formulation of the FP7, particularly at the detailed and technical Work Programme level in areas of leading edge technology. The chapter finds that ETPs have a greater capacity to impact on the content of policy because they represent the views of the key stakeholders within a technology sector and not individual or group interests.

Chapter 7 outlines the key theoretical and empirical findings to be drawn from the thesis. The thesis finds that through the development of ETPs the Commission has developed an effective mechanism for gathering the necessary knowledge, expertise and stakeholder support on which to legitimise policy proposals and shape member state preference. Furthermore, through ETPs, the Commission is able mobilise competing stakeholder interests within a deliberative policy forum to provide an effective safeguard against expert domination in the highly complex and technical areas of policy.

Chapter 2

European Technology Platforms – The Theoretical Perspective

Chapter Outline

The focus of this chapter is the location of ETPs in relation to the current theoretical debate about the nature of policymaking and governance in the EU. The aim is to establish theoretical points of reference on which to base the analysis of ETPs for the purpose of identifying what ETPs represent and how they fit into the EU policymaking process. The context for this analysis are the challenges faced by academics in identifying a theoretical framework for analysing the mechanisms that underpin the constantly changing institutional and policymaking environment in the EU, and the complex interrelationship between actors in the process – the member states, the European Parliament, the Commission and key non-governmental stakeholders.

This chapter examines the emergence of the academic debate about the nature of policymaking and governance in the EU. The chapter begins with an analysis of the two dominant grand theoretical approaches applied to the EU, neo-functionalism and intergovernmentalism, which continue to have a significant influence the contemporary theoretical discussion. Because ETPs cannot be easily explained in relation to the state-centric intergovernmental approach, the analysis is more closely influenced by the neo-functionalist approach with its emphasis on the complex interaction between EU institutions and stakeholders in the policymaking process. The chapter assess theoretical approaches analysing the EU as a system of governance before providing a detailed examination of actor-based models (policy network analysis, issues networks, epistemic communities and advocacy coalitions), new institutional approaches that give prominence to the role of the Commission in providing a framework for policy formulation, and a derivative of this approach that focuses on the emergence of deliberative forums. These approaches will provide a point of reference for the empirical analysis of ETPs in later chapters.

Theoretical Approaches to the EU

The attempt to describe, categorise, explain and predict the future direction of the EU has been a constant source of academic activity. From the very outset, the ECSC (1951) attracted considerable academic interest and became a testing ground for theories of regional integration. The supranational architecture of the ECSC, with a High Authority, acting independently of the nation state, at the epicentre of the policymaking process, appeared markedly different from the institutional structure of the conventional International Organisation (IO). It triggered an immediate academic debate about whether the ECSC represented a new model of regional integration or was a further manifestation of the unique ability of the European nation state to adapt to the needs of post-war economic reconstruction, the political integration of the new Germany and the uncertainties of a new world order dominated by two non-European states with competing ideologies.

The source of the academic debate was a new school of thought, neo-functionalism, which endeavoured to establish, based on a detailed study of the ECSC, a macro-theory of regional integration (Haas 1958, 1961, 1964). This new approach represented a direct challenge to the state-centric intergovernmental paradigm that had dominated much of the academic thinking and literature in the study of international relations. The main theme of the neo-functionalist approach was that the ECSC was more than a new mechanism for brokering national interests in the international environment and that the High Authority could not easily be dismissed as merely a delegated agent of the Member States. For these new theorists of regional integration, the supranational architecture of the ECSC represented a new complex political system encompassing a wide range of governmental and non-governmental actors and an emerging system of supranational governance (Haas 1958, 1961, 1964; Lindberg & Scheingold 1970). It is an academic debate that continues to have a contemporary resonance.

The challenge for academic theorists in this field remains essentially the same as it was in relation to the initial debate about whether the ECSC represented a new system of governance or was merely an adaptation of the state-centric model. This challenge involves developing a theoretical approach that provides a framework for

capturing and assisting our understanding of the mechanisms that underpin a constantly changing institutional and policymaking environment in the EU, and the complex interrelationship between the member states, EU institutions and non-governmental actors and the power relationship that drives this process. While the normative underpinnings and grandiose claims of neo-functionalism to have discovered a new theory of regional integration may have been subject to intense academic criticism that seriously undermined its credibility, the approach adopted by Haas in describing and explaining the policy process continues to have relevance for contemporary academic analysis. The link identified between an entrepreneurial High Authority/Commission, representing the European dimension and independent of Member States, interacting with key stakeholders in the policymaking process has direct relevance for the study of ETPs in relation to the implementation of EU research and technology policy (Haas 1958).

The intellectual underpinning of the neo-functionalist approach was the pluralist school of behaviourism that was gaining ascendency in the study of political science in the immediate post-war period over the formerly dominant constitutional/institutional modes of analysis. The main focus of the pluralist approach was the way in which individual and collective behaviour in a liberal democratic polity influenced the political dimension. For academics grounded in the pluralist approach, the political process is represented by the way in which groups identify their interests and the way these interests are processed by political institutions.

The neo-functionalist analysis of the political and economic profile of the newly established European Community, and the participating member states, generally fit the preconditions of the pluralist model. This involves a complex and highly diverse society with an advanced industrial/bureaucratic base built on a consensus around liberal democratic values (Haas 1958). It manifested itself in a multiplicity of interests taking the form of interest group activity established for the purpose of influencing the allocation of resources and, therefore, policy outcomes. The system of governance in this type of advanced industrial society is, therefore, subject to the competing demands of these groups and public policy is essentially a synthesising of their demands. Politics, therefore, becomes a group-based activity in which actor groups

pursue their own interests in a pluralist environment (Haas 1958). The state, although important, is not the sole actor; and the complex nature of society and its continued economic growth requires it to act mainly as a gatekeeper to the policy dimension. It is a model of society in which politics is driven by problem solving, rather than an ideological narrative. Haas (1968: xix) provided a classic description of the pluralist approach in relation to the emergence of the EC:

> 'Converging economic goals embedded in the bureaucratic, pluralistic and industrial life of modern Europe provided the crucial impetus. The economic technician, the planner, the innovating industrialist, and trade unionist advanced the movement not the politician, the scholar, the poet, the writer.'

These were the conditions that Haas thought were present in the formulation of the ECSC and why a refined form of neo-functionalism became the dominant form of analysis in relation to the emergence of the EEC and Euratom. Based on a synthesis of the neo-functionalist literature, the analysis can clearly be identified in the outline below which sets out the main components of the approach (Haas 1958, 1961, 1964; Lindberg, Scheingold 1970):

Background Conditions:

- Advanced industrial development an essential pre-condition of integration;
- A prevailing pluralist/behaviourist model of politics;
- Economic and technology driven problem-solving rather than an ideologically driven narrative and political division.

Institutional Architecture:

- Supranational institution independent of member states with policy initiating powers and capacity to interact with key interest groups.

Spillover Process:

- Supranational institution has entrepreneurial and expansive outlook based on integrating policy and engaging with groups in relevant sector;
- Decoupling of interest group loyalties from nation state to new supranational authorities;
- The establishment of new communities with similar supranational institutional architecture (e.g. Euratom and EEC);
- Institutional mergers.

Normative Features:

- Gradual economic and political integration aimed at establishing peace in a continent recently ravaged by national conflict and leading to a United States of Europe.

The fact that the neo-functionalist theory was based on an analysis of the operating processes of the EC, starting with the ECSC and the processes leading to the establishment of the EEC and Euratom, meant that the approach was able to link two important variables that subsequent actor-based models have found difficult to reconcile in relation to the way the EU presently operates. The neo-functionalist approach not only provides an explanation of the role of actors and groups in the policy process, but provides a unique insight into the interaction of these groups with Community institutions and provides an explanation ('spillover') of how a European policy dimension emerges in areas that were previously the responsibility of the nation state.

For neo-functionalists, the unique feature of the newly emerging EC was the supranational architecture with the High Authority/Commission at the epicentre of the policy process equipped with the tools necessary to promote the European dimension. The High Authority was seen as the generator of policy and the main focus for interaction with key stakeholders leading to a shift in perceptions from a national to a European policy dimension. In the words of Ross (1995: 11):

'encoding the strategic insights of Jean Monnet into social science, neo-functionalists hypothesized about issue linkages that would allow European activists in Brussels to seduce essential interest groups towards Europeanism and promote "spillover".'

The neo-functionalists contrasted the institutional structure of the newly established communities with the conventional intergovernmental model in which the secretariat acted as the agent of the participating Nation States and decisions were brokered on the basis of the lowest common denominator of national interests involving a process in which each state takes out a sum equivalent to what it has invested ('*juste retour*'). For the neo-functionalists what distinguished the EC from this model was that the policy process would represent more than the sum of the parts.

The state-centric critique of neo-functionalism was that the approach underestimated the significance of the nation states in that it failed to adequately take account of their role in the creation of the EC and their capacity to interfere with its subsequent progress. This critique was given impetus with the re-emergence of the nationalist narrative in the newly established 5th Republic in France and President de Gaulle's refusal to allow Ministers to attend meetings of the EU Council of Ministers (the 'empty chair policy') and the subsequent Luxembourg Compromise which resolved the impasse by giving Member States the right to veto policy that appeared to undermine national interest. This halted the process of European integration and the Commission entered a period of policy stagnation that would not be fully resolved until the Commission Presidency of Jacques Delors (1985). As Ross (1995: 11) points out:

'Neo-functionalism can hardly be held to explain European integration both when progress is made and when no progress exists. What is most interesting about the building of the EC, that it started, stalled for a very long time, then started up again much later in the 1980s and then fell upon hard times in the 1990s, is not particularly well explained by neo-functionalism.'

In response to the events surrounding the Luxembourg Compromise and the critique outlined above, state-centric models and intergovernmentalism re-emerged as

the dominant mode of analysis (Hoffman 1966). Neo-functionalism, therefore, could not provide a complete explanation of the dynamics of the system. The significance of its contribution, however, and why it continues to have a resonance is that it does provide an explanation of the interaction between institutions and groups in the process of EU expansion and, in particular, the role of an entrepreneurial Commission, and, therefore, still has a relevance for the present analysis (Mutimer 1989; Tranholm-Mikkelsen 1991).

The neo-functionalist model has been particularly helpful in providing an insight into the role of the Commission in establishing a European dimension in research and technology policy and in the interaction between the Commission and the newly established ETPs that are the focus of this thesis. It serves to confirm that while state centric and neo-functionalist models have been the subject of much critical scrutiny by academics they remain an important influence in the debate because they both continue to offer two competing, yet plausible, theoretical explanations of developments at the supranational level. As Peterson (1995c: 399) points out:

> 'The intergovernmentalism v. neofunctionalism debate may have seemed hackneyed and tired. Yet it still lurks behind many competing accounts of EU policy making. Both models provide plausible "macro theories" of EU politics.'

Indeed, the neo-functionalist approach - with its focus on an independent High Authority/Commission at the epicentre of policymaking in the EU and a multi-actor based policy process - remains particularly influential in relation to the emergence of new, if somewhat less ambitious, policy approaches. These have recently emerged in the academic literature about the nature and character of governance and the policy process in the EU and are discussed below in relation to the emergence of research and technology policy and the role of ETPs in the process.

Governance Approaches to the EU

The re-launch of the EC in the 1980s, driven by an entrepreneurial Commission under the Presidency of Jacques Delors, established a new policy agenda for the final decade of the century that involved the creation of the Single Market, Economic and

Monetary Union and the development of new policy dimensions relevant to a modern European industrial policy (Cram 1994, 1997; Gillingham 2003; Green-Cowles 1995; Pollack 1994; 1997; Ross 1995; Sandholtz & Zysman 1989). This involved the expansion of Commission competence in research and technology policy with reference to leading edge technologies critical to the emergence of a knowledge-based economy, including, information and communication technology, microelectronics, nanotechnology, biotechnology, energy and environmental technology.

These developments ignited a renewed academic debate about the complexity of policymaking and the implications of this for the nature of governance in the EU. This debate challenged the one-dimensional state-centric intergovernmental model that dominated academic thinking in the post-Luxembourg Compromise period. This model appeared to be one-dimensional and over-simplistic in that it presented all policy outcomes as the product of inter-state bargaining, explained by exclusive recourse to national self-interest; it therefore appeared to be an inadequate tool for analysing and explaining the events surrounding the re-launch, the entrepreneurial role of the Commission in the process and the wide range of stakeholder involvement. As Richardson notes (1996b: 26-29):

> 'The locus of decision-making, and therefore possibly of power, has shifted. A more complex structure of policymaking has developed, encompassing a wide range of actors...EU policies are not simply the outcome of interstate bargaining, but of a complex process involving different types of actors, institutional and non-institutional, governmental and non-governmental.'

These developments provided momentum for a new approach in the theoretical analysis of the EU policy process. These new approaches had an intellectual inheritance in neo-functionalism; however, whereas neo-functionalism attempted to establish a grand theory of integration, these new approaches were less ambitious; they moved the debate from an analysis of European integration to an analysis of the system of governance (Hooghe and Marks 2001; Kohler-Koch & Eising 1999; Jachtenfuchs 2001). They focused on the complex interaction of key variables in the process, including;

- the number of actors involved, all with competing values and interests;

- the development of the process over a particular time span;

- the different levels of governmental decision-making in relation to policy;

- the growing technocratic dimension in the policy debate;

- the inter-linked stages of the policy process from policy initiation to implementation (Sabatier 1999: 3-4).

These new approaches emphasised the emergence of a new form of 'governance' defined as the exercise of authority and the allocation of resources without the formal apparatus of government (Rosenau & Czempiel 1992). This more narrowly focused approach developed a range of new descriptions, concepts and theories built around the idea of multi-level governance. The multi-level governance approach is neatly summed up below:

> 'European integration is a polity creating process in which authority
> and policy-making influence are shared across multiple levels of
> government – sub-national, national and supranational...decision-
> making competencies are shared by actors at different levels rather
> than monopolised by state executives.'(Marks *et al.* 1996: 342).

The increasing use of the term 'governance' referred to 'the structured ways and means in which the divergent preferences of interdependent actors are translated into policy choices 'to allocate values', so that the plurality of interests is transformed into co-ordinated action and the compliance of actors is achieved.' (Kohler-Koch & Eising 1999: 14) The core of the governance approach is that the state is merely one actor in a political arena involving a wide range of interdependent stakeholders. Governance involves a shift 'towards a sharing of tasks and responsibilities; towards doing things together instead of doing them alone' (Kooiman 1993: 1). Policy is formulated on the basis of discussion and negotiation between a wide range of mutually interdependent public and private stakeholders. Within such a system of governance actors must be willing to share knowledge and resources in order to reach

consensus and avoid a stalemate or policy gridlock (Héritier 1999). 'Political actors consider problem solving the essence of politics and...the setting of policy-making is defined by the existence of highly organised subsystems.' (Kohler-Koch & Eising 1999: 5). Policymaking, therefore, becomes a positive-sum game in which networks of actors build a consensus in a system where all stakeholders benefit.

As part of this new governance approach a number of actor-based models of policymaking have emerged that identify a wide range of public and private actors, rather than formal institutions, as the central drivers of policy change at the European level; including, policy networks, epistemic communities and advocacy coalitions approaches (P. Haas 1988, 1992; Richardson & Jordan 1979; Rhodes & Marsh 1992b; Sabatier 1988, 1999). Most of these actor-based models have been influenced by the American political scientist E. E. Schattschneider, who argued that the supreme source of political power is the ability to determine what politics is about, in other words, power lies with those who set the political agenda (Schattschneider 1960). There is a general consensus in the academic literature that at the agenda-setting level public and private stakeholders can substantially influence the formulation of policy acting through the kind of actor-based approaches identified above (Peters 1994; Peterson 1998, Peterson & Bomberg 1999, Princen 2007; Princen & Rhinhart 2006). Indeed, in highly complex areas like research and technology policy, the Commission is reliant upon the technical knowledge and information that actor-based networks can provide. As Richardson (1996b: 37) notes:

> 'At the detailed and technical stage, Commission officials in particular
> need the expertise of other policy actors. If the devil is in the detail,
> then policy networks, and indeed policy communities, may come into
> their own as concepts for advancing our understanding of the EU as a
> policymaking state.'

The emergence of research and technology as a European issue was driven by the Commission involving a complex interaction that embraced a range of expert groups and stakeholders that reflects the complex nature of policymaking at the EU level. It is a process that cannot be easily explained by the state-centric analysis. The fact that ETPs are an integral part of this complex process, therefore, places this analysis firmly

within the academic debate analysing the EU as a system of governance. Peterson and Sharp (1998) have identified actor-based models as the most useful analytical tools in the area of research and technology policy in describing and explain policymaking at the policy formulation stage. It is, therefore, important to provide an assessment of the three actor-based models, policy networks, epistemic communities and advocacy coalition approaches, which most closely describe the policy process in the complex area of research and technology policy and, in particular, the insight they provide into the emergence of ETPs.

Policy Network Analysis

Policy network analysis arose within academic circles as a response to the failure of the two traditional schools of integration theory, intergovernmentalism and neo-functionalism, to provide an adequate explanation of the complexity of the policymaking process within the European Union. Policymaking involved a wide range of stakeholders and went beyond those with the formal power to set the agenda: 'Looking for the few who are powerful, we tend to overlook the many whose webs of influence provoke and guide the exercise of power' (Heclo 1978: 102) Where intergovernmentalism and neo-functionalism represented grand theories designed to describe, explain and predict the future direction of European integration, policy network analysis is less ambitious and seeks to describe, explain and predict policy formulation and policy outcomes (Peterson 2004: 124). The term 'network' is used to describe different actors who are linked together in political, social or economic life. For Peterson (1995c: 391):

> 'The term "network" implies that clusters of actors representing
> multiple organisations interact with one another and share
> information and resources. "Mediation" implies that the networks
> usually are settings for the playing of positive sum games: they
> facilitate reconciliation, settlement or compromise between different
> interests which have a stake in outcomes in a particular sector.'

Policy network analysis forms part of a body of literature that views EU governance as occurring on multiple levels of government that bring together a wide

range of stakeholders who are mutually dependent upon each other and have an incentive to share key resources such as knowledge, information, ideas and expertise. It is at the policy formulation stage that policy networks can shape and define policy options, narrow policy options, and shift the agenda by pursuing strategies that generate new political and economic forces (Thatcher 1998: 406). Academic work on network analysis at the European level has been ambiguous, featuring a variety of different models and terminologies. There exists no grand theory of policy networks and it makes no predictive claims about the future direction of the EU.

Rosenthal (1975) was the first political scientist to put forward policy networks as an explanation of policymaking at the European level. In her study of decision-making in the EC, she argued 'elite networks' offered the most insightful explanation of European policymaking. Decision-making was the result of subtle behind-the-scenes lobbying and elaborate committee work. The focus this debate is grounded in the idea that the EU provides the perfect breeding ground for policy networks. The EU is a system of governance without government, it is non-hierarchical and a deeply fragmented system in which power is shared across different levels of government and amongst many stakeholders. Furthermore, the EU is resource poor and relies heavily upon the knowledge and expertise of outside actors brought into EU committees by the Commission to assist in the formulation of policy within highly complex and technical policy areas. Within this environment, policy network analysis has become an important analytical tool and is, therefore, worth looking at in more detail.

Development of the Concept

Policy network analysis was developed during the 1970s to provide an alternative explanation to dominant models of policymaking during a period in which the nature and arena of politics was changing; no longer could governments be perceived as the sole dominant actor in the international and national policymaking process. Globalisation and economic liberalisation were creating an interdependent world in which power was shared and new modes of governance at both the national and supranational level emerged to explain this phenomenon. Within this context the concept of policy networks emerged, primarily, to offer an antidote to existing state-centric models (Judge 1993).

The concept was initially developed by British political scientists, Richardson and Jordan, in an attempt to encapsulate the nature of policymaking in the British polity during this period. In their book, '*Governing Under Pressure',* they argued that Britain had entered a period of post-parliamentary democracy; policymaking was no longer confined to the halls of Westminster and Whitehall and the preserve of politicians and civil servants alone, but involved a range of stakeholders working together in policy communities (Richardson & Jordan 1979). Richardson and Jordan (1979: 73-74) noted:

> 'We see policies being made (and administered) between a myriad of interconnecting, interpenetrating organisations. It is the relationship involved in committees, the policy communities of departments and groups, the practices of co-option and the consensual style, that perhaps better account for policy outcomes than do examinations of party stances, of manifestos or of parliamentary influence.'

The concept of a 'policy community' developed by Richardson and Jordan described a closed and stable network between key stakeholders with shared interests and beliefs (Richardson & Jordan 1979). They specified that the role and influence of policy communities was restricted or confined to middle and micro levels of the policymaking process; the emphasis being that the concept of policy communities had its greatest analytical utility at the policy formulation stage of the process (Richardson and Jordan 1982: 88). They also postulated that if stakeholders could be brought together within a stable long-term network then an exchange relationship would develop in which knowledge and learning would occur:

> 'Working together they will learn what kind of change is feasible and what would embarrass other members of the "system" as to be unproductive. Members of the system will begin to debate in the same language (if not the same values), and arguments will be treated seriously only if discussed in these common criteria. There is a role diffusion in that all members – government officials, academic experts and groups officials – become policy experts. (Richardson and Jordan 1982: 93-94).

Research for this thesis will examine whether ETPs represent a framework in which stakeholders can share knowledge and expertise and learn about how best to influence and interact within the policymaking process and the degree and extent to which they share some characteristics with Richardson and Jordan's policy communities model. A central weakness of the Richardson and Jordan model is that 'policy communities' are too narrowly defined and are too rigid in terms of group membership; they have a closed membership in which access is constrained. This research will assess whether ETPs reflect the closed and exclusive membership of a policy community or if they are more open to a broader range of participants.

This is not to say that policy communities of the type identified by Jordan and Richardson cannot be found within the EU. In fact, within the area of research and technology policy tightly knit policy communities do exist. Indeed, early forms of European collaboration in this policy area were based on tripartite corporatist networks similar to those identified by Jordan and Richardson at the national level (Peterson & Sharp 1998). As will be shown in Chapter 4, collaborative efforts in the fields of aeronautics, space, telecommunications and micro electronics produced stable and closed policy networks involving national governments, the Commission and major industry, many of which remain in existence today. The development of ETPs would, however, appear to be a response to the need to open up the policymaking process to a wider number of stakeholders in an attempt to manage and add greater knowledge and stakeholder legitimacy to EU policy.

During the same period, American political scientist, Hugh Heclo, analysing decision-making in Washington, identified a policymaking process characterised not by closed and stable policy communities, but fluid, loosely organised and inclusive policy networks. Heclo (1978) argued that politics was no longer dominated by politicians and a small elite group of stakeholders with privileged access to government; the policymaking process was now open, inclusive and involved a range of stakeholders, so existing notions of political power had to be reassessed. As Heclo (1978: 94-95) noted, 'as proliferating groups have claimed a stake and clamoured for a place in the policy process, they have helped diffuse the focus of political and administrative leadership.'

Heclo (1978: 103-104) identified a policymaking process that was fluid and open involving a wide range of stakeholders coming together in groups he described as 'issue networks'; 'an issue network is a shared-knowledge group having to do with some aspect (or, as defined by the network, some problem) of public policy.' Knowledge was central to Heclo's model with people with shared expertise in a particular area coming together in an attempt to induce policy change: 'increasingly, it is through networks of people who regard each other as knowledgeable…that public policy issues tend to be refined, evidence debated, and alternative options worked out – though rarely in a controlled, well-organised way.' (Heclo 1978: 103-104).

For Heclo, the policymaking process was becoming professionalized and characterised by narrow technocratic specialization in modern, complex and technical policy areas. Knowledge and expertise were the distinguishing features that brought together such a diverse range of actors in the process. As Heclo (1978: 49) notes:

'Expanding welfare policies and Washington's reliance on indirect administration have encouraged the development of specialised sub-cultures composed of highly knowledgeable policy-watchers. Some of these people have advanced professional degrees, some do not. What they all have in common is the detailed understanding of specialised issues that comes from sustained attention to a given policy debate.'

Indeed, it is the knowledge-based nature of Heclo's issue networks that make this approach useful to an analysis of European policymaking. Given the highly technical nature of EU policy areas, such as research and technology policy, EU institutions are reliant upon outside stakeholders for information and advice to assist in the formulation of policy. Furthermore, a political system like the EU's, with multiple levels of governance, multiple access points to EU institutions, and involving a wide range of stakeholders would, on the surface, appear to be an ideal breeding ground for the type of fluid, open, inclusive and knowledge-based groups posited by Heclo. Issue networks provide a useful concept in capturing the openness of some expert groups and the knowledge they bring to the policy debate. The research will assess how ad hoc and unstable ETPs are and whether they have emerged organically around a single policy like issue networks.

More recently, policy networks analysis has been revived by British political scientists Marsh and Rhodes (1992). It is the Marsh and Rhodes model of policy networks that has been employed most in the study of EU policymaking (Peterson 2004). Marsh and Rhodes (1992) identify three key variables that determine the nature and character of a policy network and their capacity to influence change; firstly, the stability of network membership, secondly, the insularity of networks to outside influence and, finally, the relative strength of their resource dependencies. On the basis of these criteria they go on to identify 5 types of networks 'ranging along a continuum from highly integrated policy communities to loosely integrated issue networks' (Rhodes & Marsh 1992a: 13). For Marsh and Rhodes (1992), strong and stable policy communities and loose and open issue networks are all part of the same continuum; therefore, the term policy network can be utilised generically to describe and explain the way in which different networks are formed and operate.

The Marsh and Rhodes (1992) continuum is a useful reminder that the nature and character of policymaking at the European level cannot always be easily categorised by one approach and that a number of competing concepts may have to be utilised to describe and explain effectively the nature and character of policymaking at the European level (Richardson 1996). By utilising the continuum concept there is recognition that there can be several different types of networks in operation at one time and that the nature of these groups may change over time and in different circumstances.

Rhodes and Marsh (1992a: 182) have advocated a return to the more stable and exclusive policy networks advocated by Richardson and Jordan, stating:

'Policy communities are networks characterised by stability of relationships, continuity of a highly restrictive membership, vertical interdependence based upon shared delivery of responsibilities and insulation from other networks and invariably from the general public (including parliament).'

Marsh and Rhodes (1992) argue that the nature, structure and character of a policy network will determine their ability to influence the policymaking process. They

purport that closed policy communities will have a greater impact on changing or preventing policy change, than loosely affiliated groups, as they gain a regular role in the process and, therefore learn the subtle ways to influence policymaking. Other academics have rejected this argument suggesting that the EU policy making system is too open, fluid and rapidly changing for stable networks to exist (Thatcher 1998).

While ad hoc issue networks certainly have the potential to influence the policymaking process, especially during times of uncertainty, recent Commission attempts to encourage the creation of more formal partnerships and networks, such as ETPs, do suggest a move towards developing more stable networks identified by Marsh and Rhodes (1992). In encouraging the development of ETPs the Commission has created the opportunity to manage the policy dimension through the creation of a stable framework for widespread stakeholder interaction and the exchange of knowledge and ideas in the formulation of policy. In addition, in line with the neo-functionalist concept of spillover, the regular involvement of members in the ETP will encourage the development of a European perspective in both discussions and the identification of potential solutions to key issues in the area of research and technology.

The potential for policy networks to become exclusive and closed has been a particular area of criticism. Experts who share knowledge within a specialist field will come together, thereby technical expertise 'can become an exclusionary device, a device that is more effective at the supranational level because representative institutions like parliaments, that can play a surveillance role by holding experts to account, are weak.' (Coleman 2001: 97). Where specialist knowledge and technical expertise become the terrain of politics there is the possibility for groups to become closed, insular, elitist, dominated by vested interests and lacking transparency. Indeed, the great danger for the Commission is that in attempting to create stable groupings for managing knowledge, such as ETPs, they become closed elite networks characterised by the Richardson and Jordan/Marsh and Rhodes (1992) policy community models. Peterson (2004) correctly observes that there is a clear need for a normative approach in the formulation of groups and networks at the European level that considers how they are designed and controlled as a means of closing, rather than

widening, the EU's democratic legitimacy gap. The Commission, however, is aware of this in relation to ETPs and has insisted that each ETP must prepare to be open and transparent in terms of membership, the publication of documents and engagement with the wider public (COM 2006).

Policy network analysis has not been short of critics (Kassim 1993; Dowding 1995; Peters 1998; Thatcher 1998; Dowding 2001). The main criticisms of this approach is that it does not constitute a theory and does not include a theory of power recognising that some actors within networks have more influence than others (Konig 1998; Dowding 1991). Both these are legitimate criticisms, as it is hard to identify the main assumptions, causal propositions and predictive features of the approach and they fail to recognise the central role institutions have within the EU process, in particular, the Commission in formulating networks for managing knowledge at the European level. In defence of network analysis, however, the approach has never been presented as a theory and has always been firmly rooted in the governance literature that recognises that power is shared by different stakeholders at different levels of policymaking. In this regard, the approach is compatible with other policymaking approaches that identify a dominant role for certain actors in the process (Peterson 1995c).

The main strength of the policy networks approach is that it recognises a complex policy process that involves a large number of actors and the need to move away from state-centric explanations of policymaking. As a generic tool it helps capture the nature and character of policy networks when looked at along the Marsh and Rhodes continuum; for example, do they reflect the closed stable and exclusive networks of Jordan and Richardson or the open, unstable and inclusive networks of Heclo? Where policy networks fall short as an approach, however, is that it does not explain why these networks have influence and how they come into being. The important role of the Commission in formulating networks at the European level is not addressed and while the role of knowledge is addressed, not enough emphasis is placed on knowledge as the vital resource of these networks for influencing the process. For this reason, actor-based models that focus on knowledge as the key variable in the policymaking process, such as epistemic communities and advocacy

coalitions may be more useful for helping assess the nature of actor-based groups in the sphere of European research and technology policy.

Knowledge-Based Groups

Given the increasingly complex and technical nature of many EU policy areas, approaches that focus on the role of expert groups, such as epistemic community and advocacy coalition, have become more prominent as explanations of policymaking (Radaelli 1995; Richardson 1996a; Verdun 1999; Zito 1998, 2001a, 2001b; Meijerink 2005). It is the knowledge-based nature and claim to expertise which apportions such groups a significant role in the process and the potential to influence the policymaking (Radaelli 1995: 165, Zito 2001a: 465). Authoritative knowledge becomes the key resource within these types of networks and confers legitimacy upon them. The central tenet of these approaches is that it is stakeholders and the knowledge and expertise they possess and provide, rather than institutions, that are the major agents of policy change (Meijerink 2005).

The highly fragmented nature of the EU institutional and policymaking system is a source of both help and hindrance to knowledge-based groups. The lack of strong EU-wide political parties, easy access to EU institutions and the complex and technical nature of many EU policy areas, create the perfect conditions for agenda change for those groups with the necessary knowledge, expertise and ideas to influence the process. Equally, the institutional structure of the EU, in particular the Commission, can also constrain and manage the ability of knowledge groups to have an impact, as they must compete with other stakeholders and groups in trying to persuade and convince EU institutions that their policies represent the best way forward (Peters 1994: 13; Zito 2001b: 586-587b).

Research and technology policy provides a natural breeding ground for epistemic communities and advocacy coalitions to develop and influence change, as EU institutional actors, in particular the Commission, look to expert groups to provide policy options and knowledge legitimacy to EU proposals. If sufficient entrepreneurial spirit is shown there is considerable scope for such knowledge-based communities to play a pivotal role in the process (Peters 1994; Richardson 1996a; Radaelli 1999a,

1999b; Zito 2001a, 2001b). This section seeks to address the contribution these approaches can make to our understanding of the emergence and role of ETPs.

Epistemic Communities

The epistemic community approach was developed by Peter Haas to explain the relationship between experts groups and state actors in international policy development and co-ordination. An epistemic community is 'a network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge.' (P. Haas 1992: 3) It is their claim to knowledge and expertise that provides epistemic communities with the potential to influence decision-makers. The conceptual premise of the approach is that the increasingly complex and technical nature of international politics is creating a feeling of ambiguity and uncertainty amongst decision-makers. In these circumstances, policymakers turn to the knowledge provided by epistemic communities to develop new policy ideas which persuade decision-makers to break with traditional ideological positions and short term interest calculations (P. Haas 1989: 379). As Haas (P. 1992: 14) notes; 'decision-makers do not always recognise that their understanding of complex issues and linkages is limited and it often takes a crisis or shock to overcome institutional inertia and habit and spur them to seek help from epistemic communities.' In these conditions, 'knowledge and information is an important dimension of power.' (P. Haas 1992: 2)

Epistemic communities are particularly influential at the policy formulation stage where they are crucial in providing knowledge and expertise, contextualising issues, promoting new ideas and framing policy choices (Adler and P. Haas 1992). The influence of epistemic communities is most pronounced at the sub-systemic level of policymaking, where technical policy-shaping decisions are made that define the policy measures to be taken within a specific policy area (Peterson and Bomberg 1999). At this level public and private actors are widely consulted usually through working groups and advisory committees established by the Commission and designated with the task of coming up with technical solutions to complex problems. The more technical and complex the policy area the greater the influence epistemic communities will bestow (Zito 2001a). This is particularly the case in highly complex and technical

areas such as research and technology policy. Indeed, very few decision makers would have a background in science and technology; they would, therefore, lack an understanding of the key issues in the area (Williams 1973). An analysis of the role that ETPs have played in influencing the preparation of scientific Work Programmes in FP7 will serve to vindicate whether knowledge groups are influential at the sub-systemic level.

Members of an epistemic community can come from a variety of disciplines and backgrounds, but they are bound together by a shared set of normative and principled beliefs, or a world view, around which they construct a general consensus; these principles include, shared causal beliefs, shared notions of validity and a shared common policy agenda clearly identifying policy priorities (P. Haas 1992: 3). Haas (1992: 3) notes:

> 'Members of an epistemic community share intersubjective understandings; have a shared way of knowing; have shared patterns of reasoning; have a policy project drawing on shared values; share causal beliefs, and the use of shared discursive practices; and have a shared commitment to the application and production of knowledge.'

The membership defined by Haas is very narrow and restrictive suggesting a small and homogenous group of actors that come together within an epistemic community (Zito 2001a: 467). Scientific knowledge is regarded as the glue which holds epistemic groups together. In this regard, expert knowledge, rather than lay knowledge, is regarded as having a superior and more pivotal role in the policymaking process, therefore, only those with the necessary expertise can participate in the process. The approach is grounded in a scientific approach and does not discuss how other actors might become involved in the process, which raises questions about legitimacy and public participation.

While ETPs certainly provide knowledge and expertise, it is wide ranging in its scope and reaches beyond the scientific and industrial community to include key stakeholders representing a range of sectoral and societal interests and, therefore, counters any criticism of ETPs representing a narrow scientific and technocratic

perspective. This would appear to be a key difference between ETPs and epistemic communities. Members of ETPs come from diverse backgrounds with competing interests and have normative values to promote and self-interested motivations for involvement; knowledge and interests are clearly interlinked. The research will analyse the membership of ETPs to see if participation is wider in scope, offering the potential for a wider range of actors to become involved, and if all types of knowledge are welcomed into the forum.

The Haas model also states that epistemic communities may consist of professionals from a variety of different backgrounds, commonly linked by shared normative beliefs, causal beliefs, notions of validity and a common policy enterprise. ETPs involve a wide variety of stakeholders and they are certainly bound by a common policy enterprise that is enshrined in the preparation of a Strategic Research Agenda (SRA). However, given the wide variety of different backgrounds of stakeholders, it is difficult to suggest that membership of ETPs is linked by a common sense of shared values, causal beliefs and notions of validity, as they all have different interests and agendas to pursue. For example, within an ETP, the views and interests of industry are going to differ broadly from those of academia, research centres and societal groups. Furthermore, epistemic communities tend to form around a specific issue within a policy area, whereas ETPs represent the whole policy area and all issues within it. The research will determine if ETPs represent a heterogeneous forum, rather than the homogeneous grouping emphasised by Haas.

The concept of epistemic communities has the aim of 'turning the study of political process into a question about who learns what, when, to whose benefit, and why' (Adler and P. Haas 1992: 370). In uncertain conditions, learning becomes an integral part of the policymaking process, as traditional policymaking methods are unavailable and new patterns of action develop (P. Haas 1992: 3). In times of high uncertainty it becomes increasingly difficult for national and European policymakers to clearly identify what the best course of action is. For Haas (1992: 3-4), 'uncertainty gives rise to demands for particular sorts of information...and the likely consequences of actions that require the application of considerable scientific or technical knowledge.' As the demand for information arises, epistemic communities become

one possible source of the information and advice that political leaders require (P. Haas 1992: 4). By illuminating the various dimensions of an issue, the epistemic community offers information and advice from which an actor can deduce their interests. Under these conditions, knowledge and learning become an integral part of the policymaking process. The interests of decision-makers therefore become a dynamic dependent variable, framed by knowledge. Knowledge, rather than ideology or self interest, therefore, becomes the terrain of politics (Radaelli 1999a: 41).

For Sebenius (1992), uncertainty and power go hand in hand; this is supported by Richardson who notes that 'uncertainty presents opportunities for power to be exercised if individuals or groups are sufficiently alert to the opportunities' (Richardson 1996b: 39). A central theme of the epistemic community approach is that periods of uncertainty provide the best opportunity for these communities to influence policymakers. Areas such as research and technology are in a process of constant change. In areas as rapidly changing as this the knowledge that epistemic communities can provide is always required by decision-makers. It is not a question of waiting for a period of uncertainty to arise for the expert group to exert influence.

The point about ETPs is that they provide a framework, irrespective of periods of uncertainty, in which a range of stakeholders including epistemic communities or advocacy coalitions can interact in an attempt to influence policy change. The political climate may have a more decisive impact on the overall scope of ETPs to influence policymaking. For example, ETPs representing areas of high topical and political importance, so-called 'sexy' areas, such as energy, environment and innovative medicine, might exert greater influence over the Commission as they will be more heavily reliant on knowledge in newly emerging areas of technology. This is suggested in the fact the Commission has provided funding support to some ETPs and not others, as will be shown in Chapter 5 and 6 of this thesis.

ETPs appear to be constantly interacting with the Commission and member states, not just during times of uncertainty. There are, however, certain periods of time during which ETPs can exert more influence over the process. Kingdon's (1984: 1) 'window of opportunity' approach argues that there are certain periods in which policy ideas can rise to prominence if stakeholders and groups show sufficient awareness and

entrepreneurial spirit. In the case of ETPs, their potential to have a major impact on policy content is restricted to a short window of opportunity: when the Commission consults upon the content of the structure of the Framework Programmes; and the content of the individual work programmes in specific thematic areas. If ETPs are to have an impact, therefore, they must be fully prepared to take advantage of these brief windows of opportunity.

Adler and Haas (1992: 381) specify that even during times of uncertainty the ability of epistemic communities to influence the policymaking process is constrained by other factors; epistemic communities 'create reality, but not as they wish'. For Haas (1992: 7), the influence of epistemic communities is over the form of policy choices, though 'the extent to which state behaviour reflects the preferences of these networks remains strongly conditioned by the distribution of power internationally'. Haas argues that epistemic communities only have power when they are organically inserted into the policymaking process, or when experts reach positions of bureaucratic power via the institutionalization of committees. Haas (1992: 4) notes that 'the extent to which an epistemic community consolidates bureaucratic power within national administrations and international secretariats, it stands to institutionalise its influence and insinuate its view into broader national politics'. The emergence of ETPs gives some weight to this suggestion, as their formulation would appear to be an attempt by the Commission to institutionalise the role of stakeholders' and knowledge and expertise within the policymaking process. While ETPs have no formal legal basis they were invited by the Commission to formally develop Strategic Research Agendas to help inform the development of specific Work Programmes as part of the FP7 Cooperation Theme. ETPs, therefore, have been allocated an important role in the process, which provides them with the potential for greater influence than those actors who choose not to participate in an ETP. What gives them this influence is the fact that the Commission was instrumental in their formation. The extent of their influence will analysed in chapter 6.

Richardson argues that the power of epistemic communities is 'constrained by the need for policymakers – at the EU and national levels – to involve other forms of actors, particularly conventional interest groups' (Richardson 1996: 16). Indeed, the

Commission consults a wide range of stakeholders for policy input; epistemic communities form merely one source of information provision, so they must compete against other networks. The influence of epistemic communities will be greater if other networks lack technical knowledge, unity, effective organisation and clear policy objectives (Zito 2001b: 590). In times of uncertainty policymakers are more receptive to new ideas and, therefore, epistemic communities can define the policy issues. In times of stability, however, decision-makers are far more likely to turn to established networks of interests within a given policy sector for information and advice (Radaelli 1999a).

Indeed, a central weakness of the epistemic community approach is that it fails to discuss how the input of other actors can influence the process (Dunlop 2000; Toke 1999), how actors within the community interact with one another and how communities interact with other key stakeholders within the process (Zito 2001a: 468). From an epistemic community approach, an ETP within a key research and technology area would be the most important and influential source of knowledge and information in the policy process (under the right circumstances). However, ETPs are merely one of a number of advisory groups and committees made up of public and private actors that the Commission consults in the formulation of the Framework Programme. ETPs should be able to greater influence the process due to their legitimate claims to represent a whole sector and a wide range of stakeholders within that sector, rather than individual/sectoral interests.

Much of the criticism of the epistemic community approach comes from intergovernmental and institutional schools of thought in which state and EU actors remain the dominant players in EU policymaking. From their perspectives, the influence of epistemic communities only extends as far as member states and EU institutions allow and are receptive to their ideas. State actors and EU institutions can be persuaded and are amenable to the ideas of epistemic communities only insofar as the information being put forward is in keeping with policy preferences (Sabatier 1998) and remains within their perceived interests (Sabatier 1998). Not only are epistemic communities in direct competition with other networks and stakeholders, but, for Richardson, the involvement of epistemic communities in policymaking is almost at the

behest and grace of the European Commission, suggesting that their sole purpose is to lend critical mass to the Commission's own policy objectives. As Richardson (1996b: 42) notes:

> 'By drawing other policy actors into the policy process, the Commission may be able to build coalitions in favour of its own notions of desirable policy change. By assisting the formation of 'relevant' state and non-state actors, or by "massaging" the way that these networks operate, the Commission can maintain its position as an "independent" policy-making institution and can increase its leverage with the Council of Ministers and the European Parliament.'

Indeed, the Commission has been extremely active in bringing together interested stakeholders and experts in discussion forums. For Héritier, the Commission formulates these groups both to ensure favourable outcomes and to legitimise policy (Héritier 1999). In contrast, others have argued that the Commission uses knowledge groups to increase their own institutional standing *vis-à-vis* the member states and the European Parliament (Richardson 1996b, Radaelli 1999a). The Commission, while having no influence over the content of ETP research agendas, did play a pivotal role in their formulation, providing funding and outlining the way they should be structured. This reflects one of the central weaknesses of actor-based models in that they do not identify the fact that institutions, particularly the Commission, have a powerful role in the policy process by virtue of the fact that they can form networks that support their proposals. ETPs did not emerge through stakeholder interaction in the way that epistemic communities, policy networks and advocacy coalitions would come into being. The development of ETPs involved a complex interaction between the Commission and stakeholders and adds an additional dimension that actor-based models will, in future, have to take account of.

The significance of the epistemic community approach is the insight it provides into the role of knowledge in the policy process. The focus on knowledge does provide a common theme with the role of ETPs. A cursory look at the key features of the model would suggest, however, that as an explanation of the emergence of ETPs the epistemic community approach is limited primarily because its conception of

knowledge and membership is too narrowly defined in technocratic and scientific terms. ETPs appear more heterogeneous in terms of membership involving a wide range of sectoral, and often competing opinions. Furthermore, the knowledge ETP members contribute is normative and comes in symbiotic relationship with their interests. In this regard the advocacy coalition approach which recognises groups involving a wider range of stakeholders and a broader conception of knowledge may be more useful to an analysis of ETPs.

Advocacy Coalitions

Working in the field of public policy analysis, Sabatier (1988) developed a new concept, advocacy coalitions, looking at the role of expert groups at the national level. Running parallel with the epistemic community literature, the advocacy coalition approach starts from the premise that knowledge enters and influences the policymaking process through coalitions, or networks of experts (Radaelli 1995: 170). Advocacy coalitions are networks established around a shared set of normative and causal beliefs attempting to induce policy, or prevent, policy change. They are 'people from a variety of positions (elected and agency officials, interest group leaders, researchers *etc.*) who share a particular belief system – that is, a set of basic values, causal assumptions, and problem perceptions – and who show a nontrivial degree of coordinated activity over time.' (Sabatier 1998: 25) Advocacy coalitions offer a broader conception of membership than epistemic communities with actors coming from both the public and private sectors, including, politicians, interest groups, lobbyists and those working in the media and journalism (Radaelli 1995).

There is usually one dominant advocacy coalition competing for the control of a 'policy subsystem' with other stakeholders and groups. Where knowledge is the core concept of the epistemic community approach, normative and causal beliefs, and basic values, are the glue that holds the advocacy coalition together (Sabatier 1998). The model acknowledges from the outset the symbiotic link between knowledge and interests; the belief system of an advocacy coalition has clear political aims, is openly normative and, therefore, immune to empirical challenge (Radaelli 1995: 171). They are united around clearly identified goals, priorities and political strategy, and a common theory about the best way of achieving these goals. External factors, such as

changes in the political climate and socio-economic conditions, can have an impact on the secondary goals, but their core value beliefs are more resistant to change (Sabatier 1988, 1998).

The wider conception of membership provides a closer link between advocacy coalitions and ETPs than the rather narrowly defined epistemic community approach. Epistemic communities are dominated by expert professionals who 'tend to be motivated by technocratic considerations' (Peterson & Bomberg 1999: 24; Radaelli 1999a: 40-42). The information offered by epistemic communities is regarded as being based upon authoritative scientific and technical knowledge, whereas, from an advocacy coalition approach, knowledge is based on political concerns and self-interests. While ETPs offer scientific and technical, knowledge-driven advice, this advice reflects the views and interests of a wide range of stakeholders within the platform.

The wider conception of knowledge developed by the advocacy coalition approach appears more applicable to the empirical reality of ETPs. Where they differ, however, is that ETP members do not seem to be linked by shared values, but rather shared practical and resource needs, such as shared knowledge and potential financial gains. With regard to key political priorities, ETPs are also more open to change than advocacy coalitions in areas such as research and technology which is in a process of constant change, so the primary goals and priorities are an exchange of ideas and to provide a forum in which these ideas are open to challenge, and experts are forced to defend their position. In this regard ETPs are not only a framework for dialogue, but are more long-term in their outlook in comparison with advocacy coalitions which are invariably looking for short term gains.

The potential for advocacy coalitions to induce policy change is enhanced if there has been external challenge to the existing policy system brought about by such factors as a change in socio-economic circumstances, public opinion or new governing coalitions (Sabatier & Jenkins-Smith 1999). The external political climate might have a major impact on the influence of ETPs. Indeed, ETPs representing topical and politically sensitive areas, such as climate change, renewable energies and the environment should have more relevance and therefore, more influence in the development of FP

Work Programmes. Other variables that affect advocacy coalitions' potential to influence the process are key resources such as money, expertise and political connections (Zito 2001: 486a). Other key variables include time, commitment and the enthusiasm of the members involved.

Central to the Sabatier approach is the idea that, within any given policy area, there is a large number of stakeholders, including different advocacy coalitions, competing against and interacting with one another to induce or prevent policy change. Where the Haas model identifies one dominant epistemic community within a given policy area, the advocacy coalition approach recognises a wide range of different groups and stakeholders within the process. Advocacy coalition approaches, therefore, provide a broader explanation of how groups interact with one another in the policymaking process. Where ETPs differ from advocacy coalitions is that they are designed to represent a specific area of research and technology policy and all the different stakeholders within that area. Indeed, it is their claim to represent the whole sector that provides ETPs with the potential to influence policy change.

The Sabatier advocacy coalition model is a problem-driven approach in which competing groups must convince politicians and each other to follow a particular course of action through argument, debate and discussion of policy options. For Sabatier (1988: 156), the purpose of advocacy coalitions:

> 'is to force debate among professionals from different belief systems in which their points of view must be aired before peers. Under such conditions, a desire for professional credibility and the norms of scientific debate will lead to a serious analysis of methodological assumptions, to the gradual elimination of the more improbable causal assertions and invalid data, and thus probably to a greater convergence of views over time concerning the nature of the problem and the consequences of various policy alternatives.'

The advocacy coalition approach offers a clear link between policymaking and politics (Radaelli 1995: 171). It offers a model of deliberative politics, whereby policy change is the product of debate and discussion between competing coalitions. There

needs to be a level of conflict and an issue 'prestigious enough to force professionals from different coalitions to participate.' (Sabatier and Jenkins-Smith 1993: 48-56) Advocacy coalitions can be regarded as policy brokers themselves seeking to reach compromises between different competing groups (Zito 2001a: 486).

There is a strong link between the deliberative consensus-building aspects of the Sabatier model and ETPs. ETPs were created to bring together all relevant stakeholders to identify the key challenges and future direction of European policy within specific policy areas. They are designed to be open and easy to access, so all interested stakeholders can participate and put forward their normative views, priorities and interests. ETP members are forced to debate and discuss their competing perspectives before arriving at a consensus identifying strategic priorities in their policy area. Where ETPs differ from advocacy coalitions, however, is that they provide a framework in which discussion can occur. This framework embraces a wide range of stakeholders, including competing advocacy coalitions and epistemic communities; this is not merely advocacy coalitions debating with other advocacy coalitions in an unstructured and disorganised manner. The fact that discussion in ETPs occurs within a structured framework with the main goal of developing a strategic research agenda forces participants to reach compromises. However, within unstructured debate and discussion between competing advocacy coalitions and other stakeholders, consensus is an aim, but not an overall requirement as with ETPs.

As Sabatier (1988: 156) notes above, through debate and discussion a convergence of views will eventually be established between competing groups over a period of time. There is a similar logic at work behind the Commission's development of ETPs. ETPs provide a framework for the dual purpose of, firstly, institutionalising the discussion of policy in which competing groups reach a consensus through debate and discussion and, secondly, in line with neo-functionalist thinking, creating a European perspective amongst participating stakeholders in the development of research and technology policy.

The advocacy coalition approach provides a useful tool in the analysis of ETPs as it recognises a wider range of stakeholders and the symbiotic role of knowledge and interests within the policymaking process. Where the approach falls down is in its

malleability in terms of the knowledge and key policy goals; ETPs reflect a wider range of policy issues and are far more flexible and open to policy change than advocacy coalitions. The central weakness, however, of all actor-based models, such as policy networks, epistemic communities and advocacy coalitions, remains that they place too much emphasis on the role of stakeholders at the expense of other key variables such as the institutional framework in which the policy process takes place. These perspectives have been increasingly challenged by the revival institutionalist analysis that suggests the power and influence of institutions in the EU policy process is significantly greater than suggested by the actor-based models.

New Institutional Approaches to the EU

The dynamic re-launch of the Communities in the 1980s and its capacity to generate new policy dimensions, such as research and technology, raised important questions about whether the actor-based approaches, outlined above, accurately captured the complexity of the policymaking process in the EU. It highlighted one of the main criticisms of these approaches in that they emphasise policy outcomes that focus solely on the interplay of actor interests based on rational utility maximisation to the exclusion of other key variables, such as the role of institutions in shaping and influencing the context and content of the policy debate. In particular, actor-based models fail to take full account of the fact that interests are influenced and constrained by the political institutional infrastructure.

Responding to these developments, academics have revived interest in the role of institutions and their capacity to influence actor preference and policy outputs. The common theme of what have become known as 'new institutional' approaches is the relationship between structure and agent and the interdependence and interaction of institutions. This debate has been influenced by a range of academic disciplines in the social sciences: comparative politics, international relations, sociology and the political study of institutions that was particularly influential before the emergence of behaviourism.

New institutional approaches have been increasingly applied to the study of EU policymaking. Garrett and Tsebelis (1996: 269-70) note that 'one can understand the

legislative process in Europe only through detailed institutional analysis of the interactions among the Council, the Commission and the EP.' In relation to the EU three main new institutional approaches have been applied to an analysis of the EU, sociological, rational choice and historical institutionalism. It is difficult to generalise across all these different approaches, however, central to all of them is the idea that institutions are not passive vessels or arbiters within the policymaking process, but are key players in the process: 'they are the source of much political behaviour and not impartial "black boxes" which simply transform preferences into policies.' (Peterson & Bomberg 1999: 16). As Aspinwall & Schneider (1998: 5) so graphically note, the reasons why institutions cannot be ignored in relation to the policy process is that, 'actors bump into institutions, go ouch, and then recalculate behaviour and strategies'. (Garrett & Tsebelis 1996).

While actor-based models provide an insight into the policy process and a useful tool for analysing agenda-setting and the pre-decision process, they fail to address the role of institutions in shaping and defining the policy context or to explain the way power is distributed in this process. In particular, they underestimate the way in which the institutional framework intervenes in the process of actor preference and policy outputs and the way this impacts on the decisions made. This is particularly significant in the EU, given its supranational architecture and its complex institutional configuration. Any analysis of the EU policymaking process must take account of the Community Method; in particular, the role of the Commission at the epicentre of the policy process and the key role it plays in policy design, brokerage and implementation. This literature identifies how the Commission is more than just an arbiter of the policy process, but is an involved actor and, therefore, a potential agent of change. The unique powers of the Commission in the policy process opens up the opportunity for it to play an entrepreneurial role in expanding Community policy (Cram 1994; 1997; Green-Cowles 1995; Pollack 1994, 1997; Sandholtz & Zysman 1989).

This revival of academic interest in the role of institutions in the policymaking process in the EU gets much of its sustenance from the re-emergence of the Commission as the dynamic driver of Community growth in the 1980s. Its role in the re-launch of the Community during the period of the Delors Presidency did much to

renew academic interest in the role of the Commission in driving the Community policy agenda. The impact of the Delors Presidency and the methods adopted to revive the Commission is comprehensively discussed by George Ross (1995) based on a period of participation in the Delors Cabinet. He provides a fascinating insight into the way in which Delors and his team gave new momentum to the Commission during his period as President.

As the Ross (1995) study identifies, the rapid change of circumstances in the 1980s, culminating in the Delors re-launch, created the conditions for the Commission to re-establish an expansive and entrepreneurial role of the type originally envisaged by Monnet when the European Communities were first established. What was significant about this period was that this new momentum was not driven by the interaction of interest group activity, with the Commission acting as an independent arbiter. It was driven by a dynamic Commission developing a policy agenda involving the collaboration and coordination of key stakeholders from the industry, business and financial world in support of their proposals (Green-Cowles 1995; Sandholtz & Zysman 1989; Verdun 1999). Ross (1995) emphasises the way that the Commission strategically based the re-launch on competencies outlined in the existing Treaties. In particular, they focused on two key policy aspirations outlined in the Treaty of Rome: the creation of a Single Market and Economic and Monetary Union. By reviving member state interests in these two policy aspirations the Commission created the opportunity to put forward the idea of developing a European dimension to industrial policy which created the opportunity to expand EU competence in new areas such as research and technology policy.

Ross (1995) notes that the Delors' approach involved a complex, knowledge-driven and evidence-based policy process, arrived at through stakeholder consultation and consensus aimed at shaping member state preference. It was an approach very much rooted in the Commission's heritage and in what has been described as the Monnet Method, first developed in the French Planning Commission under Monnet's Presidency and manifested in the role of the High Authority in the ECSC. Ross (1995) points out that Delors had imbued this culture during his period working in the French

Planning Commission and, therefore easily adapted to the Commission house style established by Monnet during his Presidency of the Commission.

In response to the re-emergence of the Commission as a key actor in the policy process, new institutional approaches have sought to develop a more sophisticated analysis of this process that transcends the more conventional institutional approaches. In particular, the need to overcome a narrow arid analysis focused on the formal legal powers of institutions and decision-making rules, as defined by constitution or treaty, and the way this places obligations on the political actors through formal and rule-bound interaction. The new institutional approaches adopt tools from both behaviouralism and sociology in analysing both the formal and informal ways in which institutions influence the political process. The aim is to establish a deeper understanding of the political process that goes beyond a narrow, arid discussion of constitutional and legal frameworks. Based on analysis of the new institutional approaches, Rosamond (2000) identifies five key themes in the literature:

- the institutional and legislative process as defined by the various treaties that make up the EU (the traditional institutional approach);

- the EU institutional architecture analysed within the context of its history with reference to the development of the supranational role of the Commission and the European Court of Justice;

- the way in which the institutions and legislative process influence and shape the interaction and interest-driven activity between the key stakeholders in the political process (the main influence here has been the sociological/philosophical debate about the dialectical relationship between structure and agent);

- the styles of inter-governmental bargaining that prevail within the Council of Ministers and the European Council (inter-governmental analysis);

New institutional approaches draw on a more complex assessment of the interaction of institutions and groups and emphasises both the formal and informal way in which institutional structures impact on stakeholder involvement. For example, in relation to the EU, actors have to operate in a context of a structure that is not only Treaty-defined, but greatly influenced by the supranational ideas reflected in the institutional structure of the EU, in particular, the role of the Commission. The policy process in the EU, therefore, is not simply a vacuum waiting to be filled by the ideas and preferences of interest groups, with the Commission acting as a neutral observer or an arbiter of stakeholder preference in the policy process. The Commission is itself a key actor in the process, developing its own ideas and agendas, setting rules and imposing obligations and directly influencing the nature and character of the debate.

A good example of this is the emergence of research and technology policy in the EU and the way the Commission controlled the emergence and funding of ETPs. This suggests that the Commission is more than just a player in a game of equals; it is a key player coordinating stakeholder involvement and driving the policy agenda. Both actor-based models and inter-governmental theories share a misconception in that they underestimate the supranational architecture of the EU and the role that the Commission has in generating and determining the policy agenda. In particular, the role the Commission can play in formulating expert groups, such as an ETP, that provide both stakeholder support and knowledge-driven, evidence-based policy analysis, based on stakeholder consensus, that shapes the choices available to the member states.

Hall and Taylor (1996) identify three different types of institutionalisms, sociological, rational choice and historical, that all have different explanations as to how and why institutions impact upon the process. The influence of sociology in this discussion is based on one of the central debates in this discipline: the nature of the interaction between structure and agent – in particular, the way in which institutional structures socialise and mould actor behaviour through beliefs, knowledge, values, normative constraints and established ways of doing things (North 1990). They render meaning to actors both within and outside institutions 'by providing the cognitive scripts, categories and models that are indispensible for action, not least because

without them the world and the behaviour of others cannot be interpreted.' (Hall and Taylor 1996: 948). This analysis is particularly relevant to the EU because of its unique institutional structure and the supranational narrative developed by Monnet and the Founding Fathers that continues to influence the Commission's approach to policy making. This approach has manifested itself in recent empirical studies of policymaking in the EU; for example, Armstrong and Bulmer (1998: 52), in their study of the Single Market, define institutions 'as meaning formal institutions; informal institutions and conventions; the norms and symbols embedded in them and policy instruments and procedures.' They describe a process in which the institutions become normative vessels that shape the behaviour of actors, their beliefs, knowledge, understandings and values.

The rational choice theorists emphasise the role of institutions in defining and constraining the role that that political actors adopt in pursuing their interest (Thelen and Steinmo, 1992: 7). It is an approach that has been particularly significant in the further development of the state-centric analysis and, in particular, the impact of interdependence on decision-making by the nation state. This is often described as the neo-realist approach and it provides an explanatory model of the EU dynamic grounded in the idea that the nation states established the EU with the aim of maintaining and extending national interest (Moravcsik, 1993). Sandholtz (1996: 404) criticises this approach on the grounds that it 'tells us nothing about how the institutional context shapes preferences and EU decision-making'. One of the problems of the neo-realist approach is that it provides a limited role for actors other than the nation state (Garrett & Tsebelis 1996; Pollack 1997). The Commission is viewed essentially as a tool of the member states with its role perceived as one of a neutral observer manifesting state preference as, and when, required. It is a view that was particularly influenced by the post-Luxembourg Compromise era, where the role of the Commission appeared severely constrained by an institutional framework that favoured decision-making based on a convergence of national interests. As Sandholtz notes, it is a view that effectively treats the EU institutions as little more than extensions of the member states (Sandholtz, 1996: 406).

The analysis of the role of institutions in the policymaking process in the EU, from a historical perspective, tends to emphasise the supranational architecture that was one of the most distinctive features of the early communities and distinguished it from intergovernmental organisations. In relation to this approach the EU institutions are not merely a neutral vehicle for manifesting member state preference but, in the case of the Commission, because of the historical narrative, can play a role that is expansive and entrepreneurial. As Rosamond (2000: 117) notes, from the historical perspective: 'the very act of creating particular sorts of institutions, with identifiable competencies and powers unleashed logics that could not necessarily be predicted at the time.'

The point Rosamond is making is that the Commission has established beliefs, values, knowledge and a distinctive way of doing things. This has a particular influence on its aims and objectives and the various agendas it pursues to achieve them. Indeed, central to historical institutional approaches is the idea of 'lock-in' or 'path dependency' (Pierson 1996) that institutional norms and values place constraints upon stakeholders to influence policy change. As Krasner (1984: 225) notes, 'once an historical choice is made, it both precludes and facilitates others. Political change follows a branching model. Once a particular fork is chosen, it is very difficult to get back on the rejected path.' In other words, 'institutions become a force for continuity rather than change.' (Peterson & Bomberg 1999: 20) Historical new institutional approaches have been adopted by Peterson and Sharp (1998) as the most useful analytical tool to capture policymaking at the systemic level of policymaking in European research and development policy. This is the level at which the key thematic areas of the Framework Programme are determined. This thesis supports Peterson's and Sharp's (1998)claims that there exists a degree of path dependency at the systemic level which is reflected in a strong element of continuity in key thematic areas from one Framework Programme to another.

One of the most interesting developments directly related to this new institutional debate has been the identification of a proactive and entrepreneurial Commission in the creation of structures that bring together interest groups and technical experts in professional fora (Zito 2001: 473a). Zito points out that Richardson

(1996), Radaelli (1999) and Héritier (1999) have argued that 'the Commission frequently tries to legitimate European policies by the creation of supportive networks.' (Zito 2001; 474a) Nowhere is this more clearly manifested than in the formulation of ETPs that have been created to provide both knowledge and stakeholder legitimacy to Commission proposals. The central role of the Commission in the development of ETPs is what distinguishes them from the actor-based approaches discussed above; ETPs have not formed organically or spontaneously through stakeholder interaction like an epistemic community or advocacy coalition, but are a Commission initiative designed on the basis of a clear framework.

Richardson (1996b: 45-46) has pointed to increasing evidence that 'Commission officials are moving towards institutional structures which...bring together groups of actors in a forum, be they epistemic communities, advocacy coalitions or different policy communities'. Richardson correctly identifies a move by the Commission towards institutionalising expert groups, but ETPs represent something different to the policy communities, advocacy coalitions and epistemic communities that he identifies. It is within the context of the emergence of the Commission as a key actor in the establishment of ETPs and the interaction with actor-based groups that the case study of ETPs will need to focus on in order to illuminate the policy process in the EU. ETPs bring together a wider range of stakeholders within a deliberative forum that embraces epistemic communities and advocacy coalitions. Indeed, it is the deliberative nature of ETPs that suggest the origins of the ETP model lie in the comitology committees that have developed in the formal policymaking environment of the EU.

Comitology Committees were given treaty definition in Article 202 of the Lisbon Treaty. The purpose of these committees is to agree and prepare legislative instruments clearly identifying the scope of implementing powers in relation to specific areas of legislation. These committees are there to assist and scrutinise the Commission and consist of a wide range of governmental and non-governmental stakeholders. The role of these committees is subject to Parliamentary scrutiny under the co-decision procedures, including the right to veto if the Commission is thought to be acting *ultra-vires*. In addition, measures have been put in place to encourage easy access for European citizens, including an on-line public register. The end product of

this process has been the establishment of a range of committees to deal with specific areas of policy implementation, including advisory committees, management committees and regulatory committees for information and scrutiny. Comitology committees are an example of the institutionalisation of policy implementation in the area of EU regulatory competence and, therefore, are drawn within the orbit of the new-institutional approaches.

Recent academic analysis of the emergence of committees and forums in the EU has stimulated a new line of thinking in relation to the emergence of a process referred to as 'supranational deliberation'. The work of Joerges and Neyer (1997) based on an empirical analysis of the work of comitology committees in EU Foodstuff Regulation identifies a process in which national and supranational stakeholders enter into a process of deliberation with the aim of mobilising knowledge and expertise in the search for the most appropriate and efficient solutions to common and specific problems. In relation to the Foodstuff Regulation they identified a process in which the deliberative process constrained the capacity of competing stakeholders from pursuing a narrow partial interest, whether national or intellectual. The decision-making process in these forums can only be understood in relation to the informal norms that underpin the deliberative process, the quality of the arguments presented and a need for a consensus in relation to the best and most efficient way forward (Joerges & Neyer 1997; Joerges 2001). The complexities of this process and the dialectical link between agent and structure cannot be explained by an intergovernmental analysis driven by the pursuit of national interest.

The key to the Joerge's and Neyer's argument is that what has developed is 'an openly political, administrative regulatory process producing a forum through which competing private and public, political and social, national and supranational values and interests could be expressed.' (Joerges 2001: 8) Joerges (2001: 5) notes that 'the legitimacy of this governance is to be measured by the deliberative quality of the decision process organised in it' (Joerges, 2001: 5). He points out that the significance of these committees is that they encourage interaction through deliberation between government representatives and representatives of social and economic interests (Joerges, 2001: 7). For Joerges and Neyer, a new process of European communication

has been established through the dynamic of the deliberation process in which the discussion is institutionalised and experts and participants can challenge their competing perspectives with the aim at arriving at the best possible solution.

Thomas Risse (2000) has identified a framework for analysing the deliberative process in international relations. Although Risse's research in this area does not focus on the EU, the framework for deliberation he identifies has a resonance with and most likely influenced the supranational deliberation approach developed by Joegres and Neyer. Risse (2000: 7) argues that actor preferences, when subject to debate and discussion within a deliberative framework, will be questioned and reshaped:

> 'Where argumentative rationality prevails, actors do not seek to maximise or to satisfy given interest and preferences, but to challenge and to justify the validity claims inherent in them – and they are prepared to change their views of the world or even their interests in the light of the better argument'.

Risse (2000: 1) has identified some of the key features of the deliberative process, including:

- Arguing constitutes a necessary step in the negotiating process;

- It provides a mode of interaction that enables actors to mutually challenge the validity of their respective claims and helps identify vested interest, norms and identities;

- It provides a means for actors to confront their views through argument, stimulates self-evaluation and encourages a preparedness to change their views.

This research will assess to what extent the framework developed by the Commission for ETPs reflects the deliberative policy models outlined above. While epistemic communities, policy networks and advocacy coalitions represent homogeneous groups that come together to promote singular policy issues, ETPs exist to provide a forum to promote discussion and debate between a range of stakeholders with competing interests. ETPs are open to all groups and stakeholders, including the

above actor-based groups. The role of ETPs is not to represent a particular interest or preference, but to identify the best solutions to particular problems based on stakeholder consensus. ETPs provide a mode of interaction that enables actors to mutually challenge the validity of their respective claims and helps identify vested interests and normative argument. They provide a means for stakeholders to confront differing views through argument and stimulate self-evaluation and a preparedness to challenge their own views. As noted above there is a deliberative element of Sabatier's advocacy coalition approach in which different groups debate, argue and discuss in an attempt to alter views and perspectives. The difference between advocacy coalitions and ETPs, however, is that this debate occurs in a structured deliberative forum in which a consensus identified in a strategic research agenda is a fundamental requirement, not just a potential outcome of negotiations.

The supranational deliberation approach developed by Joerges and Neyer (1997) has been subject to intense academic criticism from a state-centric perspective. The main thrust of this criticism is the purpose of comitology committees is to monitor, supervise and control the Commission and, therefore act as agents of the Member States (Pollack 2003). They are particularly scornful about the idea of supranational deliberation and the attempt to link this to growing academic interest in the idea of democracy through discussion. The main criticism of Joerges and Neyer is that their idea of supranational deliberation is, in reality, a new way of encouraging and fostering technocracy – the rule of experts. The critics have pointed out that governance by committees gives precedence to expertise over the opinion of ordinary citizens. They argue that because the process involves such a limited range of actors it actually compounds arguments about the democratic deficit rather than providing a solution.

Joerges (2001) has challenged this perspective arguing that a forum for supranational deliberation counteracts the potential for expert or group domination. He points out that the Commission's emphasis on open access, transparency and public scrutiny of documents and results in relation to this type of forum further undermines any criticism that this approach is both technocratic and serves to enhance the democratic deficit in the EU. This analysis is reflected in relation to the ETP model in that the Commission has issued guidance for ETPs in relation to equality

of access and openness and transparency in relation to their activities. In addition, the SRAs are made available for public scrutiny and further expert analysis and criticism. More significantly, however, it is the deliberative process which forms the basis for the preparation of the strategic research agenda which places emphasis on debating challenging ideas and competing interests with the aim of establishing a consensus based on what Majone has described in a more general discussion of the policy process as reciprocal persuasion (1989). In this respect, ETPs are more open and inclusive and, therefore, less susceptible to domination by any one group or groups of actors as discussed earlier in this chapter.

The central role of the European Commission in the formulation of ETPs corroborates recent claims that the Commission has been proactive in forum politics. Furthermore, there is a direct link between the deliberative nature of the formal institutional procedures of comitology committees and ETPs. ETPs reflect a move by the Commission towards developing frameworks for institutionalising a deliberative policymaking method. ETPs provide a forum that brings together a wide range of competing interests that are required to develop a strategic priority agenda through open discussion and deliberation. By institutionalising a deliberative policy method and imposing clearly defined rules on openness and transparency, the Commission is attempting to establish a barrier against expert and sectoral domination. The strategic research agenda that is ultimately produced is based on both expert knowledge and widespread stakeholder support and, therefore, provides the Commission with a vital source of legitimacy on which to base its policy proposals. This supports the view of Richardson that the Commission can create networks and institutionalise particular methods of policymaking, in this case deliberative approaches, to build support for their proposals (Richardson 1996a).

Conclusion

The purpose of this chapter was to locate ETPs in relation to the existing range of theoretical analysis that informs the nature of the debate about the complex process of governance in the EU. It is increasingly clear that no one theory, range of theories, approaches, descriptions, metaphors or explanations, that presently inhabit the theoretical landscape, provide an adequate explanatory tool capable of providing a

comprehensive explanation of the constantly changing political and policy environment. Where they do assist in our understanding, however, is in highlighting the key factors that drive the policy process, how these factors have influenced the emergence of ETPs, what they represent and in identifying their role in the policy process.

The main academic debate about whether the EU represents a new system of governance, without the trappings of government, or is a merely an agent of the nation state, continues to divide the academic community. The initial claim of neo-functionalists to have discovered a new theory of regional integration in Europe, based on an empirical analysis of the ECSC, may not have survived the spotlight of intense academic scrutiny largely because of its grandiose theoretical claims and normative undertones that appeared to undervalue the role of the nation state in the process. Despite this major flaw in the argument, neo-functionalism remains an important source of influence on theories of governance in the EU.

The reason that neo-functionalism still has relevance is that it provides an important insight into the policymaking process; in particular, the complex interaction between the High Authority/Commission and non-governmental stakeholders in the development of the European policy dimension. It still remains the only theory that attempts to identify a mechanism (spill-over) in which the emergence of the European dimension, as a focal point of a policymaking, triggers a changing mindset amongst stakeholders creating a dynamic for further progress in European policy competence; it became particularly influential because it appeared to provide an explanation of the creation of the EEC and Euratom. Neo-functionalism, therefore, remains an important point of reference in relation to the emergence of research and technology policy and ETPs because of the insight it provides in the relationship between an entrepreneurial Commission and its interaction with a rapidly expanding group of national and supranational stakeholders in the development of this new policy dimension.

The neo-functionalist analysis contrasts with the state-centric/intergovernmental approach in which all EU policy outcomes are explained as a product of inter-state bargaining driven by national self-interest. Whereas the neo-functionalists tended to undervalue the role of the nation state, this approach goes to

the other extreme in overstating member state dominance at the supranational level. The problem with this approach as an explanatory tool is that it fails to capture the complexity of the policy process in the EU; in particular, the role of an entrepreneurial Commission interacting with non-governmental stakeholders in the development of policy. A significant weakness of the state-centric intergovernmental approach is that it fails to explain that in the process of creation a supranational institution independent of the member states, it unleashed a dynamic involving a new source of governance that would inevitably impact on the member states' own policy preferences. As an approach, therefore, it is not particularly useful in explaining the emergence of a research and technology policy at the European level, the ideas behind the creation of a European Research Area and the establishment of ETPs.

In attempting to identify a theoretical point of reference in relation to the emergence of research and technology policy and ETPs, this thesis is firmly located within the wide-ranging literature that seeks to analyse the emergence of the European dimension, not in terms of a process of integration, but one of an emerging system of governance involving a complex interaction between a wide range of actors. From this perspective policy is formulated on the basis of discussion and negotiation between a wide range of inter-dependent governmental, non-governmental, national and supranational stakeholders. It is a process in which knowledge and resources are shared in order to reach a consensus and avoid conflict and stalemate.

Central to governance approaches is a policymaking process involving a wide-range of stakeholders. It is within this context that a number of actor-based models have emerged that emphasise the role of expert groups/stakeholders and knowledge as the key drivers of the policy process; including, policy networks, epistemic communities and advocacy coalitions. The main theme of these approaches is the idea that actors, rather than institutions, set the policy agenda and determine change in complex areas of policy. They emphasise the fact that EU institutions, in particular the Commission, are heavily dependent upon the knowledge, expertise and ideas these groups provide in formulating policy at the agenda-setting level.

While these approaches certainly capture the analysis from the perspective of the actor in relation to the emergence of research and technology policy and ETPs, it is

a process that cannot be solely explained as a product of or as a derivative of the interplay of actor interests and expert group activity. The weakness of these actor-based approaches is that they undervalue the way in which the complex institutional framework of the EU impacts on the process, in particular, the role of the Commission in managing the policy and knowledge agenda and shaping stakeholder involvement in the process. It is naive to think that the Commission is a passive vessel waiting to be filled by the ideas and preferences of expert groups; nor is it a neutral observer that merely acts as an arbiter in the policy process. It is an actor in its own right, driving the policy agenda and using knowledge, expertise and stakeholder support to build policy proposals.

Nowhere is the impact of the institutional approach more clearly evident than in the role of the Commission in the EU policy process; in particular, the way it uses the Community Method to generate evidence-based policy proposals underpinned by stakeholder consensus for the purpose of shaping the policy process. The fact that the Commission is at the epicentre of the policy process in the EU has stimulated growing academic interest in its role (neo-institutionalism). One of the interesting developments in this area is the increasing use of the policy forum by the Commission as a means of informing the policy process. Richardson (1996) was one of the first academics to note the Commission's use of a forum approach based on the idea of bringing together groups of stakeholders, with competing interests, for the purpose of developing policy solutions. The most significant development in this area of study, however, was the empirical study, by Joerges and Neyer (1997; 2001), which focused on the work of comitology committees in highly complex areas of EU regulatory policy. They argued that this approach reflected the emergence of a new system of supranational deliberation. Although their work has been subject to intense criticism, largely because of the emphasis on supranational deliberation as a source of democratic legitimacy, they have identified a significant development that requires further investigation and there is some value in examining ETPs within this context.

This chapter has provided a comprehensive over-view and analysis of actor-based models, institutional approaches and deliberative forum approaches, for the purpose of locating ETPs in the theoretical landscape. It is within this context that this

thesis will attempt to identify the nature and character of ETPs, what they represent and how they fit into the policymaking process. In examining ETPs in relation to the various approaches, it will help provide a point of reference for identifying whether they represent a new model of policymaking or come under the broad intellectual umbrella of an existing approach.

The common theme that is emerging in all of these approaches is the increasing significance of knowledge and expertise in the policy process. This has profound implications for the generalist politician and administrator in relation to how this knowledge and expertise can be controlled and managed. The increasing need for knowledge and expertise to formulate policy in highly technical and complex areas such as research and technology goes to the very heart of the technocratic critique of the EU and debate surrounding the 'democratic deficit'. The next chapter will discuss the above theoretical approaches in relation to the technocratic critique of the EU in an attempt to assist our understanding of the policymaking process and the way knowledge and expertise can be managed in an increasingly complex knowledge-driven economy.

Chapter 3

Knowledge and Expertise in the EU Policymaking Process

Chapter Outline

The theoretical debate surrounding the nature of governance in the EU has served to highlight the increasing importance of knowledge and expertise in the policymaking process. This debate has been further illuminated by the growing number of actor-based models that have emerged that argue knowledge and expertise have become the terrain of politics at the agenda-setting level, particularly during times of uncertainty when politicians start to question the status quo and look to expert advice to provide alternative solutions to problems (P. Haas 1992; Sabatier 1998; Richardson 1996a, 1996b; Zito 2001a, 2001b). In increasingly complex areas of policymaking, such as research and technology policy, the Commission is increasingly reliant on the knowledge and information provided by expert groups and stakeholders. ETPs have been specifically designed to contribute to the formulation of FP7 through the identification of future research and technological priorities in areas key to European economic growth and competitiveness. The knowledge and information that ETPs provide, based on widespread stakeholder support, have become a major source of legitimacy for Commission proposals (Peters and Barker 1993; Boswell 2008).

The increasing role of expert groups and stakeholders, such as ETPs, in EU policymaking has given rise to the criticism that the EU is a technocracy, a system of governance dominated and ruled by experts. Much of this debate has been based on the view that the EU was built upon technocratic foundations by Europe's Founding Father, Jean Monnet, with the 'Monnet Method' of policymaking, as it has become known, as the central cause of the democratic deficit that exists today (Featherstone 1994; Tsakatika 2002). The central weakness of these arguments is that there has been no attempt to either define technocracy and its central tenets, or provide an analysis of the 'Monnet Method'. Given that the role of experts in European policymaking has been inextricably linked with the concept of technocracy and the Monnet Method it is important that this discussion is revaluated in the light of the emergence of European research and technology policy and, in particular, the emergence of ETPs.

The aim of this chapter is to challenge the conception that the 'Monnet Method' was a technocratic approach. The chapter will first discuss the growing importance of knowledge and expert stakeholders in EU policymaking and the questions of democratic legitimacy that this raises, before providing an overview of the technocratic critique of the EU, with particular reference to the 'Monnet Method'. The chapter will then provide a clear definition of technocracy and the key components of the approach and its relevance to the actor-based models and the emergence of ETPs, before analysing the technocratic approach against an assessment of the Monnet Method. The chapter suggests that while there are technocratic elements to the Monnet Method it cannot be regarded as wholly technocratic. The Monnet Method was rather a deliberative forum in which a wide range of stakeholders would bring their own views and interests to a debate and discussion before reaching an agreed plan of action. The chapter concludes that the Monnet approach to policymaking, with its emphasis on widespread stakeholder involvement and evidence-based policymaking, forms the foundation of the Community Method that exists today.

Knowledge and Expertise in EU Policymaking

Rapid technological change is transforming society. Science, research, technology and innovation are now widely considered to be the cornerstones of the modern knowledge-based economy (European Council 2000). The escalating speed and complexity of scientific and technological change has had a major impact on the processes of governance and policymaking in the modern European polity. Technological progress, however, as well as bringing benefits, brings problems, and one of these is the growing knowledge gap between specialists and non-specialists. At the supranational level, these developments have manifested themselves in the Commission's increasing reliance on expert opinion through interaction with stakeholder groups, forums, advisory committees, think tanks and regulatory agencies to provide knowledge, information and ideas in the formulation of policy in highly complex and technical areas such as research and technology (Majone 1996; Coen 1997; Stone *et al.* 1998). This process is reflected in the establishment of European Technology Platforms by the Commission to assist in the formulation of policy in leading-edge technology areas that have become the engine of the post-industrial age,

such as, computer science, microelectronics, telecommunications, robotics, biotechnology and nanotechnology. The emergence of ETPs provides further insight into the management of expert knowledge and the way in which the Commission uses knowledge as a source of legitimacy in the preparation of policies aimed at shaping Member State preference.

While the search for adequate tools to describe and analyse this rapid transformation is still in its early stages, there is little doubt that the key components of this process are specialist knowledge and expertise. Knowledge, rather than ideology, has become the essence of the policymaking process and the major source of policy change in the EU (Radaelli 1999a; 1999b). This is reflected in actor-based policy models, outlined in the previous chapter, that stress the importance of the knowledge and expertise stakeholders provide in the formulation of policymaking at the agenda-setting level, particularly in highly complex areas of policymaking and during periods of crisis and uncertainty (P. Haas 1989, 1992; Sabatier 1988, 1998; Zito 2001a, 2001b). There now exists a policymaking system in the EU that involves the complex interaction between EU institutions, governmental and non-governmental stakeholders in which the role of experts, large organisations and sectoral networks reflect the essence of modern governance (Radaelli 1999a:3). Actor-based models point to the emergence of a new class of professional expert at the core of the policy process whose role and capacity to influence change is determined by their specialised knowledge.

Nowhere is knowledge and expertise more pivotal than in the area of research and technology policy. At the heart of the emergence of research and technology policy as a key area of European policy has been the European Commission. This is an area in which the Commission has been pro-active in involving expert groups and stakeholders in the formulation of policy (Peterson & Sharp 1998; Sharp & Shearman 1987; Green-Cowles 1995; Sandholtz & Zysman 1989). As will be explored in the next chapter, many of the groups that interact with the Commission could be characterised by the policy communities approach developed by Richardson and Jordan (1979) and Rhodes and Marsh (1992b) in that they have become exclusive and closed to a small number of stakeholders. This has often made policymaking in the area appear elitist

and exclusive which is something the Commission has tried to overcome through the development of ETPs that provide a forum for deliberation that opens up the process to a wide range of stakeholders.

The debate and the need for knowledge and ideas in highly complex areas such as research and technology policymaking exposes tensions between the role of experts and more conventional notions of representative democracy. More significantly, it has raised questions about the role of public opinion and individual participation in the process. Fischer (1990: 16) argues that the need for greater expertise gives rise to undemocratic practice and forms of governance:

'Post-industrialism leaves little room for traditional concepts of democracy, particularly the concept of individual participation…In a highly technological society, the pivotal roles of public opinion and citizen participation are seen as artefacts of an earlier time. In a governance system geared to mediating between technological and organisational imperatives and the demands of the citizenry, politics must be administratively centralized, much more technocratic, and largely elitist…Democracy is, in short, taken to be an inappropriate and inferior decision-making system for the emerging post-industrial society.'

Fischer is arguing that the need for knowledge and expertise have become key political resources for sustaining increasingly undemocratic forms of decision-making. For Fischer, what is emerging is a process that is only open to a select few and 'erects stringent barriers to popular participation. Only those with knowledge (or credentials) can hope to participate in deciding the sophisticated issues facing post-industrial society.' (Fischer 1990: 112) Indeed, the need for the knowledge and ideas to develop policy and the increasing role of expert groups and stakeholders in the policymaking process has given birth to a view that the EU represents an emerging technocracy in which unelected experts are dominating the process and therefore undermining conventional notions of legitimacy and accountability.

Technocracy in the EU: The Legacy of the Jean Monnet Method

The increasing role of expert groups and stakeholders in European policymaking has stimulated academic interest in the idea that the EU is becoming increasingly technocratic (Featherstone 1994; Harcourt & Radaelli 1999; Radaelli 1999a 1999b; Tsakatika 2002; Wallace & Smith 1995). The essence of this debate is that the EU is becoming increasingly dominated by experts, who operate outside formal democratic representative institutions, deriving their authority from technical expertise and knowledge (Radaelli 1999a: 1). The prominent agenda-setting role of the European Commission and the growing number of expert stakeholders involved in the policymaking process has given rise to a new Euro-sceptic lexicon characterising Commission officials, expert groups and stakeholders as: 'faceless bureaucrats', 'technocratic elite', 'anonymous experts' and 'hidden hierarchies' (Radaelli 1999a). The view that the EU represents an emerging technocracy goes to the very heart of the debate surrounding the idea that there is a 'democratic deficit' in the EU.

If the concept of technocracy is to have any resonance as an analytical tool, it will be in highly complex areas of EU policymaking, such as, research and technology, as this is an area where politicians and administrators are heavily reliant on specialist knowledge to formulate policy. Furthermore, a cursory analysis would appear to indicate that the EU institutional and policymaking structure would provide a perfect breeding ground for technocratic practices as there is:

- the European Commission, a bureaucracy made up of unelected officials, with a pivotal role in setting the policy agenda;

- no democratically elected government with legislative mandate to push through policy change;

- a weak party system in the European Parliament;

- a number of highly technical and complex policy areas such as research and technology;

- a wide range of public and private experts consulted in the formulation of policy (Radaelli 1999a: 7).

Indeed, the institutional framework on which the EU was originally constructed, with a High Authority/Commission made up of appointed experts, at the epicentre of a policy process, remains central to the contemporary debate about its technocratic nature and the 'democratic deficit'. Much of the recent literature analysing the EU from a technocratic perspective has been based on the idea that the model on which the EU was designed, the 'Monnet Method', was built upon a technocratic foundation whose legacy continues to influence the contemporary system of governance (Featherstone 1994; Radaelli 1999a; Tsakatika 2002; Wallace & Smith 1995).

Featherstone (1994) and Tsakatika (2002) argue that the EU was designed upon technocratic grounds leading to shallow, weak and fragile foundations of democratic legitimacy. Featherstone (1994: 150) argues that 'Monnet established the European integration process with a particular character – which was marked by technocracy and elitism...it seemed technocrats had to build Europe first before the politicians and the people could get their hands on it.' He suggests that the building of Europe was an elite- driven project with little input from European citizens where decisions were to be left to a small group of technocratic experts working in the High Authority: 'Monnet set European integration on a particular course, having crucially shaped its character, and the long term effect was to make its central institution – the Commission – weak and vulnerable in the face of democratic challenge' (Featherstone 1994: 162). He continues: 'Monnet's original conception of an elitist, technocratic High Authority to lead the integration process has been found wanting. The very form of today's Commission weakens its capacity to exert political leadership. It is too vulnerable to attack, as a result of its lack of accountability and democratic legitimacy.' (Featherstone 1994: 165). This view is supported by Myrto Tsakatika (2002: 1) who argues that the Monnet Method 'can be shown to be the principal cause of the failures of openness, accountability, coherence, participation and efficiency that the Union is called upon to confront today.'

The main problem with this critique of technocracy is that it underestimates the wide-ranging consultation and deliberation that the process involves in order to ensure that all aspects of thinking with regard to a given policy area are analysed and

assessed. This is an essential feature of the Commission approach arising from the detailed scrutiny their proposals receive at both the supranational and national level (public scrutiny). This is why the Commission places such emphasis on ensuring that documents entering the public domain are coherently argued and have a sound evidential base (Ross 1995). But the most frustrating aspect of the technocratic critique is the failure to define what is meant by technocracy. If the use of technocracy in this context is to have any value as an analytical tool in relation to the role of the Commission and the 'Monnet Method' it requires definition. The emergence of this technocratic critique manifested itself in the early academic discussion of the European Project. It was very much grounded in the secrecy surrounding the launch of the ECSC and a critique about the elitist nature of both the institutional framework and the legacy of the method Monnet bequeathed to the EU, an aspect of the academic debate over which there is little disagreement. Since this critique is central to the contemporary discussion of the policy process in the EU, it is essential to define what is meant by technocracy and whether this approach conforms with the Monnet legacy and its subsequent influence on the present 'Community Method'.

Technocracy – Definition and Key Concepts

In order to assess the value of technocracy as a conceptual tool in a discussion of governance and policymaking in the EU, it is first imperative to clearly define the term technocracy and identify the essential components that contribute to the approach; only then can it be applied to the debate about the technocratic nature of the EU. Technocracy is defined by the Oxford English Dictionary quite simply as the "rule or control by technical experts". However, within political science, Meynaud's definition remains the most cited: "a system of governance in which technically trained experts rule by virtue of their specialised knowledge and position in dominant political and economic institutions...the rise to power of those who possess technical knowledge or ability, to the detriment of the traditional politician." (Meynaud 1969: 31).

The common denominator between this definition of technocracy and ETPs and the actor-based models and neo-institutional approaches discussed earlier is knowledge and the fact that this expertise provides groups and stakeholders with the

potential to influence the policymaking process and shape institutional and member state preferences. However, what distinguishes these approaches from the technocratic approach is the word 'rule'. Actor-based models and ETPs might use knowledge to influence the policy process, but they do not dominate and rule the EU policymaking process. For example, ETPs involve a deliberation process in which competing ideas and sectional interests come together to debate critical issues in leading edge technologies. It was clear from interviews with Commission officials that while the information that ETPs provided was valuable they did not dominate the decision-making process. The final decision about what became policy and what does not, remains with the Commission and has to be ratified by the Council and Parliament (Various Interviews 2008).

Where the thesis uses the term 'knowledge and expertise' it is specifically referring to specialist knowledge over generalist knowledge. Knowledge can exist independently of expertise, but it is the detailed and technical specialist knowledge, particularly in areas of research and technology, experts can provide to policymakers that gives them the potential to influence policy formulation. It is also this specialist technical knowledge that distinguishes the expert from the generalist politicians, administrator and citizen and it is precisely this area where concerns are emerging about a growing knowledge gap and the potential for the technical expert to dominate the policy process. Indeed, there is an emerging consensus that it is knowledge and expertise that endow technocrats with their power. For Bell (1973: 348, 358) 'the technocrat is one who exercises authority by virtue of his technical competence' (Bell 1973: 348, 358). Bell continues that 'if the dominant figures of the past hundred years have been the entrepreneurs, the business men and the industrial executive, the "new men" are the scientists, the mathematicians, the economists, and the engineers of the new intellectual technology' (Bell 1973: 344). The implication being, that within a technocracy only those with the necessary expertise can participate in the policymaking process. Both policy networks and epistemic communities have a closed and exclusive membership, and what is particularly interesting about epistemic communities is their restriction of membership to those with scientific and technical knowledge. This would clearly place the approach within a technocratic domain. The narrow definition of technocrat cannot be extended to ETPs and advocacy coalitions,

however, as their membership is broad and open to a wide range of stakeholders. With reference to ETPs, all Commission officials interviewed were at pains to point out that the membership of ETPs should be open and their work transparent, as specified in the Commission ETP report on openness and transparency (COM 2006), in order to ensure that ETPs do not become a closed shop like policy communities or technocracies (Interview 2008i; Interview 2008xiv).

The concept of technocracy was developed as a political and ideological response to industrialisation and rapid technological progress (Fischer 1990: 17), and has particular relevance in societies with high levels of economic development (Radaelli 1999a: 11). The concept has become more prominent within the context of the emergence of a highly complex post-industrial society of which there are six central features:

1. The importance of science and technology for economic growth;

2. Large scale technological complexity;

3. A high degree of organisational interdependence;

4. Centralised forms of economic and political decision-making;

5. Greater reliance on technical expertise;

6. Rapid rates of economic and technological change (Fischer 1990: 14).

There is academic consensus about the economic context in which technocracy thrives and that the European nation state and the EU fit this pattern. There is also an emerging degree of consensus over what constitutes the basic elements of technocracy as a concept (Fischer 1990). Through an analysis of the literature it is possible to identify what these key fundamental elements are (Ridley 1966; Meynaud 1969; Putnam 1977; Fischer 1990; Radaelli 1999a):

- knowledge and expertise take precedence over politics and therefore the policy process is depoliticised;

- a problem-solving approach determined by rational and scientific methods and evidence-based policy analysis, rather than ideology, opinion and self-interest;

- Expert knowledge is viewed as objective, impartial, neutral and value free;

- the policy debate involves a closed and elite network with entry based on knowledge and expertise

- it is underpinned by the idea of technological progress and societal improvement;

- rational analysis that forms a strong evidential base will create broad consensus regarding a particular course of action.

Central to the technocratic approach is the view that in post-industrial society, governing becomes a process in which managerial problem solving, rather than ideological narrative, is the dominating feature. The foundation of the technocratic approach is a policy process that embraces scientific method and technical knowledge rather than what is perceived as the irrationality of self-interest and ideology. Ridley notes that the technocrat is 'a pragmatist, hostile to political ideologies or, indeed to any theoretical systems .... Problems must be solved in a rational scientific manner as they arise' (Ridley, 1996:43). For the technocrat, politics is the problem, not the solution and it is necessary to de-politicise the process. The mission of the technocrat is to save 'public policy from the irrationalities and indignities of politics, hoping to conduct it instead with rational, analytical and scientific methods' (Fischer, 1990: 21). For technocrats, neither the politician nor the citizen has the information or background knowledge to make decisions in technical and sophisticated policy areas; therefore, political problems need to be re-defined in scientific and technical terms in order to find effective and efficient solutions (Fischer, 1990: 22-23).

Fischer notes that the public interest is safeguarded by the 'impartial conscience' and 'neutral' competence of the technical expert (Fischer, 1990: 24). Meynaud argues that the technocrat 'in his reactions, thought and action, and above

all, in his innermost conviction, is free from all political attachment. He behaves according to conscience and especially his competence.' (Meynaud, 1969: 219). 'One of the most important components of the technician's mentality, is the belief that rational analysis and interpretation of facts are liable to bring about unanimity, at least among men of good will' (Meynaud, 1969: 209). Indeed, the technocratic idea is grounded in an intellectual ethos and world view based on a positivist ontological and epistemological perspective. The focus is on problem solving with little analysis of the values and contexts in which the problem is being analysed. The main criticism of this component of technocracy is that the technocrat cannot divorce themselves from the dominant ideas and values of the society in which they inhabit. They are, therefore, not impartial and neutral and their opinions are not value free.

In this respect, there is a technocratic element to the epistemic communities approach in that the knowledge they provide is based on scientific and technical method, however, the Haas model is more sophisticated and recognises that knowledge is not impartial and neutral. Actor-based models recognise that knowledge and interests are in a symbiotic relationship with one another; you cannot have one without the other. This is also reflected in ETPs where members' values and interests are inextricably linked with the expert scientific knowledge they bring to the discussion. Indeed, an interview with an ETP member revealed that one of the strengths of the deliberative process is that each participant represents a competing interest or sectional group and participation requires them to outline their perspective in relation to the deliberation and to defend their position if their perspective is to be included in a strategic research agenda (Interview 2008xlix). For the Commission, the policy deliberation around the development of an SRA is critical in ensuring that no one interest or group dominates.

The technocrat does not have an ultimate ideological goal, but is more interested in the efficiency of outputs; they are 'far more concerned with raising the level of production than with equalising distribution' (Putnam 1977: 387). In this regard, the technocrat is committed to the efficient running of technological processes and material productivity and less concerned with issues relating to the distribution of wealth and social justice (Putnam 1977: 387). The technocrat's

commitment to efficiency does link the concept to a body of literature looking at the EU as a regulatory body (Majone 1996). Regulatory approaches, as with technocracy, regard knowledge as the key resource in a political process in which the focus is on efficiency, rather than the redistribution of wealth (Majone 1996). This argument does have a resonance with the emphasis on the Monnet approach on problem solving at the expense of ideological narrative solutions. However, it is the way that the problem solving is carried out, including wide ranging consultation and a deliberative process that seeks to engage competing interests that distances the approach from the technocratic model.

Where the concept of technocracy is useful to an analysis of EU governance and policymaking is that it recognises that in complex post-industrial societies, knowledge and expertise have become the terrain of politics and a central feature of this development is an increasing reliance on expert stakeholders. However, as Radaelli (1999a 8, 24) correctly observes, the concept of technocracy should not be stretched so far to be an explanation of EU policymaking. In highly complex areas of policymaking, such as research and technology policy, experts and the knowledge they provide are unquestionably important in the formulation of policy, however, experts alone are not dominating the process. Technocratic approaches ignore the role of other key societal actors in the process and like the actor-based models in the previous section, underestimate the central role of EU institutions. The plurality of arenas, the wide number of stakeholders involved and the fragmented and sectoral nature of policymaking makes it very difficult for one group of actors to dominate the EU policymaking process (Radaelli 1999a: 47). Indeed, within complex systems of governance like the EU, actors must reach compromises with all interested stakeholders. For example, deliberation involving a range of stakeholders with competing ideas aiming to reach compromise around a strategic research agenda effectively constrains the potential domination by a single group. This is one of the key areas that will be examined in relation to the role of ETPs.

Neither should the concept of technocracy be extended to encompass the actor-based models identified in Chapter 2 or as a basis for an explanation of ETPs. There are elements of technocracy within these actor-based approaches; for example,

policy communities and epistemic communities have a restricted and closed membership. Within epistemic communities, in particular, membership is restricted to those with the expertise necessary to be able to participate. However, technocracy does not fully describe the membership of advocacy coalitions and ETPs. Their membership is not confined to the scientists, engineers and industrialists, identified as the most significant actors in a technocratic model but is open to a wide range of stakeholders.

As noted above, the Monnet legacy is generally regarded as the source of much of the technocratic criticism that has emerged in relation to the EU policy process. It has been described as technocratic, elitist and the main cause of the democratic deficit existing within the EU today. However, the central weakness of this critique is that it is not based on a detailed analysis of the 'Monnet Method' itself, let alone an analysis of the method based on a clear understanding of what is meant by technocracy in the form of a definition. This leaves this critique open to challenge on the grounds of misapplication of key concepts and the methods at the heart of the discussion. In order to establish the technocratic nature of the contemporary 'Community Method' and the legacy of Jean Monnet it is necessary to re-assess Monnet's legacy if we are to have a clearer picture of the technocratic critique.

The Monnet Method – A Reappraisal

There is general academic agreement that Monnet left a lasting legacy both in relation to the institutional structure and what is now widely described as the 'community method' of policymaking. Critics of the method have identified the approach established in the ECSC as the source of the contemporary 'democratic deficit' (Featherstone 1994; Tsakatika 2002). Ross (1995) acknowledges Monnet's legacy in the way the contemporary Commission functions in his in-depth analysis of the Commission during the Delors Presidency. In particular, he confirms that the proactive and entrepreneurial approach the Commission adopted during the re-launch of the EU in the 1980s was firmly grounded in the 'Monnet Method'.

Recent research, discussed in the previous chapter, on the influence of institutions in the policy process (new-institutionalism) places considerable emphasis

on the way institutions structure and mould actor behaviour through beliefs, knowledge, values, normative constraints and established ways of doing things (North, 1990). This view was promoted by Monnet and confirmed why the institutional framework of the ECSC was of critical importance to him. In a quote that is often attributed to Monnet himself, but upon closer inspection of his Memoirs was first observed by Swiss Philosopher Henri-Frédéric Amiel and had a major influence on Monnet's thinking with regard to the importance of institutions; Amiel noted that 'institutions accumulate collective experience; and owing to this experience and wisdom, men subject to the same rules will not see their own nature changed but their behaviour gradually transformed' (Henri-Frédéric Amiel, cited in Monnet 1978: 393). By institutionalising his methods in the High Authority, Monnet sought to establish a legacy that would influence future policy processes and behaviour and that through concrete achievement both government and non-governmental actors would embrace the methodology. This is an idea that would greatly influence the neo-functionalist approach developed by Ernst Haas and more contemporarily the Commission thinking behind the development of ETPs.

Monnet, in a speech made at the first meeting of Assembly of the ECSC in 1952, confirms the significance he gave to the institutional structure of the European project and its legacy in influencing future actor behaviour:

'The Union of Europe cannot be based on goodwill alone. Rules are needed. The tragic events we have lived through and are still witnessing may have made us wiser. But men pass away; others will take our place. We cannot bequeath them our personal experience. That will die with us. But we can leave them institutions. The life of the institutions is longer than that of men; if they are well built, they can accumulate and hand on the wisdom of succeeding generations.' (Monnet 1978: 384)

The capacity of institutions to shape and mould actor behaviour through established norms and ways of doing things is one of the key issues addressed in this thesis. The approach that the Commission adopted in developing the European dimension in research and technology policy and its role in developing and funding

ETPs provides further insight into the Monnet legacy and its continuing influence on the policy process in the EU. The influence of the institutional process was described by one Commission official as the 'house style'. He pointed out that in the 'house' (the Commission) has a way of doing things that is well established, tried and tested and they know what works and what does not. He added, in establishing ETPs we needed to ensure that they were a natural fit with our way of doing things and the process was open and transparent (Interview 2008ii). These issues will be addressed in more detail in later chapters.

Monnet was a strong proponent of the view that in times of crisis key individuals could induce policy change (Monnet 1978: 62, 64), a perspective that provides a strong link between Monnet and the epistemic community approach. Monnet often used the aphorism, 'there could be no progress without a certain disorder, or at least without disorder on the surface.' (Monnet cited in Duchêne 1994: 361) For Monnet, the problem did not have to be real; as long as it was real in the minds of decision-makers that was enough to induce action and change. As Monnet said 'people only accept change when they are faced with necessity and only recognise necessity when crisis is upon them' (Monnet cited in Rostow 1994: 265). In times of crisis the status quo is challenged and politicians look to experts for advice, so, a crisis represents an opportunity. However, the method developed by Monnet was not merely politicians becoming deferential to technocrats or ruled by experts, but was based on developing framework in which a range of stakeholders, including politicians, could debate and discuss identified problems before reaching a consensus around the best possible solution.

In confronting the technocratic critique of the EU and, in particular, the role of the Commission in the policy process, it is important to understand the roots of this 'house style' and to compare and contrast this with the main components of technocracy outlined above. In approaching this, and because of the acknowledged influence of the Monnet legacy in the process, it is necessary to re-visit the ideas that influenced the unique supranational institutional architecture of the ECSC and the continuing influence the Monnet Method has on the contemporary EU policy process.

Development of the Monnet Method

The 'Monnet Method' has its roots in the post-war French Planning Commission. In March 1946, Monnet became the first *Commissaire Général du Plan de Modernisation et d'Equipement,* a post he would hold until his appointment of the First President of the High Authority of the ECSC in 1952. As Commissaire, mandated by General de Gaulle with the task of rebuilding the French post-war economy, Monnet went about reconstructing the national industries of steel, coal and electricity that were critical to economic reconstruction and growth. From the outset, he was confronted with a provisional post-war government that was made up of the Communists, Socialists, Gaullists and Christian Democrats. It was an uneasy and fragile coalition with deep ideological divisions. In his memoirs, he notes, the main obstacle that had to be overcome was that the political parties and the French civil service were 'entrenched in their own positions' (Monnet 1978: 235). To establish a consensus for action it was necessary to confront these ideological divisions and vested interests.

Marjolin (1989) notes that Monnet's main aim was to focus attention on the realities and challenges of reconstructing the economy and that the ivory towers of political theory and ideology would have to be put to one side. For Monnet, problems needed to be dealt with independently; self-interest was to be overcome and an effective solution found. This rejection of ideology and the emphasis he placed on problem solving does connect the Monnet Method to the technocratic model outlined above. However, unlike a technocrat, Monnet was not anti-politician, nor against the democratic parliamentary process. Monnet believed that ideological divisions diverted attention away from the issues that needed to be addressed. Monnet, however, clearly did not want to replace political debate and activity with a technocratic model in which 'impartial' and 'value-free' experts made policy on the basis of a rational scientific method. Quite the reverse, from the very outset Monnet engaged all politicians in the debate about reconstructing France. Monnet recognised that if a range of stakeholders were brought together to focus on a problem and provide a framework for open discussion and debate the need to find a solution would dilute and transcend ideological divides and individual self-interests. The important thing was to ensure that the deliberation took place in the right institutional environment and

that the issues were presented and deliberated on in an open and reasoned way. In this sense, the involvement of a wide range of stakeholders in the policymaking process, including politicians, challenges the technocratic critique of the Monnet approach.

The Monnet Method did not involve a closed group of apolitical experts making policy on the basis of impartial and value-free scientific methods, but involved a wide range of stakeholders, including politicians, whose competing interests and ideological positions would be diluted by the need to reach a consensus around the best way to solve an identified problem. The wide number of stakeholders involved distinguishes the Monnet approach from the narrow expert-driven technocratic model. Monnet recognised the French economy could not be run by a small group of experts, but had to involve a collective collaborative effort involving a wide-range of sectoral and societal interests. In discussion with General de Gaulle about the challenge that lay ahead, Monnet noted:

> 'I don't know exactly what has to be done, but I'm sure of one thing. The French economy can't be transformed unless the French people take part in its transformation. And when I say "the French people", I don't mean an abstract entity: I mean trade unionists, industrialists, and civil servants. Everyone must be associated in an investment and modernization plan.' (Monnet 1978: 234)

In a letter he wrote to de Gaulle he confirmed this approach:

> 'Since the implementation of the Plan will require everyone's collaboration, all the vital elements in the nation must help to draw it up. That is why the method of work proposed is to bring together in each sector the administrative department concerned, the best qualified experts, and the representatives of industry and trade unions.' (Monnet 1978: 238)

Through an analysis of the key stakeholders identified by Monnet above it could be legitimately argued that the Monnet Method reflected a corporatist approach to policymaking in that it involved a complex 'interaction of state agencies and

interests organised on a sectoral basis.' (Cawson 1985: 2) It also reflected the type of closed and exclusive policy communities identified by Jordan and Richardson (1979) Rhodes and Marsh (1992a, 1992b). Policy communities, however, may be closed and exclusive, but they cannot be described as technocratic if measured against the definition and key elements of technocracy outlined above. While Monnet clearly identifies the role for experts in the process, he also recognises the importance of the involvement a wider grouping of political and societal stakeholders; it was a method based on converging the preferences and interests of policy actors. In comparison with the closed systems of technocracy the approach he envisaged was open, transparent and inclusive of as wide a range of stakeholders as possible. In relation to the ECSC this was critical in raising awareness of the European dimension. In E Haas's discussion of the ECSC he points out that wide stakeholder involvement was critical to the spill-over process. To have carried out the discussion in a closed technocratic environment would have defeated the object of raising the profile of the European idea.

In a technocratic fashion Monnet believed that in order to reach a consensus the problem at hand had to be completely isolated. Monnet noted that what was needed was 'a method of concerted action whereby everyone could see where his own efforts fitted in with everyone else's. We had to ensure that everything – the most pressing needs and the most distant ambitions – obeyed the rule we had set ourselves: always start with an overall view' (Monnet 1978: 236). He continued:

> 'Our action had to be at once less dictatorial and more specific: we had
> to persuade, not compel, private enterprises to act in accordance with
> public needs. The best way, surely, was to bring together all parties
> concerned, so that they could jointly seek the common interest, which
> no one of them could determine alone, but in which all of them had a
> share. We agreed that what mattered above all was to work out a
> democratic method of action along these lines.' (Monnet 1978: 236)

Traditionally, conventional bargaining frameworks set people at opposite sides of the table; this was a confrontational approach where more often than not the problem at the centre of the table was never addressed as people fought for personal advantage in zero-sum battles. As Monnet noted:

'As I have said, civil servants, producers, and work people had never sat down together around the same table. If they had sometimes negotiated, they had done so bilaterally, on opposite sides of the table and in an atmosphere of confrontation. There had been a winning side and a losing side, so that the underlying problem had merely been postponed.' (Monnet 1978: 236-237)

Monnet wanted to move away from this approach and develop a regularised framework of common action by focusing on finding solutions to a common problem that affected all people around the table (Monnet 1978). In other words, all people should be brought around to the same side of the table with the problem clearly identified and left isolated. By bringing people together around a common problem the sense of differences among them was reduced and a sense of equality established between participants (Monnet 1978). Monnet was especially adept at creating an environment in which all stakeholders had equal rights and could be clearly heard, which was important in persuading people to trust each other enough to sit at the same side of the table when discussing the problem at hand.

Once the problem had been discussed and a solution agreed upon, Monnet noted that 'the ultimate aim of this system was to draw up 'an overall balance sheet' which would enable the Planning Council to set 'priorities' and submit to the Government 'practical proposals concerning France's essential industries and the targets to be attained within a stated time.' (Monnet 1978: 239) The influence of the Monnet balance sheet approach can be clearly seen in the development of the Framework Programme for Research and Technology during the 1980s by Jacques Delors and the Strategic Research Agenda developed by ETPs. Both involve identifying long-term priorities developed through a wide-ranging consultation process involving an extensive group of stakeholders.

The Plan that was eventually produced, described as the Monnet Plan, aimed to induce industrial growth and economic recovery through the increased production of basic industries: coal, steel and electricity (Monnet 1978). Once the plan was formulated the institutional provisions for implementing the plan were developed. A Planning Council was established to be chaired by the Prime Minister, consisting of

governmental and non-governmental figures to be chosen on the basis of their expertise in a particular field whose job was to determine which industries should be modernised (Monnet 1978: 239). Monnet noted in a letter to de Gaulle that once particular industries had been identified 'a Modernisation [Commission] will be set up, comprising representatives of the civil servants, experts, employers, trade unionists, and white collar workers concerned.' (Monnet 1978: 239) This was not an approach based on a narrow group of technocratic experts controlling the process. It was based on wide ranging consultation and deliberation; Monnet points out that there were '350 members of the Modernisation Commissions and a further 500 in their sub commissions all working towards the same goal.' (Monnet cited in Rostow 1994: 278)

The success of the Monnet Method was that it developed a plan for the post-war reconstruction of the French economy that was acceptable to all political interests. He managed to bring together a disparate group of actors divided by ideology and was able to develop a broad political consensus with regard to the implementation of the plan. The support Monnet mobilised behind his plan was so widespread that opposition was minimal. Monnet believed that it was not the quality of the idea that mattered most, but the support mobilised behind the idea that really counts (Duchêne 1994: 347).

Monnet and the Development of the ECSC

The institutional structure and policymaking model developed in the French Planning Commission was central to the launch of the ECSC. In his role as the Head of the French Planning Commission, at a meeting with Robert Schuman, the French Foreign Minister, he proposed the initiative to place the raw materials of war – coal and steel – under joint German and French ownership in a European Coal and Steel Community. Following a short period of secret negotiation, the French Foreign Minister announced on the 9th of May that French and German coal and steel would be placed under joint sovereignty and controlled by an independent supranational body named the High Authority (Monnet 1978).

For Monnet, the High Authority would become the driving force behind this European project. He viewed its role as pivotal if the limitations and constraints of the

national veto that was central to existing international organisations was to be overcome (Monnet 1978). There is no doubt that Monnet's aim was to be president of the new organisation and that membership of the High Authority would be based on knowledge and expertise. It was essential that the High Authority did not become embroiled in party politics, ideological division or self interest. They were not to be representatives of the Member States or receive instruction from governments. For Monnet this was the pre-condition for the institutional framework. It was a pre-requisite for the plan to go ahead and that all parties must be prepared to accept the decisions of the High Authority to be binding.

However, this proposal opened up the debate about the technocratic nature of the new institutional structure proposed. Featherstone quotes the European Federalist, Spinelli, as commenting: 'Monnet has the merit of having built Europe and the great responsibility to have built it badly' (Spinelli cited in Featherstone 1994:, 150). The main focus of the technocratic critique of the 'Monnet Model' was particularly focused on the appointment of an independent High Authority at the epicentre of the Coal and Steel policy process, an area of the European economy that was critical to European construction and the capacity it provided for European nations to wage war. There is little doubt that the driving force behind the idea of a High Authority in such a critical area of policy making was to ground policy making in objective and scientific method and to avoid ideological disputes. This deep concern about the threat of ideology was clearly influenced by the impact of nationalism in the cause of the conflict that had reduced Europe to bankruptcy and the emerging perceived threat of Communism and the need to integrate the newly established Federal Republic of Germany into the western sphere of influence. This was particularly important in committing the Christian Democrat and Socialist ruling elites into support for the establishment of the ECSC. The institutional model presented by Monnet was effectively an anti-dote to ideologically driven conflict, in particular nationalism.

For Featherstone the legacy of the 'Monnet Model' was two-fold; firstly, it established a technocratic approach to policymaking, "government action following the advice of experts", and, secondly, it established a mode of operating involving

consulting industry representatives and networks of outside producer and interest groups (Featherstone 1994: 154-155). Undoubtedly, there are technocratic elements to the Monnet Method of policymaking and integration, but to describe his Method as wholly technocratic is misleading and shows a misuse and misunderstanding of the technocratic concept and a rather shallow and simplistic view of the policymaking method developed by Jean Monnet. On a personal level Monnet showed technocratic views, for example, he was wary and distrustful of politicians and civil servants viewing them as self-serving and self-interested. On a methodological level, basing policymaking on a practical problem-solving level rather than an ideological debate is certainly reflected in the key tenets of the technocratic approach identified above. However, ultimately the Monnet Method cannot be considered a technocratic approach to policymaking, as it does not simply hand over power and authority to the expert. Neither is it merely government action following expert advice (Featherstone 1994: 155).

The Monnet Method is a more sophisticated, subtle and nuanced approach designed to bring about practical solutions to problems by wide-ranging discussions aimed at reaching a consensus amongst a range of different stakeholders. The Monnet approach was not merely government by experts, as all views and opinions, including that of ideological and nationally driven politicians and civil servants needed to be heard before a consensus is reached. It is, however, important to repeat that the essence of the method is the involvement of a wide range of stakeholders in a process of analysis and discussion. It is the emphasis on the importance of discussion that undermines the technocratic critique. It is also the reason why the approach still has a resonance for a highly complex, knowledge-based economy.

The legacy that Monnet bequeathed is not just the unique institutional structure, but the 'Community Method' of policymaking that remains integral to the contemporary policy process in the EU. The following list of the central components of the 'Community Method' is based on a synthesis of Monnet's own views, EU Treaties and academic contributions to the debate (Monnet 1978; E Haas 1958, 1961, 1964; Lindberg and Scheingold 1970; Ross 1995; Wallace *et al.* 2005):

- the adoption of an entrepreneurial role by the Commission in the policy process uninhibited by national interest;

- an extensive process of engagement with national governmental and non-governmental stakeholders in the development of policy initiatives in expanding the European policy dimension and the mindset of those participating in the process (the idea of 'spillover' developed by Haas in the neo-functionalist model);

- the development of knowledge driven evidence based policy analysis based on a consensus of stakeholder opinion aimed at shaping member state preference;

- a close working relationship with the European Parliament in promoting the European dimension;

- support from the European Court of Justice in reinforcing the legal authority of the Community regime;

- using Community resources to sustain the method including the financing of stakeholder involvement in the process, for example the funding of ETPs.

Although the key components of this model remain loyal to the Monnet Method it is an evolving process that is adapting to the complexities of a modern knowledge-based economy. Richardson has identified an interesting development in the emergence of forums in the discussion of policy (Richardson 1996a). In addition the process of comitology committees is a further example of the emergence of the forum approach (Joerges & Neyer 1997; Joerges 2001). The following study of ETPs will examine whether they form part of this process of managing complexity and the need for knowledge and expertise through deliberation.

Conclusion

The prominent agenda-setting role of the European Commission and the growing number of stakeholders involved in the European policymaking process has

given rise to claims that the EU is a technocracy. The focus of this critique is that the policy process is dominated, controlled and run by experts, who make policy decisions on behalf of EU citizens, without the necessary democratic controls. A cursory glance at the EU policy process, with an appointed Commission at the epicentre of the policy process, would suggest that this model would provide a perfect breeding ground for technocratic practices. Indeed, while it is fair to acknowledge that the Community Method and the legacy left by Monnet have technocratic elements to them, it is too easy to label the whole system of governance in the EU as technocratic.

Where the concept of technocracy is useful is that it recognises that in highly complex, technologically and economically advanced post-industrial societies the nature of power has changed; knowledge, ideas and expertise have become the terrain of politics (Fischer 1990; Radaelli 1999a). This is particularly true in the highly complex and technical policy areas dealt with by the EU. In addition, in areas of policymaking where experts play a significant role, such as research and technology policy, the concept of technocracy raises interesting questions about the nature and character of knowledge and, in particular, the way in which knowledge enters the policymaking process. However, if the EU policymaking process is assessed against the Meynaud (1969) definition of technocracy and the key tenets of the concept identified above, then its usefulness as an explanatory tool in relation to the nature of governance and policymaking in the EU is not particularly helpful. The political system of the EU is not one dominated and ruled by experts; it is not a citadel of expertise. The policymaking process is not as linear as the technocratic approach suggests. While acknowledging that in highly technical and complex policy areas experts are unquestionably very important in policy formulation, it would be naive to suggest that experts alone dominate the EU policymaking process.

There are a number of problems with applying a technocratic model to an analysis of the EU policymaking process. Firstly, technocratic approaches provide too narrow a definition of what type of stakeholder becomes involved in the process; for example, it ignores the way the Commission openly engages with a wide range of key societal actors covering all sectors of society rather than relying on scientists, engineers and industrialists who are identified as the most important actors in the

technocratic model. Secondly, the 'Community Method' embraces the idea that expert knowledge is not value-free and impartial and it must be seen as increasingly politicised (Radaelli 1999a, 1999b). In other words, the experts themselves have interests that they wish to become a reality. Finally, the plurality of arenas, the wide number of stakeholders involved and the fragmented and sectoral nature of policymaking makes it very difficult for one group of actors to dominate the EU policymaking process (Radaelli 1999: 47). Furthermore, the technocratic critique fails to take account of the way in which the Community Method has evolved a complex process of deliberation in which key stakeholders are invited to put their views and these views are then subject to challenge by other key stakeholders. This process of deliberation is one of the key features of the 'Community Method' and is particularly important in challenging the technocratic critique. The following analysis of ETPs will throw further light on the development of the deliberation process in relation to this Method.

The focus of much of the academic critique about the nature and character of technocracy in the EU is largely based on the Monnet legacy and its influence on what is now described as the 'Community Method'. While there were undoubtedly technocratic elements to both Monnet's personality (his view that politicians and civil servants were self-interested and self-serving) and his problem-solving method, it is overly simplistic to dismiss the model as technocratic. It fails on the very first count that the aim was not to hand over policymaking to experts; indeed, the model is the very reverse of this approach. The Monnet Method did involve identifying and focusing on a given societal/economic problem. The solution, however, involved bringing together a wide range of political, administrative experts and key stakeholders covering all aspects of societal interest for the purpose of deliberating over the problem and establishing a consensus capable of delivering a solution to the problem.

The model needs to be viewed within the context of the time in which it was evolved; in particular the huge ideological divide in French society, not to mention the need to find an antidote to the corrosive influence of nationalism in European politics; an ideology that had brought European society to the brink of economic and political bankruptcy. It is important to note, however, that even given the historical roots that

were clearly influential in the model that evolved it retains a resonance for the contemporary discussion regarding the nature of discussion and deliberation in highly complex areas of policy such as research and technology. Indeed, the Monnet Method, could be regarded as an attempt to overcome the tension that inevitably exists between the democratic political process and the growing system of expertise essential to a modern knowledge-driven economy by ensuring that the problem at hand is discussed and debated by all interested stakeholders and that all views and interests are represented before reaching a consensus around a given plan of action. The Monnet approach is essentially a deliberative model and its influence in relation to the Community Method has made the transition to a deliberative mode in complex areas of policymaking in the EU, such as research and technology policy, relatively straightforward.

The European Union is manifestly not a technocracy in the classic sense, in that it is not a system ruled and dominated by experts. Undoubtedly, the role of experts and the need for expert knowledge and ideas in policy formulation has increased and this does in turn raise important questions about the nature of governance and democratic legitimacy in the EU, but these questions need to be analysed in relation to the increasing complexity of society and how knowledge and expertise is managed both at the national and supranational level. The escalating speed and complexity of scientific and technological change is transforming society and is putting increasing pressure on all aspects of governance. The main source of this pressure is the rapidly expanding knowledge gap between the expert and the generalist politician, administrator and citizen who do not have the background and information to make decisions in technically sophisticated areas of the policy process. Governance at the national and supranational level is increasingly reliant upon knowledge and expertise provided by expert groups, knowledge communities, think tanks, advisory committees, advocacy coalitions and European Technology Platforms.

In highly complex post-industrial society there is a definite requirement to reconcile the need for both expertise and democracy in policymaking as both are needed to make effective policy on behalf of European citizens. The critical issue is how this dialectical relationship can be effectively managed in order to avoid rule by

technocrats. Sartori and Habermas have identified the nature of the relationship between the expert and the non-expert as one of the key issues facing modern democracy. Sartori has identified one of the key dilemmas for modern democracy is the requirement to balance the need for knowledge and expertise with the need for open and transparent policymaking (Sartori 1987) For Habermas the challenge for modern democracy is managing this relationship by experts and society (Habermas 1970)

These developments present a major challenge for the nature and character of governance at both the national and supranational level. Whereas knowledge and expertise has always been an important component of the conventional model of parliamentary government, the newly emerging research and scientifically-driven knowledge economy is generating a growing unevenness in the distribution of knowledge between the expert and the generalist and this is changing the nature of the dialogue in the policy process. In the traditional model the politician would examine the options provided by experts and knowledge before making a choice about which policy is the most appropriate to help them achieve their goals. Nowadays, knowledge and expertise are inextricably linked with both the discussion and the decision making process. In order to avoid complete domination by the expert it is essential that the generalist politician and administrator needs to adopt new measures to manage the policy process. This means they must find ways in which competing analysis can be controlled and managed and that they themselves become part of the deliberation process, so that they can fully understand the complexity of the discussion involved in order to participate in the decision-making process. Otherwise the decision will be one made by the expert and technocracy would become the dominant mode of the governance process.

These issues present a major challenge for governance at the national and supranational level. However, the 'Community Method' discussed earlier means that the EU is particularly well placed to deal with these developments. Indeed, in many respects it is better placed than the more traditional parliamentary model. As Radaelli points out, the EU reflects a new era of post-parliamentary governance where experts, large organisations and sectoral networks reflect on the issues of modern governance

(Radaelli 1999a). One of the themes of this thesis is that because the Commission has no claims to democratic legitimacy through electoral endorsement, it has evolved a policy process (the 'Community Method') in which its main claim to policy legitimacy is knowledge. The Community Method has its roots in the policymaking approach developed by Jean Monnet as the key to it is the wide- ranging engagement of key stakeholders in the development of evidence based policy. It seeks to involve politicians, administrators, industrialists, trade unions, academics, regulators, pressure groups and financiers. The emphasis is placed on cooperation and deliberation in which each contribution is open to challenge and each participant must be prepared to defend their position and amend it if more powerful arguments are presented. The process is carried out in an open and transparent way. The purpose of this process is to establish a consensus around a particular course of action based on a rational analysis and interpretation of the facts. The end product is to produce a carefully thought through policy document on the basis of the best available evidence which is then presented to the European Parliament and the Council of Ministers for further scrutiny.

The main feature of the 'Community Method' is the focus on cooperation. This involves recognition by the participating actors that can only achieve what they want with the cooperation of others. An important aspect of this method is that this becomes an established norm of the process and that the emphasis is on discussion, 'reciprocal persuasion' (Majone 1989: 2) and the application of an evidence-based approach to society's problems.

The significant feature of this development is the need to establish deliberative forums in which each party is required to provide evidence-based arguments that are open to challenge with the aim of establishing a consensus around a particular course of action. Central to the process of discussion and argument is that it inherently incorporates a degree of scepticism which is an essential requirement of the deliberative process (Popper 1945). This is particularly important in areas like science and technology where all discussion must take place in a condition of incomplete information and an awareness of imperfect knowledge. Through challenge and counter-challenge a consensus may emerge with regard to the next tentative step in

the policy process. This approach can be contrasted with a model based on a grandiose design driven by ideologically driven universal law (Popper 1945). The significance of Popper is that he reintroduces the Socratic notion of the limits of knowledge and that scepticism is the starting point of any deliberative process. The key to the deliberation process is not what the expert knows but exposing what they do not know.

The challenge for governance at the national and supranational level is to establish processes and institutional frameworks for the effective management of knowledge and expertise. Developing these processes will be essential if rule by experts is not to become the dominant feature of modern governance. The emergence of the research and technology dimension at the European level and the methods introduced by the Commission for dealing with such complex areas of policy provides an interesting case study of how best to deal with policy involving leading-edge knowledge. ETPs have emerged as an important part of this process. It is within this context that we need to analyse the nature of the relationship between the Commission and ETPs and the contribution that they make to the EU policy process and how they fit with the 'Community Method'.

Chapter 4

The Emergence and Evolution of European Research and Technology Policy 1950 – 2000

Chapter Outline

Research and technology policy has traditionally been the preserve of the modern European nation state. As Sandholtz (1992a: 1) so perceptively notes, 'technology and the state long ago forged bonds of mutual dependence'. Research and technology policy has been an essential tool of the state, enhancing its security, survival and prosperity. Indeed, while nation states finance research and technology projects, these projects provide the state with industries, wealth and tools of defence. As Sandholtz (1992a: 1) points out, the modern state has given research and technology an ascendancy it had not previously enjoyed. However, what requires explanation is how, against this background, the EU has emerged as a key allocator of resources in research and technology policy.

The aim of this chapter is to examine the constellation of circumstances that has led to the emergence of the EU as a key actor in the area of research and technology policy and to examine the role of the Commission in this process. The chapter begins with a discussion of the early Treaty provision that provided very little in the way of Community competence in the area, before analysing the contextual changes that created the conditions for an expansion of European competence under the proactive and entrepreneurial leadership of Commission President Jacques Delors and Commissioner for Research, Viscount Davignon. The chapter identifies the role of the key agents of change in relation to the transfer of resources to the supranational level both in terms of institutions, expert groups and individuals; in particular, it focuses on how the opportunity to develop this policy sphere was seized and the methods used to loosen the grip of the nation states over research and technology policy. This discussion is set within the context of the actor-based models, new institutional approaches and the Monnet Method discussed in the previous chapters.

Early Treaty Provision in European Research and Technology

The starting point for any analysis of Community competence in a given policy area is treaty definition. The capacity of Community institutions, in particular, the Commission, to act in relation to research and technology is determined by the various treaties that make up the European Union. This explains why research and technology policy was slow to emerge as a key area of policymaking in the EU and this, to a large extent, explains why, in comparison with other policy areas, it has remained under-researched by academics.

In the first decade of European integration, science and technology was very much the competence of the nation state. Although the first Community established in Coal and Steel (ECSC) might be perceived as a traditional industry, it was technology driven, and, therefore, the issue of research and development was inevitably referenced. The Treaty of Paris (1951) tasked the newly established High Authority with the role of facilitating and stimulating the development of leading-edge technologies in coal and steel with the establishment of a Coal and Steel Research Fund. The High Authority's competence in this area was set out in Article 55 of the Treaty:

> 'The High Authority shall promote technical and economical research
> relating to the production and increased use of coal and steel and to
> occupational safety in the coal and steel industries. To this end it shall
> organise all appropriate contacts among existing research bodies.'
> (Treaty of Paris 1951)

The significance of this clause is that it gave the High Authority the power to develop a policy and decision-making model that went beyond governments and reached out to key stakeholders in industry and in scientific and research communities. The most important aspect of the High Authority's role was that it was legally required to act independently of national consideration and that it was to be the engine of the Community in relation to policy formulation. Central to this role was the responsibility of the High Authority to give the Community momentum through policy proposals and

the generation of new agendas. This significant departure from the conventional intergovernmental organisational model formed the basis of what this thesis has described as the Monnet Method.

The pluralist decision-making model established by the President of the High Authority, Jean Monnet, placed emphasis on practical problem solving involving the widest level of participation of key stakeholders. It was a method in which policymaking was perceived as essentially a knowledge process in which the emphasis was on establishing a consensus amongst key stakeholders and in which the political actors were simply one part of the process. The most comprehensive discussion of the process and policy system established by Monnet is set out in the *Uniting of Europe* by Ernst Haas (1958) and the processes identified and the interplay between the institutions and key stakeholders formed the basis of Haas's neo-functionalist model that remains influential in the analysis of the emerging EU political system. The main emphasis of the Monnet model is evidence-based policy development through wide-ranging discussion. The emphasis was not on depoliticising the process, as all stakeholder interests and opinions were represented around the table, but to develop a strategic consensus based on extensive consultation. It established the process of legitimising policy initiatives through a knowledge-driven process with widespread stakeholder involvement.

The process of developing the European dimension through a piecemeal sectoral approach meant that the competence of the institutions to act was limited to the areas defined in the specific treaty and although the existence of the High Authority afforded opportunities to expand policy agendas into related policy areas, the scope to act inevitably required governmental approval. So while a supranational community may have existed in coal and steel, any further sectoral expansion would require the approval of the member states. This clearly constrained the role of the High Authority and ultimately manifested itself through Monnet's departure and his commitment to the establishment of an interest group, The Action Committee for United States of Europe, to put pressure on governments to progress the European project. This reflects one of the significant weaknesses of the neo-functionalist approach in that while it provided a sophisticated analysis and assessment of the

processes in the Coal and Steel Community and developed the theoretical tool of 'spillover' for explaining moves into related sectors, the final decision about the next steps would be taken through conventional diplomatic and intergovernmental processes.

This piecemeal approach was reflected in the creation of the European Economic Community (Treaty of Rome 1957). However, there was very little reference to research and technology in this treaty other than a very minor reference to training and research projects in the section dealing with the establishment of a Common Agricultural Policy (Article 41a). The most significant development in relation to research and technology policy was the creation of the European Atomic Energy Community (Euratom Treaty 1957). Atomic energy, at this time, was at the leading edge of research in relation to the security of Europe and sustainable energy supply. Euratom solved two problems for Europe: firstly, it gave smaller states, which lacked resources and research capacity, access to this new technology; secondly, it Europeanised the issue of German access to this potentially destructive technology. The European Atomic Energy Community (Euratom) was designed to develop a nuclear industry in Europe based on a common research programme, coordinating the research activities of the member states and providing a regulatory framework for standards and safety in nuclear energy provision.

The Euratom Treaty encouraged the promotion and facilitation of research and dissemination of technical knowledge between member states through the creation of The Joint Research Centre (JRC) and, therefore, provided the first foundations of a European-wide research and technology policy in nuclear energy. In addition, Article 5 of the Treaty placed continued emphasis on a pluralist model of decision-making identifying a central role for the Commission in bringing stakeholders together:

> 'The Commission may bring together representatives of public and private research centres as well as any experts engaged in research in the same or related fields for mutual consultation and exchanges of information.' (Euratom Treaty 1957)

It is important to note, however, that the emphasis on unanimity in Article 7 of the Treaty significantly diluted the pluralist model, since setting the research agenda had to take account of what was acceptable to the member states: 'Community research and training programmes will be determined by the Council, acting unanimously on a proposal by the Commission, which shall consult the Scientific and Technical Committee' (Euratom Treaty 1957). This confirmed the intergovernmental approach as the main driving force in relation to peripheral areas of the Treaty. The fact was that even though the member states were prepared to establish a Community in Atomic Energy, the French government was not prepared to give up its comparative advantage in the use of this new technology.

The three Treaties establishing the European Communities allowed for the action and financing of research and development only in the areas of coal and steel, nuclear research and agriculture; research in any other area could only be considered under Article 235 of the Treaty of Rome:

> 'If action by the Community should prove necessary to attain...one of the objectives of the Community and this Treaty has not provided the necessary powers, the Council shall act, acting unanimously on the proposal from the Commission, and after consulting the European Parliament, take appropriate measures.' (Treaty of Rome 1957)

The problem with invoking Article 235 was that, more often than not, it led to long drawn out and protracted debates which inevitably led to compromises based on the lowest common denominator, and that was only if the proposal was not vetoed at inception (Peterson & Sharp: 28). As a result, the advancement of research into other areas was restricted. The reality was that during this early period, research and technology policy remained essentially a competence of the nation state and the Community only became involved when it became clear that co-ordinated action was an essential and more efficient way of dealing with a particular problem. For example, in the domestic supply of atomic energy the prospect of an emerging German atomic energy industry capable of turning its skills to the production of atomic weapons was resolved.

Indeed, even in areas such as nuclear energy which had European Treaty provision, research was predominantly carried out on a national basis. Four laboratories were set up to co-ordinate activity and foster European collaboration in areas such as fast breeder reactors, high temperature gas reactors, nuclear applications in medicine and agriculture, in addition to regulating and ensuring safeguards in nuclear energy and materials (Sharp and Shearman 1987: 29). While Euratom did play a role in helping to foster debate and transnational interaction, it failed in its main aim to develop a European nuclear industry policy. Member states were pursuing national interests in nuclear research even within the European framework. There was a failure of member state governments to reach an agreement to fund the development of nuclear reactors and deeply entrenched national procurement standards and regulation added further complications. Even in the area of nuclear energy, where the Commission had treaty competence, the member states remained the dominant actors in this policy sphere.

Early Collaboration Efforts at the European Level

As noted at the outset of this chapter, the nation state regarded research and technology as an essential tool in enhancing its security, survival and prosperity, and was, therefore, not prepared to sacrifice their control in this area to the European dimension. Indeed, the excursions into research and technology in the form of the ECSC and Euratom were exceptions, rather than the rule: this was the age of the 'national champion' in which governments would protect their large national industries against foreign companies through subsidies, loans and granting them a monopoly on public contracts, particularly in newly emerging areas of technology such as computers and electronics (Hayward 1995; Kassim and Menon 1996). The constellation of circumstances, at this time, was not conducive to the development of a European dimension in research and technology. Furthermore, the High Authority of the ECSC and Commission of Euratom were constrained by Treaty definition in their capacity to develop the European agenda in this policy area. However, as will be established later on in this discussion, the changing context and the Commission's capacity to act as a generator of ideas in new policy areas became a critical factor in the expansion of European research and technology policy.

As new areas of research and technology emerged that were vital to economic growth (in fields such as computers, microelectronics and telecommunications), national governments were keen to protect indigenous industry by ensuring access to the domestic market and protection from foreign competition, in particular from the US and Japan. This took the form of subsidies, soft loans and the awarding of public contracts to leading national industries. National industries became particularly influential in working with governments to determine the policy agenda in research and technology; within the policymaking process they were regarded as insider groups and became characterised by the closed policy communities and the corporatist tradition identified by Richardson and Jordan (1979) and Marsh and Rhodes (1992).

This national protectionist outlook ensured that early attempts at developing the European research and technology dimension were based only in areas where the nation state perceived a competitive weakness domestically. In areas such as aviation and space exploration the European nation states found it increasingly difficult to compete in the face of competition from the US. The conditions for some form of European collaboration were particularly favourable in these areas due to their large scale, highly complex and technical nature and the massive investment they required. Furthermore, industrialists working within these areas, particularly the aerospace industry, recognised the need for collaboration, and were pushing their national governments for greater collaboration in areas where national solutions were not viable (Sharp & Shearman 1987: 24-25).

The context was changing and the new circumstances were forcing the European nation states to reflect on the national champion approach and to examine alternative approaches that sought to develop intergovernmental forms of collaboration based on mutual interdependence in which nation states had come to recognise that it was in the national interest to share and pool resources in certain policy areas in order to maintain competitiveness in an increasingly globalised market. It is important to note, however, that because of treaty constraints on the Commission, its capacity to act as a generator of policy in the areas of aviation and space exploration was inhibited. Furthermore, the conditions for the expansion of community competence in these areas were not ideal mainly because policy in these

areas was still dominated by the nation states and the type of conditions identified by neo-functionalist in relation to 'spill-over' were not present.

Indeed, during the 1960s cooperation at the European level was driven through an intergovernmental approach (Sharp & Shearman 1987: 24-41). The most significant step forward in this type of collaboration took place in relation to aviation. It was increasingly clear that national aeronautic manufacturers could not compete with the American giants such as Boeing and McDonnell Douglas. The latter had a significant competitive advantage both in terms of technology and market domination. Furthermore, American industry was not fragmented in the way in which European industry was. In response to this challenge the main European manufacturers, in an attempt to maintain a foothold in the aviation sector, put pressure on national governments to identify ways of establishing a solution through collaboration.

In the aviation sector, the two main European manufacturers were the UK and France and any collaborative solution would inevitably have to involve a Franco-British initiative, but what was significant when the initiative was announced in 1962, was that it was to take place in an area of leading-edge aviation technology: a jointly built supersonic aircraft that would be the first of its kind in the world. The interesting feature of this initiative was that while the Americans were focusing on a market-driven solution involving the production of larger aircraft capable of carrying more passengers, the British and French were focusing on speed through the development of leading-edge supersonic technology that ultimately manifested itself in what would become a symbol of joint national prestige. It represented merely an adaption to the national champion approach. Indeed, not long after the announcement the Americans withdrew completely from commercial supersonic research in favour of preference for planes capable of carrying significantly larger number of passengers based on an assessment of the future direction of the industry.

This initiative placed the French and British at the forefront of aeronautic research and was based on concentrating national resources on status-driven priorities that only served to emphasise the intergovernmental approach; the intergovernmental nature of this collaboration was heightened by the fact that Britain was not yet a member of the EC. The significance of this collaboration, however, was not so much

the production of Concorde, but the precedent it created for future collaboration. It merely served to emphasise that the only way European states could compete with America in view of its size and investment was through collaboration. The next step in this process was the 'Airbus Industrial Consortium' involving France, Germany and the UK. The important thing to note in relation to these developments is that the role of the European Commission was non-existent. As Freeman *et al* (1991: 62) note, the success of Airbus owed nothing to the Commission. Layton (1986: 189) supports this view arguing that the achievements of Airbus were 'largely the result of bilateral or trilateral contacts and negotiations between both (government) officials and industrialists'.

While both Freeman *et al.* (1991) and Layton (1986) are accurate in their assessment, it is important to remember that the capacity of the Commission to adopt an entrepreneurial role was inhibited by a lack of treaty competence and the contextual circumstances that surrounded the withdrawal of French diplomats from the European Communities (The Empty Chair Crisis) and the eventual negotiation of the Luxembourg Compromise that further inhibited the potential of the Commission to act; it consolidated member state support for intergovernmental solutions. However, what was not lost on the Commission was the significant role of industry in pressurising national governments to collaborate on a European level in aviation and provided a blueprint for future collaborations that would be particularly significant in relation to the emergence of research and technology policy. Although the Luxembourg Compromise clearly stood in the way of many major new initiatives the work of the Commission in identifying challenges to the European economy continued involving the establishment of a number working groups discussed in more detail later in this chapter.

A similar set of circumstances manifested itself in relation to space exploration. There was clear recognition amongst the major European nations that the technology and resource implications of pursuing space exploration were prohibitive and that collaboration was an inevitable and natural response in a sector of significance both in terms of military and economic opportunity. Intergovernmental discussions took place and in 1973 a European Intergovernmental Space Conference was convened. This

conference agreed to merge the European Launcher Development Organisation and the European Space Research Organisation into the European Space Agency (ESA), which provided a framework for governments to coordinate areas of national comparative advantage. The model was strictly intergovernmental in which projects were chosen by the participating states and what each nation got out of the project allocation was roughly proportionate to its financial investment. This process has become widely known by the French term *juste retour*. The ESA model, however, provided a framework for intergovernmental cooperation by bringing a range of actors together and producing a close-knit community of policymakers, scientists, engineers and industrialists (Peterson & Sharp 1998: 40). Indeed, as within the aviation sector, closed and exclusive policy communities of the kind identified by Jordan and Richardson/Rhodes and Marsh emerged in the space sector with policy determined mainly in negotiations between national governments and ESA.

Early attempts to develop European co-operation during the 1960 and 1970s were largely determined by national interests and conducted on an intergovernmental basis. States would work together in areas where it was in their interest to do so. A supranational Europe was replaced by a *'Europe des Patries'* in which further collaboration that was sectorally driven based on the neo-functionalist concept of spillover was given little credence by the member states. Indeed, the role of the Commission was seriously inhibited by Treaty definition and the political climate that did not favour an entrepreneurial approach. Some of these early experiments based on intergovernmental collaboration were themselves beset by problems. There were disagreements between governments over conflicting priorities, finance and management structures (Peterson & Sharp 1998: 41). Part of the problem was that there was no institution independent of national interests of the type developed in the Monnet model and manifested in the High Authority/Commission to develop knowledge-driven evidence- based solutions. As a consequence, decisions were made in these interstate collaborations on the basis on the lowest common denominator and *juste retour*.

This was a period when 'national strategic considerations and conflict with national programmes proved the stumbling blocks to further collaboration' (Farrell

1996: 8). This view is supported by Keith Hayward (1987: 25-26) who argued that 'national defence and technological interests' made a European technological policy 'more of an aspiration than a realistic project.' Wayne Sandholtz (1992a: 7) points out that 'national governments were not interested in European co-operation; they pursued unilateral strategies because they preferred autonomy, and the unilateral approach had not yet proved to be non-viable.' The central weakness of this argument, however, is that in an increasing number of areas the unilateral approach was becoming increasingly unviable, but the response of the member states was to manifest national interest through intergovernmental cooperation and interdependence, rather than supranational solutions.

Despite the difficulties, these early collaborations laid the foundations for a future European research and technology policy. These early collaborative efforts were significant in that they forged close bonds between the Commission, industry and member states and formed new policy networks between policymakers, scientists, engineers and industrialists, thus creating the context for further progress. These networks, particularly in the areas of aviation and space, would consolidate, become more powerful and begin to reflect the closed policy communities identified by Jordan and Richardson (1979) and Marsh and Rhodes (1992). In addition, the Commission began to recognise the important role of large industry in helping to set the agenda and influencing national government decision. Important lessons were being learnt, but if greater collaboration was going to occur and a genuinely European research and technology policy established, then a period of crisis or uncertainty was required that would force national governments and large industries to question the status quo and the wisdom of a national protectionist mindset and unrelenting commitment to national champions; this would occur with the emergence of a growing technology gap involving fierce competition from America and Japan.

The Technology Gap

During early collaborative efforts at the European level, nation states were reluctant to put aside their 'complex psychological halos' which made them carefully guard their national interests in the area of research and technology (Williams 1973: 143). As noted in the previous chapter, Jean Monnet once said 'there could be no

progress without a certain disorder, or at least a certain disorder on the surface' (Duchêne 1994: 361) and 'people only accept change when they are faced with necessity and only recognise necessity when crisis is upon them.' (Rostow 1994: 265) If a European research and technology community was going to be established, there would have to be a change of context that would force member states to question their national 'psychological halos' and seek alternative solutions to problems.

During the 1960s, a common and widely held perception began to grow amongst political elites in Europe that a 'technology gap' in new technologies was emerging involving an increased threat from the US and Japan. Deregulation in the United States lifted restrictions that had hitherto prevented large US companies such as AT&T (telecommunications) and IBM (computers) from entering world markets. Secondly, Japanese electronics firms were rapidly gaining entry in European markets with competitively priced consumer and industrial products and were quickly establishing a monopoly position especially in the supply of computer components, in particular, microchips. European firms were finding it increasingly difficult to compete with the Japanese and Americans in this crucially important sector. The European political elite faced the prospect of domination by foreign competition in a sector critically important for the future economic prosperity of the region. Recently, academics, such as Keith Pavitt (1998: 561-562), have challenged the veracity of these perceptions and suggested that the notion of a technology gap was greatly exaggerated; the fact remains, however, as Krige and Guzzetti (Krige & Guzzetti 1995: 412) shrewdly observe, that in political circles perceptions are often stronger than the reality. As W. I. Thomas (1928: 571-572) notes, 'if men define situations as real, they are real in their consequences'. Indeed, the technology gap was real in the minds of the political elite and this forced European member states to reassess their predominantly national interest-driven research and technological agendas.

The most significant change in the context was that, whereas the EC institutions were on the periphery of the various intergovernmental initiatives outlined above, they now became a central feature of the discussion. Numerous proposals and ideas were put forward to foster greater collaboration involving the EC institutional framework, in particular, the Commission. In the early 1960s, the French government

proposed that the European Commission begin a study of national industrial and technology policies to identify and establish common research priorities (Krige & Guzzetti 1995: 35-39). In addition, pressure group activity began to emerge led by the Action Committee for a United States of Europe, headed by Jean Monnet. They called for the establishment of a European research and technology policy involving institutions working in close conjunction with the European Commission to promote collaboration.

The increasing role of the Commission in the debate surrounding the development of research and technology policy at the European level can be traced to the establishment in 1965, of the Marechal Committee. The Marechal Committee, composed of experts from member states and the Commission, was created to look at coordinating national policies in science and technology in seven clearly defined technological sectors, including, transport, oceanography, metallurgy, environmental problems, meteorology, data processing and telecommunications (Sharp & Shearman 1987 26-27). Christopher Layton (1969), advisor to Spinelli and eventual Chief of Cabinet in Directorate General (DG) for Technology and Industrial Affairs, in his book *European Advanced Technology: A Programme for Integration*, called for European industrial R&D contracts, the development of a European Advisory Council and a Technology Assessment Centre. In 1970, the Commission released the Colonna Report that proposed the creation of a European R&D Committee and a European R&D Agency (Peterson & Sharp 1998 28-32). All these proposals were met with a cool response from European nation states that were still not ready to give up looking for intergovernmental models for collaboration. However, the work of the Marechal Committee, in particular, eventually led to the creation, in 1971, of a programme for Cooperation in Science and Technology (COST) which provided funding for collaborative European projects for scientific research in a broad range of areas. However, as Peterson and Sharp note, COST projects were designed on an intergovernmental basis (Peterson & Sharp 1998: 32).

A further important development was a change in attitude of some of the major national industry champions in support of greater collaboration at the European level. This was particularly significant in changing the context of the debate and

provided the opening for the Commission to start playing a leading role in mobilising industrial support for European initiatives (Sharp & Shearman 1987: 45). This was given further momentum by a refreshed debate about the potential stimulus to the European economy through the creation of a single market. This had, of course, been one of the central aims of the Treaty of Rome and the desire to progress this policy in the face of increased competition gave further emphasis to finding solutions at the European level (Peterson & Sharp 1998: 85).

A further important factor in this debate was a convergence of economic and political policies in both France and Germany. The latter was particularly significant because all previous European initiatives had been driven by Franco-German *rapprochement*. Sharp and Shearman (1987: 43) place particular emphasis on the change in attitude of the French government in relation to the necessity of European collaboration. Sandholtz (1992a: 150) supports this perspective arguing that "France was rapidly discovering the limits to what one European nation, even one of the largest, could hope to achieve autonomously in high technology'. Indeed, the economic crisis of 1983 led the French Socialist government to rethink the national champion strategy, particularly if France was going to maintain its competitiveness in the information technology and telecommunications and microelectronic markets where there was growing alarm about American and Japanese domination in these key sectors.

Furthermore, the abandonment of a Socialist economic strategy in favour of a more market- driven approach along the lines of the German model led by the then French Finance Minister Jacques Delors. Delors also came up with the idea of 'variable geometry' that advocated collaboration in industrial policy areas that complemented key areas dealt with by the European Community (Ross 1995). This idea almost certainly influenced his proposals for research and technology during the re-launch of the Community during his Presidency of the Commission. Furthermore, President Francois Mitterrand advocated a new European agenda involving increased collaboration between member states in key areas and the development of strategic alliances between European firms and the amalgamation and harmonization of standards (Peterson & Sharp 1998).

European politicians were beginning to view research and technological collaboration as a means of addressing economic problems and improving competitiveness (Farrell 1996: 25; Sandholtz 1992b:10). As Peterson (1998: 204) points out, in an increasingly globalised and highly competitive technological market, national research and technological policies, based on the protection and subsidy of their national champions, were becoming increasingly outdated. A consensus emerged amongst European nation states that a more comprehensive European research and technological policy, involving greater collaboration, was needed to maintain European industrial competitiveness. The new-found commitment of member states could be seen in Franco-German willingness to collaborate in the field of microelectronics where in 1976-77 a series of meetings were held between French and German representatives, the Commission and key industrial managers with a view to defining key policy priorities in the area (Sharp and Shearman 1987).

It is clear that although the member states were not averse to involving the Commission in discussions and using it to carry out research, the emphasis was still on interstate cooperation based on the idea of interdependence. This became particularly important in relation to the academic debate with regard to intergovernmentalism. Academics registered these developments as examples of how the nation state was adapting to change and merely transferring national interest into models of collaboration designed to preserve the autonomy of the nation state in an increasingly interdependent world. In this sense Williams (1989: 165) observed that 'European co-operation in science and technology has hitherto been driven more by negative than by positive considerations…the European route has been embarked upon as something of a last resort and often with an enthusiasm more manufactured than real.'

Williams (1989) is accurate in his assessment that member states were still keen on pursuing intergovernmental forms of collaboration at the European level. The point is, however, that the context had changed, and member states were no longer totally committed to their national 'psychological halos'. The 'technology gap' had proved the catalyst for a change of perspective in relation to European collaboration both amongst European governments and leading industrial and business elites. This appears to vindicate the view espoused by Monnet, also a central argument of the

epistemic community approach, that a period of crisis or uncertainty is needed for policy change to occur. As Monnet noted, 'the world we live in is very complex. We can't solve problems by tackling them head-on. We have to change their context. We have to find a point where a change can be made – a change that will go on by itself and change other things too. Once we find that essential point, everything else follows.' (Rostow 1994: 265). Indeed, it was this change of context that provided the opportunity for the Commission to increase European competence in research and technology policy. However, as both Sandholtz and Zysman (1989) and Ross (1995) correctly observe, structural developments alone do not lead to change; political leadership and entrepreneurial spirit is required to push change through. The structural circumstances were rife for change, but the Commission had to become proactive and take advantage of the circumstances if advances in European research and technology policy were to be achieved.

The Davignon Initiatives

Monnet emphasised 'there are no premature ideas: there are only opportunities for which one must learn to wait' (Rostow 1994: 265). Indeed, he recognised the critical importance of timing when entering a new idea into the political process. The innate instinct of the political innovator to know and understand the moment to introduce a new idea is as important as the idea itself and the support mobilised in favour of it. A similar view is espoused by Kingdon (1984: 1) who notes 'an idea whose time has come, captures a fundamental reality about an irresistible movement that sweeps over our politics and our society pushing aside everything that might stand in its path.' Kingdon (1984: 1) argues that at certain critical times, problems, policies and politics come together to present 'policy windows' or 'windows of opportunities' in which certain ideas and solutions can be advanced and prosper if policy entrepreneurship is shown and enough support mobilised behind the idea. By the beginning of the 1980s the context and circumstances were ripe for the Commission to play an entrepreneurial role in advancing the idea of greater European collaboration in research and technology.

The emergence of the 'technology gap', lagging technological competitiveness and early collaborative efforts had served to weaken the 'national champions'

approach that had driven research and technology policy goals and organisation. Furthermore, the process of European integration was, once again, back on the agenda, with research and technology being perceived by the European political elite as the key mechanism for further co-operation in relation to economic and industrial policy, in particular, the creation of a Single Market. It was becoming clear that research and technology policy was an increasingly important driver of economic growth and competitiveness. All these factors provided the catalyst for potential change, but for a European research and technological community to become a reality the Commission had to act as an agent of change and grasp the opportunity to advance Community competence in this policy area.

While 'Great Men' interpretations of historical change oversimplify more complex realities and fail to take account of structural change, few can question the significant role of Viscount Davignon in the expansion of European competence in the area of research and technology policy. Appointed as Commissioner for Industry in 1977, Davignon saw the window of opportunity that had presented itself and recognised that the changing climate of uncertainty provided the opportune moment for the Commission to push for a greater European collaboration in research and technology. Under the weak Commission Presidency of Gaston Thorn, Davignon had free rein in his attempts to advance this policy area. Under Davignon's lead the Commission showed an activism and entrepreneurial spirit not seen since the days of Jean Monnet and the High Authority. Davignon's method for advancing EU competence was based on the kind of corporatist approach captured by the Richardson and Jordan (1979) and Marsh and Rhodes (1992) policy community models. Davignon would develop small, closed and tight-knit networks between the Commission and the Heads of Europe's leading companies and together they would identify key priorities in areas of research and technology central to Europe's growth and competitiveness. Davignon's approach was based on a careful process of consensus-building and alliance formation with industry aimed at facilitating the acceptance of proposed Community initiatives by Member States (Sharp & Shearman 1987: 63).

During the late 1970s and early 1980s, the technology-gap debate remerged as Europe's information technology sector was in decline and unable to compete for market share with their US and Japanese rivals. Large European-based industrialists were beginning to question the logic of the national champion approach. This coincided with increasing industrial support for the elimination of national trade barriers and the development of a single European market. While Davignon saw a greater willingness and support for collaboration at the European level, he saw little in the way of achievement. He, therefore, carefully selected microelectronics as the first area for advancing further collaboration, as European producers were losing out heavily in the market. In 1979, his first step was to create an Information Technologies Task Force (ITTF). The ITTF was established to work closely with the Commission to identify strategic European priorities in the area of microelectronics. As Peterson and Sharp (1998: 5-6) note, the extensive consultation with outside technical experts and user groups, particularly from the microelectronic industry to develop a detailed strategic work plan, was unprecedented. While Davignon's approach bore resemblance to the Monnet Method in that it involved bringing together experts to establish a detailed knowledge-based strategic plan, Davignon's approach was not as open and inclusive as the Monnet Method and involved a smaller group of key influential stakeholders dominating the process.

During the same period (1979-80), Davignon, without consulting the member states, invited the heads of Europe's 'Big 12' electronic and IT companies to discuss how the technology gap between European and the US and Japan could be closed. The members of the 'Davignon Roundtable', as it became known, represented the largest and most politically powerful firms from Europe's largest member states. The 'Big 12' were comprised of ICL, GEC and Plessey from the UK; AEG Nixdorf and Siemens from Germany; Thomson, Bull and CGE from France; Olivetti and STET from Italy; and Philips from the Netherlands (Sharp & Shearman 1987: 49). The message Davignon gave industry leaders was clear, straightforward and very powerful: either give up your national protectionist positions and collaborate at a European level or face collapse or even extinction in the face of competition from US and Japan (Peterson & Sharp 1998). By bringing all the key players around the same side of the table to discuss a common problem the Commission forced European industries to understand that there was

little future in being uncompetitive national champions. With the full support and backing from the Big 12 leading European industries and the influential Gyllenhammer Group of leading European Manufacturers including Philips, Volvo and Pilkingtons, Davignon developed with industrial and expert assistance, a strategic plan for European programmes in key strategic research and technological areas (Sharp & Shearman 1987: 50). Davignon knew that the sheer volume and weight of knowledge and support behind these plans would make it very difficult for member states to reject them. This represents an important aspect of the way in which the Commission uses knowledge and stakeholder support as a way of legitimising its proposals.

The Davignon Roundtable and the Gyllenhammer Group shared certain characteristics of both advocacy coalitions and epistemic communities. These groups brought together the Heads of Europe's leading companies in the field of microelectronics and information and communication technologies; therefore, in terms of membership these groups reflected epistemic communities, as membership was limited to specific actors with shared aims and values. Like epistemic communities these groups brought considerable knowledge and expertise to the negotiating table, however, as with advocacy coalitions, this knowledge was inextricably linked with interests and the clear political aims and a shared interests they wished to advance within their respective fields. However, when these groups formed networks with the Commission these reflected the classic policy communities identified by Richardson and Jordan (1979) and the closed corporatist tradition that they had described as occurring in British politics during the same period.

The roundtable negotiations produced a number of new Community programmes in key enabling technologies including the ESPRIT (ICT), RACE (telecommunications) and BRITE/EURAM (industrial processes and materials). The original proposal for ESPRIT put forward by the Commission in 1980, was to establish a European programme designed to promote capabilities and enhance competeveness of European IT technologies, in particular micro-electronics (influenced by the work of the ITTF). This was based on encouraging collaboration between large European industries, SMEs, universities and research centres in 5 priority areas identified by the Round Table, including, ICT, telecommunications, industrial processes, materials and

microelectronics. In 1982 the Commission's proposal entitled 'Towards a European Strategic Programme for Research and Development in Information Technology' was greeted favourably by member states at the European Summit in Versailles and a fund of 11.5million ECU was agreed for a pilot phase. The success of the pilot phase was vital in providing enough empirical evidence to persuade Europe's largest companies that collaborative programmes could be organised and run at a European level both effectively and efficiently (Sharp & Shearman 1987: 51).

In 1979, Davignon proposed a further initiative for the development of an integrated digital network in telecommunications at the European level (Sandholtz 1992a). During this period, European telecommunications firms were disadvantaged in the market as much as their counterparts in microelectronics. However, Davignon recognised that the fragmented nature of European telecommunication market meant they would not be able to compete in the longer term against US and Japanese competition. He adopted the same strategic approach that he had used during the formation of ESPRIT by first persuading Europe's leading Post, Telegraphs and Telecommunications companies (PTTs) that European collaboration was the only means of long term survival. In 1983, the Commission set up a working group composed of ministers from member states, the leaders of PPT companies, and experts from the telecoms equipment industry to form a Planning Exercise in Telecommunications (PET). The PET encouraged PTT leaders and member states that an integrated broadband network was an appropriate way forward for the industry and these proposals formed the basis of the first European programme in telecommunications entitled RACE (1984). As Peterson and Sharp (1998: 77) notes 'RACE resembled ESPRIT in its methodology, with key decisions left to scientists, engineers and planners in industry and the PTTs.'

The strategic approach developed by Davignon based on consensus-building and forming alliances with industry and other key stakeholders provided the blueprint for all future collaboration in research and technology. By involving experts from industry, SME's, Universities and Research Institutes at the beginning of the process, Davignon helped solidify their support for European collaborative efforts and increased the likelihood of programmes being accepted by the member states. Indeed, there is a

consensus amongst academics that the Commission recognised the significance of using industry to pressurise national government into action in key areas such as telecommunications. Sandholtz (1992b: 16) notes that 'the key to winning the approval of the national governments was the alliance struck by the Commission with industry...(they) played an indispensable role in selling the programme to their governments'. Peterson (1991: 280) supports this view noting that 'in political terms, Davignon and the Commission, required support from Europe's Big 12 firms to place collaborative R & D on the agenda of European governments'. As Peterson and Sharp (1998: 71) point out, the Commission's new approach paid off 'when its new found industrial friends pressured their national governments to support and recognise the logic of Community action'.

The role of industry in support of the Commission's initiative was critical to member state support. Without industries' involvement member states would have remained suspicious of the Commission's true motives. Georghiou (2001: 895) has highlighted an interesting contradiction in the relationship between the Commission and Council stating 'the more active that body (the Commission) is as sponsor, the more suspicious do other actors (in this case Member States) become that it is pursuing its own agenda rather than acting as a referee.' This view is supported by Ernst Haas who noted that Commission initial proposals in this area were regarded with suspicion by the member states 'essentially because of the Commission's insistence on adding the R&D question to the package of steps which would lead towards political union...mainly because of the centralisation implied by these proposals...they were not well received in national capitals' (E. Haas cited in Sandholtz 1992a: 95). For Sharp and Shearman (1987: 50-63), the newly formed alliance between industry and the Commission was crucial in facilitating the member state acceptance of new Community programmes. However, there is a further factor not previously considered in the academic debate; that through the discussion process the Commission was establishing a knowledge- driven evidence-based model that gave legitimacy to its proposals and challenged any notion of suspicion that member states may have perceived. If the Commission's proposals were to be challenged by the member states then they would have to come up with a well argued evidence-based counter proposal. In line with the Monnet model, knowledge, expertise and wide

spread support amongst key stakeholders were at the heart of the Commission's claims to legitimacy.

The Davignon initiatives were to have a major impact upon the way in which policy would be formulated and developed in the area of research and technology policy. Indeed, the major role attributed to industry would form the basis of the model for industry-led European Technology Platforms. The Davignon approach can be summarised in the following way:

1. Identify problem in key research and technological area;

2. Bring key stakeholders (particularly large industry) around the same side of the table to discuss the problem and convince them of the need for a European solution;

3. Reach a consensus and draw up a knowledge-driven, evidence-based solution around a strategic plan;

4. Invite member states to accept a proposed European programme or come up with an alternative.

The significance of the Davignon Initiatives is that it gave the Commission a central role in advancing European research and technology policy through the creation of expert networks with industry. In 1984, the Commission also set up the working group, Forecasting Assessment in Science and Technology (FAST), to identify the future direction of technology in key sectors and to identify economies of scale and areas of potential European collaboration. This was a significant development in that it provided the Commission with a role in relation to agenda-setting in the area of research and technology. The Davignon approach, however, can be criticised for giving too much influence to large industry players at the expense of other key stakeholders in the process and, in doing so, creating a closed and exclusive policymaking process.

The Davignon approach shared similar characteristics with the Monnet Method in that it was a problem solving approach that involved agreeing a strategic plan of action through stakeholder consultation. Where the Davignon approach differs is that it was neither as inclusive, nor open, to as broad a range of stakeholders as the

Monnet Method. In defence of Davignon, however, the support of powerful industry leaders was vital to getting a European programme off the ground as it created a critical mass of support which made it virtually impossible for member states to reject the proposal. The importance of the Davignon approach is that it helped to develop a European collaborative ethic amongst key stakeholders and consolidated the role of industry as major players in policymaking decisions; it developed an industry-led method of policymaking, in that it was industry, working closely with the Commission, rather than national governments that were defining policy priorities. The success of the Davignon initiatives would have a major impact on the future President of the Commission, Jacques Delors, and would greatly influence the re-launch of Europe during the mid-1980s.

Jacques Delors and the Re-launch of the European Community

The Davignon initiatives helped change the context of discussion surrounding research and technology policy and raised the role of the Commission as a significant actor in the policymaking process. They created the basis for the inclusion of research and technology in the re-launch of the EU under the Commission Presidency of Jacques Delors. Delors, the former French Finance Minister in the Francois Mitterrand government, became head of the Commission in 1985. His plan was to revive the European project and Community through the implementation of the Single Market and Economic and Monetary Union. Delors would achieve this aim following a similar method to Davignon, with a pro-active and entrepreneurial Commission working closely with business and industry leaders to produce policy that the member states and European parliament would have difficulties rejecting due to the weight of evidence–based knowledge and stakeholder support behind the proposals (Sandholtz & Zysman 1989; Green-Cowles 1995; Ross 1995).

In 1985, Delors published the Commission White Paper on Completing the Single Market in which he highlighted the importance of research and technology to Europe's future growth and competitiveness (COM 1985). The White Paper was realised alongside the DG Research memorandum entitled 'Towards a Technological Community' that called for the greater coordination of national and European Community programmes in research and technology policy. A central feature of the

Delors approach was that important links between different areas of EU policy were constantly stressed, not only to achieve the main goal, but to advance competence into other areas which reflected strong neo-functionalist logic behind the method. The 1985 White Paper formed the basis for negotiations for Treaty reform that would accommodate the development of the single market and rapidly advance Community competence in the area of research and technology policy.

Delors, like Monnet, had entered work straight from school and had spent time in the private sector before entering the French Planning Commission and then ultimately French politics. He was, therefore, fully versed in the Monnet Method that was so instrumental in the French planning system and had established wide-ranging contacts within industry and business. His austerity budgets, that had been significant in aligning French policy with German economic policy, with their emphasis on controlled public expenditure aimed at restraining inflationary pressures on the economy and producing a stable exchange rate, had raised his profile with the German Christian Democrat government, which was significant in gaining German support for his initiatives when President of the Commission (Ross 1995).

John Gillingham (2003: 157) argues that 'Delors rescued the Commission from indolence and put the collective body of Euro-guardians in the front ranks of the drive to integrate Europe'. Indeed, central to the Delors' approach to the re-launch was the establishment of an expert team in the President's Office. The role of this team was to produce detailed and expert policy initiatives based on widespread consultation aimed at presenting a comprehensive case for reform that would be difficult for the European Parliament and member states to challenge. For Gillingham (2003: 158), 'Delors, like Monnet, formed an elite team loyal to him personally rather than to a particular institution or ideological tradition, and he vested team members with the authority needed to turn ideas into action'. He continues, that the Delors strategy of reform boiled down to the idea that a 'Euro-elite at the centre of power would rule, governing through a supercharged Commission.' (Gillingham 2003: 160)

The Gillingham argument is an oversimplification of the Delors approach based along similar lines to the technocratic critique of the Monnet Method. The Delors approach was grounded in the Monnet Method developed in the French Planning

Commission; it involved wide-ranging discussion with key stakeholders and consensus-building around specific problems. The aim, as noted above, was to present the member states and parliament with detailed evidence-based policy initiatives based on an established consensus that challenged the governments to act or produce an alternative scenario. It is important to point out, however, that Delors' own personal links, particularly with the French and German governments, invariably meant that any proposals presented had their support (Ross 1995). Central to this approach was increasing Commission interaction with key stakeholders in the main policy areas that were being addressed as part of the re-launch.

The Single European Act (SEA 1987) formed the main pillar of the Delors re-launch and provided greater definition to Community's role in the area of research and technology policy. Title VI of the SEA gave the Community an explicit legal base for action and the Commission the competence to develop research and technology policy. Article 130f, point one, stated 'the Community's aim shall be to strengthen the scientific and technological base of European industry and to encourage it to become more competitive at the international level' (SEA 1987). Point two of Article 130f points to the importance of the need to consult a range of stakeholders in the formulation and implementation of policy:

> 'In order to undertake to achieve this it shall encourage undertakings, including small and medium-sized undertakings, research centres and universities in their research and technological activities; it shall support their efforts to co-operate with one another, aiming notably at enabling undertakings to exploit the internal market to the full, in particular through the opening up of national contracts, the definition of common standards and the removal of legal and fiscal barriers to that co-operation.' (SEA 1987).

The SEA not only provided the Commission with the competence to develop a European research and technology policy, but by inextricably linking research to economic competitiveness and growth and the Single Market this would provide the Commission with the scope to deal with research issues relating to other areas of policy. As point three of Article 130f states: 'in the achievement of these aims, special

account shall be taken of the connection between the common research and development effort, the establishment and the implementation of common policies, particularly as regards competition and trade' (SEA 1987).

The link with Single Market policy would help the Commission to put further pressure on national governments that were still defending national champions to deregulate and liberalise in line with the market. As Peterson notes, 'research became an established weapon in the EU's arsenal of policy instruments. Its focus and priorities were subjects of debate and influence that extended well beyond the relatively closed world of research ministers, officials and project partners who ran and participated in the Framework Programme itself.' (Peterson & Sharp 1998:126). In other words, Delors created strong links between all policy areas, so that along neo-functionalist lines, advancement in one area would lead to advancement in another (Ross 1995).

Central to the Delors' approach to policymaking was the preparation of a long-term strategic plan and a financial framework of support for its implementation. This approach manifested itself in the inclusion in the SEA of a new decision-making procedure for developing a multi-annual Framework Programme in research and technology that would clearly specify the Community's scientific and technological aims over a specified period of time and provide coherence to European R&D efforts (Farrel 1996). The total budget and the broad outline of objectives would be developed by the Commission and then be subjected to approval via unanimous vote in the European Council. A series of more detailed sub-programmes developed by the Commission through stakeholder consultation with a wide range of experts would be subject to a Qualified Majority Vote (QMV) within the European Council. At this point, the role of the European Parliament (EP) in the creation of the Framework Programme remained purely consultative. While the Commission could set the agenda, their proposals could ultimately be amended or rejected on the basis of a unanimous vote in the Council. The member states, therefore, retained a prominent role in the policymaking process; decision-making remained on an intergovernmental footing.

Although Delors brought research and technology policy to the centre of the EU political stage through the development of broad-ranging Treaty competence, the mindset of the member states was still firmly entrenched in the idea of

interdependence and the need for further intergovernmental cooperation in key areas. Indeed, what emerged during this period was a dual policy initiative at the European level with an increasing role for the Commission and European initiatives, alongside further intergovernmental cooperation. Indeed, in response to the expansion of Community competence under the SEA, the member states introduced the Eureka initiative that provided the basis for further intergovernmental cooperation.

EUREKA!

In response to the SEA reforms, member states were becoming concerned at the growing competence and the increasing influence of the Commission to act in the area of research and technology. Their concerns about these developments manifested themselves in two ways: the first involved significant limitation to the budget and tight fiscal control over the framework programme. Secondly, the French President François Mitterrand proposed a parallel development in national research collaboration, which was entitled EUREKA (the European Research Co-ordinating Agency). This was developed outside the framework of the EU and involved an amalgam of national innovation policies designed to promote and fund large-scale collaborative research projects between member and non-EU states. As Peterson and Sharp (1998: 89) note, EUREKA was an 'intergovernmental and decidedly non-EU initiative'. Indeed, research projects were specifically focused on near-market research, as opposed to the pre-market research of European programmes to deliberately ensure initiatives could not be hijacked by the Commission.

For Georghiou (2001: 895), EUREKA emerged as an 'intergovernmental industry-led initiative'. Indeed, EUREKA's co-ordinating body was its Ministerial Conference made up of national research and industry Ministers and civil servants. At EUREKA's first Ministerial Conference in July 1985 the founding Declaration of Principles made it clear that EUREKA 'would be a decentralised, industry-led, non-bureaucratic initiative that adopted a 'bottom-up' approach.' (Peterson & Sharp 1998: 100) The design of EUREKA reflected recognition among member states that early collaborative efforts had been hindered or made unsuccessful due to national political differences over policy priorities and project organisation. National differences of

opinion were to be avoided by following the Japanese model in allowing industry and research to determine policy goals and criteria.

The development of EUREKA further indicated the significance of industry as one of the key stakeholders in defining the research and technology agenda. From the very outset large industries and research groups were keen to support the EUREKA initiative. This was hardly surprising given that they were the dominant players in proposing and developing research projects and were the main beneficiaries. EUREKA also had the advantage for the member states of setting a collaborative research agenda within the context of national priorities and without the interfering influence of a supranational body such as the Commission. It also provided a means of reclaiming national links with industry and it counted the overtures of the Commission with this key stakeholder. The fact that two parallel programmes emerged during this period reflects the growing significance of collaboration between states in research and technology policy in the light of rapid technological changes and growing globalisation.

Many regarded EUREKA as a return to an intergovernmental approach of policymaking with member states attempting to reaffirm their dominance in the face of growing European competence in the area of research and technology. EUREKA was an intergovernmental approach in that ultimately member states decided which projects to support and provide financial backing with the expectation of a return on investment. The principle of *juste retour* was central to the EUREKA approach. The significance of EUREKA, however, was that it consolidated the role of industry in the policymaking process. Ultimately, it was industry and other relevant experts that determined the content of policy. Peterson and Sharp (1998: 112) note:

> '(The) industry-led ethos and civilian emphasis were designed to depoliticise the initiative. EUREKA was created to generate collaborative R&D projects that deserved public support because they were underpinned by economic, strategic or policy logic, not because they met political criteria. Its success may be viewed as proving the wisdom of the strategy of, so far as is possible, keeping politics out of technology policy.'

EUREKA was particularly significant in establishing collaborative working relationships between governments, industrial elites and experts from universities/research centres in a range of research areas. This increased the awareness amongst governments of the importance of collaboration in creating a critical mass of knowledge and expertise at the European level in the face of increased global competition. These developments helped create the conditions that encouraged member states to support a significant advance in EU competence in research and technology policy that formed one of the key pillars of the Maastricht Treaty.

The Maastricht Treaty and Beyond

The development of the Framework Programme had greatly expanded the Community's competence and given research and technology policy a coherence it had hitherto been lacking. However, the establishment of the EUREKA initiative meant that research and technology policy at the European level was extremely fragmented with both supranational and intergovernmental collaborations running simultaneously. At the beginning of the 1990s Europe was plunged into a deep recession. Again, it took a period of crisis alongside pressure from business leaders and industrialists to persuade member states that a renewed treaty chapter on research and technology was central to getting Europe out of recession and solving the problems posed by the move towards the Single Market. Indeed, the European Round Table of Industrialists (ERT – formerly the Gyllenhammer Group) were particularly influential in working with the Commission to persuade the member states to expand Community competence in the area of research and technology policy during negotiations on the completion of the Single Market, the '1992 Project' (Sandholtz & Zysman 1989; Green-Cowles 1995).

Peterson and Sharp (1998: 177-187) note that the Commission has acted as ring-leader in the formulation of networks in specific policy areas. Indeed, since the days of Davignon, the Commission had been extremely active in the formulation and utilisation of expert policy networks in the area of research and technology policy. Groups, such as the ERT, strengthened Commission policy proposals through the evidence-based knowledge and stakeholder support they provided. In the formulation of the Framework Programme, in particular, the Commission was extremely reliant on advisory groups representing different areas of research and technology, in the

formulation of policy. Advisory groups of this type were becoming central to the policymaking process in this area.

In 1993, the Commission established the Bangemann Group to study Europe's Information Infrastructure and the possibility of increasing public access to newly emerging information technologies such as the Internet. The group was made up of leading industries, user and consumer groups and included individuals of considerable political weight and influence, including Viscount Davignon, Romano Prodi and Pehr Gyllenhammer, former head of the Gyllenhammer Group that had been so influential in the development of the European microelectronics programme during the 1980s. The Bangemann group was extremely influential in helping to persuade member states to liberalise markets for telecommunication services: 'the formation of the Bangemann Group was a shrewd political manoeuvre by the Commission. It acted to consolidate a powerful, high-profile telecoms policy network. When the Group agreed on a course of action, even a radical one, member states on the Council had difficulty resisting.' (Peterson & Sharp 1998:135) The legacy of the Davignon approach was still prevalent during this period as policymaking was still being dominated by a small number of key stakeholders and expert groups in specific research and technology areas. The way in which policy was being formulated was reflected by the closed, exclusive and stable policy communities described by Richardson and Jordan (1979) and Marsh and Rhodes (1992). The influence of these groups unquestionably had a large impact in getting the member states to accept further reforms and a further expansion of EU competence in research and technology policy in the Maastricht Treaty.

The Maastricht Treaty gave the Commission the right to promote 'all the research activities deemed necessary by virtue of other chapters.' (Maastricht Treaty 1993) In addition, a new Article 130h was added that stipulated that 'the Community and the member states shall coordinate their research and technological development activities so as to ensure that national policies and Community policies were mutually consistent.' (Maastricht 1993) This gave the Commission further power to co-ordinate and implement research and technology policy in different areas.

One of the most controversial issues debated at the Maastricht Summit was the issue of decision-making procedures in relation to the future development of the

Framework Programme. The control of the Framework Programme budget by the Council had been one of the most contentious aspects of European research and technology policy. Disputes regarding the size of the budget invariably led to long and laborious negotiations that had the concomitant impact of delaying the implementation of the programme.

The major change introduced at Maastricht was the introduction of the co-decision-making procedure. The co-decision procedure expanded the role of the EP in the legislative process, providing them with a significant role in discussions regarding the structure and budget of the Framework Programme proposals and the capacity to make amendments. Co-decision did not, however, place the EP on an equal footing with the Council in legislative and budgetary terms as the Council, at the insistence of the UK and German government's, retained the unanimity rule in Council decision-making in relation to the Framework Programme.

The significance, however, of the introduction of the co-decision procedure is that the Council has to take account of the EP's opinion and amendments and enter into a dialogue regarding the structure, content and budget of the Framework Programme. This manifested itself in relation to the budget negotiations for FP4. The Commission, supported by the EP, put forward proposals for a budget of 13.1 billion ECU; this figure was viewed as extravagant by the French, UK and German governments. The EP invoked its new co-decision power and persuaded the member states to agree a compromise budget of 12.3 billion ECU (Peterson & Sharp 1998 214). This was a significant victory for the EP and advanced its role in the decision-making procedures in relation to the Framework Programmes. Furthermore, the increased role of the EP gave outside experts another access point in which to attempt to influence the policymaking process as they could lobby the Parliament to make amendments on the budget and policy priorities. However, at Maastricht, the detailed proposals for individual work programmes remained subject to Qualified Majority Vote in the Council with the EP only having a consultative role over policy content (Farrel 1996).

The Commission were unhappy that the Maastricht reforms had not gone far enough and were particularly disappointed with member state unwillingness to countenance a move to QMV in the development of the Framework Programme

budget and overall priorities. The 1992 Commission Communication 'Research after Maastricht' heavily criticised the Council for retaining unanimous voting and subjecting the decision-making to a double legislative procedure that would lead to delays and potential deadlock in policymaking. 'Research after Maastricht' restated the importance of research and technology in maintaining European growth and competitiveness and that the EU should increase investment and reduce fragmentation in research and technology through the development of a European industrial policy:

> 'The need for a European industrial policy has reappeared. In the 1970s, industrial policy was characterised by a dirigiste and sectoral approach. Today, it is recognised that public interventions in this area must take the form of horizontal activities to achieve the right climate and balance for maximising the productivity and competitiveness of European industry.' (COM 1992: 22)

The idea for a European industrial policy arose due to pressure from Europe's leading electronics industry representatives making a direct plea to the Delors' cabinet (Ross 1995), however, the final Treaty made no reference to European industrial policy. Under Articles 130f and 130g of the Maastricht Treaty, however, the Commission could advance research and technology policy if they impacted upon other policy areas. What gave momentum to research and technology policy was the emergence of science and technology as the driver of the modern knowledge-based economy and the impact this had on industrial competitiveness and Europe's position in the world. It also impacted on regional and social cohesion because certain regions of the community were growing at a much faster rate than other, often more, peripheral regions. This provided the context in which the Commission could act through reference to the articles outlined above.

The most significant developments in the Maastricht Treaty was the introduction of Article 169, which allows the EU to participate in national research and technology programmes:

'In implementing the multi-annual framework programme, the Community may make provision, in agreement with the Member States concerned, for participation in research and development programmes undertaken by several Member States, including participation in the structures created for the execution of those programmes.' (Maastricht 1993)

Article 171 states 'the Union may set up joint undertakings or any other structure necessary for the efficient execution of Union research, technological development and demonstration programmes.' (Maastricht Treaty 1993) While the Maastricht Treaty did not develop a European-wide research and technology policy, Article's 169 and 171 gave the Commission the competence to become involved in national programmes and the power to establish policy instruments that would help reduce fragmentation and increase collaboration between the national and European level programmes. These new powers would go some way towards advancing the main aim of the 'Research After Maastricht' Communication, developing a European industrial policy and would lay the foundations for the development of Joint Technology Initiatives (JTIs – see chapter 6).

The importance of the 'Research After Maastricht' Communication is that it provided the Commission with a central goal, the development of a European-wide research and technology policy that reduced fragmentation between national and European programmes. The perceived need for greater collaboration in the area formed a central part of the Delors 1993 White Paper on Growth, Competitiveness and Unemployment (COM 1993). Delors presented research and technology as being central to European growth and competiveness, and the success of the Single market. Investment into new areas of technology would provide jobs and reduce unemployment caused by the decline of old industries and the emergence of knowledge-based sectors that required fewer highly skilled workers:

'The depth of the present crisis is largely due to insufficient progress in adapting the structures of the Community's economy to the changing technological, social and international environment. Only through the

structural adaptation of industry can the twin requirements of higher
productivity and more jobs be achieved.' (COM 1993)

Delors recognised that Europe was moving away from an economy based on
traditional primary industries producing physical goods to one based on knowledge
and focused on human capital (Peterson & Sharp 1998: 129). Investing in knowledge-
based research and technology industries was the solution to Europe's economic
problems. The White Paper again reflected the neo-functionalist logic behind the
Delors approach in that inter-linkages were made between different policy areas in
order to expand EU competence within them.

A central idea within the White Paper was for the creation of Task Forces in
research and technology areas key to European competitiveness. Task forces would
bring together a wide range of stakeholders including industry, researchers,
academics, scientists and user groups to seek ways to coordinate research efforts and
reduce fragmentation. Primarily designed as a mechanism to enhance the European
dimension in research and technology policy, Task Forces also represented an attempt
to open up the policymaking process and break the small group of industrialists and
researchers that had come to dominate the process. Task Forces reflected a more
open and inclusive policymaking framework captured by the Monnet Method.

The Delors 1993 White Paper made innovation and getting research into the
market place central to fostering the economic growth and employment that would
get Europe out of recession (COM 1993). However, in 1995, upon becoming the new
Commissioner for Research, Edith Cresson identified a serious innovation gap in
Europe. The 1995 Green Paper on Innovation stated that the deeply fragmented
nature of European research efforts meant while new products were being developed
they were not making it to the market place, which was having a detrimental effect of
competitiveness. This built on a point made by Delors in 1993 White Paper (COM 1993:
ch.4):

'In the Commission's opinion Europe's research and industrial base
suffers from a series of weaknesses. The first of these weaknesses is
financial. The Community invests proportionately less than its

competitors in research and technological development...A second weakness, however, is the comparatively limited capacity to convert scientific breakthroughs and technological achievements into industrial and commercial success.'

The 1995 Green Paper further emphasised this innovation gap and called for the development of a 'genuine European strategy for the promotion of R&D.' (COM 1995: 2) To solve this problem the Green Paper and the subsequent follow up, the 1997 First Action Plan for Innovation (COM 1997), called for greater coordination of European research efforts and an extension of Task Forces. Edith Cresson, with the support of the Commissioner for Industry, Martin Bangemann, resurrected the idea of 'Task Forces' originally proposed in the Delors 1993 White Paper. Task Forces were 'an essential part of the Commission's strategy to improve the impact and reduce the fragmentation of research across the EU' (COM 1996; Peterson & Sharp 1998:154). Task Forces would work together with industry, users, researchers and public authorities and were designated the task of defining research priorities in their respective fields and focusing on innovation problems. Task Forces were developed in 8 key areas, including:

- new generation aircraft;

- the car of tomorrow;

- multi-media educational software;

- vaccines and viral illnesses;

- the train and railway systems for the future;

- inter-modality in transport;

- the ship of the future;

- environment-friendly water technologies.

Since the days of Davignon the Commission had become proficient in playing a central role in formulating networks that would provide their proposals with

knowledge and stakeholder support. Where Task forces differed from the networks that had gone before, however, is that they were open to a much broader range of key stakeholders involved along the innovation continuum. In this regard they did not reflect the closed policy communities that had dominated policymaking in this area since the Davignon days. Task forces were broad stakeholder-based expert networks and were designed not only to open up the policymaking, but reduce the innovation gap by creating stronger links between researchers and industrialists. Task Forces more widely reflected the Monnet Method of policymaking as they involved a wider range of stakeholders and they formed the precursor for the ETP model.

In 1997 the Amsterdam Treaty radically altered the decision-making procedures in research and technology policy since the overall content and budget of Framework Programmes were to be decided by Qualified Majority Vote in the Council. This reform gave the co-decision procedure and the role of the EP further impetus and importance in the process. At the same time, the introduction of QMV has served to weaken the role of the member states in the policymaking process, as it now must make further compromises with other key stakeholders in the process, in particular, the EP. The slow and steady expansion of Commission competence in the area of research and technology appears to provide further support to the neo-functionalist concept of spillover.

Conclusion

By the end of twentieth Century the EU had dramatically increased its competence in the area of research and technology policy. At the very heart of the emergence of the EU as key allocator of resources and arbiter of policy in this area had been the role of a pro-active and entrepreneurial Commission. In an area of policymaking that had been the preserve of the nation state and predominantly conducted through intergovernmental forms of collaboration, the Commission took advantage of a new constellation of circumstances that emerged as a result of the perceived technology gap between European companies and their American and Japanese competitors. Jean Monnet believed that there had to be a moment of uncertainty or crisis before politicians would look to alternatives to the status quo. Indeed, the perceived technology gap forced European politicians to question their

predominantly national intergovernmental approach to research and technology policy and increasingly look towards Europe for a solution to close the technology gap. The Commission, under the proactive leadership of Davignon, took full advantage of the changing context and the window of opportunity that had presented itself to advance research and technology policy at the European level. This appears to lend weight to the central tenet of the epistemic community and advocacy coalition approach that a period of uncertainty or crisis is generally required before policy change can occur.

The Davignon approach for advancing policy in this area was to formulate networks made up of the heads of Europe's leading industries in research and technology areas key to Europe's future growth and competitiveness. The standing of these networks would place pressure on member states to accept their proposals. Groups such as the Davignon Roundtable and the Gyllenhammer Group became very influential in establishing policy in the fields of microelectronics and information and communication technology. Much like epistemic communities these groups were closed and stable in terms of their membership, with their role in the process based upon the expert knowledge they could provide the Commission. However, these groups were more like advocacy coalitions in that the knowledge they provided was inextricably linked with their own self-interests and their main political aim of advancing policy in their own area at the European level was to prevent extinction in the face of competition from US and Japanese rivals.

The Davignon approach is accurately captured by the policy community models offered by Richardson and Jordan and Rhodes and Marsh. There are elements of the Monnet Method present in that the Commission would base their proposals on the knowledge provided by the networks they formulated. However, the Davignon approach was not as open and inclusive as the Monnet Method in terms of membership, but was similar in that the Commission built its proposals on the knowledge and high-level stakeholder support these policy communities provided. The Davignon approach ultimately led to a closed and elitist policymaking process in the area of research and technology, a process that was dominated by a small group of stakeholders and reflected by the policy communities model. The approach also showed the central role of the Commission in formulating policy networks as a means

of building support for the advancement of policymaking in the area of research and technology policy.

The Davignon initiatives paved the way for the inclusion of research and technology in the re-launch of the Community under the Presidency of Jacques Delors. The Delors method for advancing policy in this area had a strong neo-functionalist logic as in his 1985 White Paper, research and technology were painted as vital to the successful completion of the Single Market. The White Paper, based on rigorously argued evidence-based knowledge, persuaded member states to provide the EC with greater Treaty-based competence defined in the SEA. The most significant development within the SEA was adoption of a strategic programme for the development of policy – the Framework Programme. The idea of establishing a Framework that lays out strategic policy priorities in a long term plan was heavily influenced by the Monnet Method and Delors's period working in the French Planning Commission.

The Delors approach was based on a knowledge-driven, evidence-based framework in areas central to Commission policy. It involved extensive consultation and consensus-building with key stakeholders in each policy sector. Delors was particularly committed to the preparation of detailed and well-argued policy papers that reflected the level of consultation undertaken and included a full evaluation of the options available of the evidence analysed. These well-argued proposals were discussed with the member states so that when they were presented to the Council it was very difficult for individual member states to challenge the logic and coherence of the argument.

This reflects one of the important themes of this thesis which is that because the Commission lacks a democratic claim to legitimacy it compensates by placing emphasis on knowledge. Knowledge is the key to understanding the Commission claims to legitimacy in the development of policy. This is particularly important in highly complex expert-driven areas such as research and technology. These are areas that are not within the comfort zone of the generalist politician and where expertise comes into its own. However, it is important to point out, the Commission's approach is not an expert-driven approach, but is one that is built on extensive consultation and

consensus-building with key stakeholders. Integral to this approach is the recognition that there is rarely a single solution to any given problem and that all steps forward in science tend to be incremental. The Delors' approach was heavily influenced by the Monnet Method, but was not as inclusive of stakeholders, since policymaking in this area remained a relatively closed and exclusive affair. The content of the Framework Programme was largely determined by the Commission's own expert advisory groups, with the networks established by Davignon remaining influential.

Despite an expansion of Community competence in the area of research and technology, at the European level it remained deeply fragmented between the European programmes and national intergovernmental programmes such as EUREKA. To overcome this, Delors formulated the idea of developing a European industrial policy aimed at coordinating research and technology policy at different levels. Again, Delors adopted a neo-functionalist strategy by offering research and technology as the solution to Europe's deep recession in his 1993 White Paper. This rigorously-argued, evidence-based White Paper convinced member states to further extend EC competence in the area under the Maastricht Treaty. Articles 169 and 171 were the most significant inclusions since they gave the Commission the authority to greater coordinate national and European programmes and to create the mechanisms for achieving this. The slow and incremental extension of competence in this area supports the logic behind the neo-functionalist spillover idea.

The novel idea within the Delors 1993 White Paper was for the creation of European Task Forces. Task Forces would bring together all relevant stakeholders to determine policy priorities in a very narrowly defined area of research and technology. The foundations of the Task Force concept lie firmly in the Monnet Method. Task forces were more inclusive of a wide range of stakeholders involved in the innovation continuum including industrialists, researchers and technology user groups. All would bring their interests to negotiations before agreeing priorities on the basis of widespread discussion and a process of reciprocal persuasion. Task Forces were designed to open up the policymaking process to a wider range of stakeholders and would help reduce the growing innovation gap identified by Delors and Edith Cresson by creating stronger links between stakeholders at the policy formulation stage. Task

Forces would also provide the Commission proposals with knowledge and stakeholder legitimacy. Task Forces were the precursor and formed the basis for the idea of establishing European Technology Platforms. The ETP concept would become one of the Commission's central mechanisms for the development of a European Research Area which will be discussed in the next chapter.

Chapter 5

The Emergence of European Technology Platforms

Chapter Outline

At the turn of the twenty-first century, Europe was beset by problems including slow economic growth and rising unemployment; an increasing innovation gap with the US, Japan and the newly emerging economies in Asia, particularly China; vast inequalities between regions; and growing health and environmental issues. These circumstances provided the catalyst for increasing member state support for expanding European research and technology policy. Scientific research and technology were becoming increasingly viewed as the solution to Europe's problems and the key to future economic growth and prosperity. The clearest manifestation of this was expressed at the European Council in Lisbon on the 23rd-24th March 2000, when the Heads of State and Government in the EU identified the importance of research and technology policy in meeting the main aim of the Lisbon Agenda, to make Europe 'the most competitive and dynamic knowledge-based economy in the world by the year 2010.' (European Council 2000)

Sensing an opportunity to further advance European competence in the area of research and technology policy, the Commission published a 2000 Communication outlining the need to increase investment and collaboration at the European level through the creation of a European Research Area (ERA) (COM 2000a). The 2000 Commission received widespread member state backing for its proposals, which provided the basis for the development of a wide-range of new funding instruments designed to enhance collaboration at the European level, including Networks of Excellence, Integrated Projects, STREPs, ERA-NETs and Article 169s. While these instruments succeeded in providing a framework for stakeholders to share knowledge and network, they were too small in scope and size, becoming dominated by the same actors, particularly from industry, research and academic communities. The Commission recognised that if the ERA was to become a reality, they needed to develop a framework that would embrace a much wider range of stakeholders into the

process – the mechanism they designed was the European Technology Platforms (ETPs).

European Technology Platforms form an integral instrument in the Commission's attempts to develop an ERA. ETPs are informal discussion networks that bring together a wide range of stakeholders within a policy area, including industry; SMEs; the financial world; national and regional public authorities; the research community; universities; non-governmental organisations; and civil society. In 2010 there now exists 36 ETPs in a range of research and technology areas key to Europe's future economic growth and competitiveness (see Table 5.2). Through stakeholder discussion and consultation each ETP has developed a vision document and strategic research agenda outlining the key medium and long term policy priorities in their area. ETPs provide a forum for stakeholders to share knowledge, information and network; however, what distinguishes ETPs from the above funding instruments and makes them truly worthy of analysis is that they have been designed to contribute directly to the formulation, rather than the implementation of policy. ETPs, therefore, have become a vital source of knowledge, expertise and stakeholder support on which the Commission can base policy proposals and shape member state preference.

This chapter examines and critically evaluates the emergence of ETPs in order to provide an understanding of what they represent. The chapter begins with a contextual overview assessing the reasons behind the development of ETPs, before proving an analysis of the key players involved in their creation, particularly, the Commission and industry. The chapter then moves into a closer examination of ETPs, analysing their key dimensions, including membership, governance structure and how they develop policy priorities in the form of a Strategic Research Agenda (SRA). The chapter analyses ETPs within the context of the key propositions of the theoretical approaches discussed in Chapter 2 of the thesis, with the aim of establishing whether ETPs can be understood within these existing theoretical frameworks or if they represent a new theoretical direction. This analysis is predominantly based on primary documentation released by the Commission and ETPs; the key empirical findings from 62 interviews conducted during the course of this research with key stakeholders, including Commission officials and ETP members; and the 2008 *Evaluation of the*

European Technology Platforms (ETPs) conducted by Idea Consultants on behalf of the European Commission (COM 2008a).

European Technology Platforms – The Context

At the beginning of the twenty-first Century, world leading scientific research capability, coupled with a well-developed innovation infrastructure, plus an ability and capacity to commercialise research effectively, were widely understood across the world's leading economies to be the key to the development of a sustainable knowledge-based economy. The foundation of this new economy was the rapid expansion in information and communication technologies, biotechnology, life sciences (gene technology), nanotechnology and environmental technology. These were areas that were attracting public and private sector investment in the world's leading twenty economies because of their potential to create high value-added companies, new job creation and their capacity to facilitate export-led growth and inward investment.

Despite the increasing recognition by member states of the importance of research and technology to a growing knowledge-based economy, research efforts at the European level were chronically under-invested and remained deeply fragmented, which was having an adverse effect on European competitiveness in the global market. While Europe appeared to be reasonably well-placed in relation to the intellectual asset base (e.g. world class universities and leading edge companies), in a number of important areas such as investment in R&D as a percentage of GDP and the number of researchers per thousand head of population, they were falling behind the US and Japan. In addition, there were increasing concerns about Europe's capacity to commercialise research and the strength of the infrastructure in supporting innovation capable of bringing products to market quickly and efficiently; again, the US and Japan were perceived to be well in advance of Europe in this area. These concerns were further exacerbated by the emerging new economies of China, India, Brazil and other parts of Asia that were not only overtaking Europe in relation to the low value-added sectors of the economy, but were becoming increasingly competitive in the more sophisticated sectors essential to a knowledge-based economy.

The perennial worry about the increasing innovation gap served to create sufficient uncertainty among the member states to create an opportunity for the Commission to exploit these concerns as a means of expanding European research and technology policy. In an attempt to increase member state support for further investment and collaboration at the European level, the Commission, in collaboration with Eurostat, began to compile a range of statistics that clearly stated the gravity of the scientific and technological challenges faced by Europe and the increasing innovation and competitiveness gap that existed in relation to its main competitors, as illustrated in Table 5.1 and Figure 5.1 below:

**Table 5.1: Europe's Growing Technology Gap**

	EU-25	**US**	**Japan**
Share of R&D financed by Industry (%)	54.8 (2003)	63.7 (2004)	74.8 (2004)
Researchers (FTE) per thousand labour force	5.5 (2004)	9.1 (2002)	10.1 (2003)
Share of world scientific publications (%) (2003)	38.3	31.1	9.6
Scientific Publications per million population (2003)	639	809	569
Share of world's triadic patents (%) (2000)	31.5	34.3	26.9
Triadic patents per million population (2000)	30.5	53.1	92.6
High-tech exports as a share of total manufacturing exports (%) (2003)	19.7	28.5	26.5
Share of world high-tech exports (%) (2003)	16.7	19.5	10.6

SOURCE: COM 2006f

The statistics outlined in Table 5.1 (above) and Figure 5.1 (overleaf) clearly identifies areas of weakness for Europe in relation to their main competitors. The discussion, however, was not just limited to Europe's immediate competitors, R&D

investment was also analysed in relation to the newly emerging economies such as China and Russia.

Figure 5.1: R&D Spending as % of GDP 2004
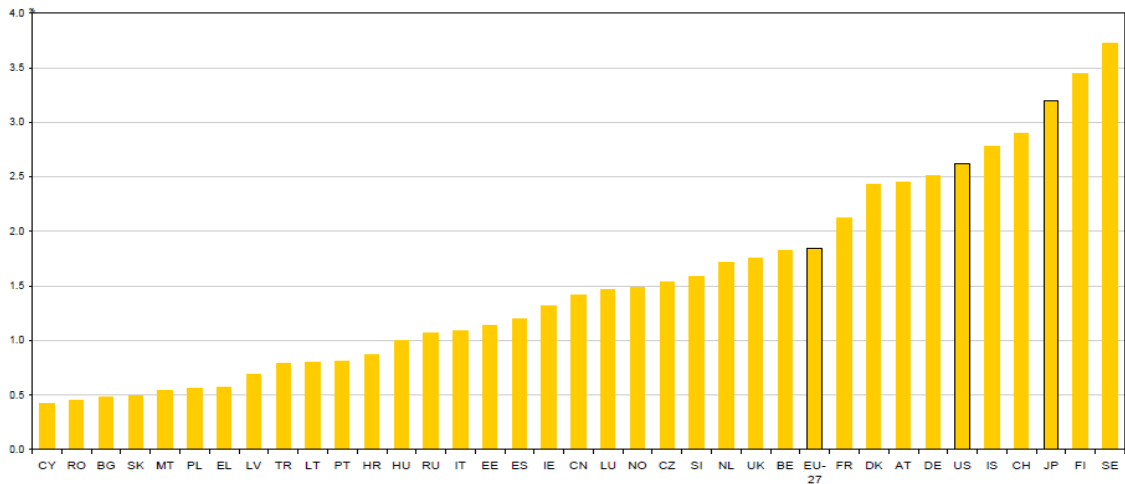
Source: Eurostat 2008

In addition to the threats to European competitiveness, the member states faced a number of important economic, social and environmental challenges including: slow economic growth, high levels of unemployment and growing regional disparities. The richest regions at the core of the EU were growing much faster than the more peripheral regions, in particular, those in Southern Europe. These challenges were compounded by a significantly declining birth rate and an increasingly ageing population, public health problems caused by lifestyle and disease and the environmental challenge posed by climate change (Mulder *et al* 2006: 1-15). These were further exacerbated by a continuing 'brain drain' of highly skilled and well qualified workers to high wage economies in the US and Asia. This was having a particularly detrimental effect on Europe in areas involving world class research and was impacting on company competitiveness, as US and Asian companies could outbid European companies for the most skilled and best qualified workers.

The challenges outlined above presented the member states with a major dilemma that continually challenges the development and progress, at the European level, in research and technology policy: should the member states commit to a European response involving a significant increase in EU competence and budget with the aim of creating a critical mass and greater coordination of research effort; or,

should they simply concentrate on a EUREKA style model based on intergovernmental cooperation with a minimal role for the Commission in relation to the coordination of national research efforts?

It was against this background of increasing problems and uncertainty that the Commission was able to adopt an entrepreneurial and expansive role in advancing European research and technology policy. What is particularly interesting is that the Commission has reverted to a tried and tested technique developed by Davignon and used by Delors of outlining in detail the major weaknesses and threats to the European economy, founded on a strongly argued evidence-based analysis, with the aim of neutralising member state opposition to a European solution. As a former MEP and Chair of the EP Research Committee pointed out, a new role for Europe was emerging; the past was based on traditional heavy industries of coal, steel and textiles, the future would be based on research and technological development (Interview 2005iii). Indeed, the Commission gave the member states a clear choice, either commit to further investment and coordination at the European level of face the consequences of losing further ground against their competitors in the global market.

The power of the Commission argument can be seen in the widespread member state support for the Commission's 2000 Lisbon Strategy proposal to make Europe 'the most competitive and dynamic knowledge-based economy in the world by the year 2010' (European Council 2000). The member states responded positively to the Commission's overtures by committing to a more proactive approach at the European level and they were persuaded to support the Commission's position noting that 'research activities at national and Union level must be better integrated and coordinated to make them as efficient and innovative as possible' (European Council 2000). Central to the Lisbon Strategy was a member state commitment to increasing spending on research and technology to 3% of GDP by 2010.

A change of attitude from member states and a commitment to research and technology as a means for developing a knowledge-based economy, provided a change in policy context and a window of opportunity for the Commission to introduce its plans for the Lisbon strategy (Mulder *et a.* 2006*l:* 75-92). Indeed, as with the period of re-launch during the 1980s, a constellation of circumstances occurred that created the

opportunity for the Commission to advance the European research and technology policy dimension. By focusing on the technology and competitiveness problems that Europe faced, within the context of an emerging knowledge-based globalised economy, the Commission could challenge the relevance of the principal agent role of the nation state in this important area of policy.

Central to the epistemic community approach is that in times of uncertainty expert groups can influence policymaking. The view was supported by Monnet who believed crisis and uncertainty created windows of opportunity that entrepreneurs could take advantage of. The central role of the Commission in the development of EU research and technology policy and the formulation of ETPs would indicate, however, that during times of uncertainty it is not just stakeholders, but also institutions that can influence change. This confirms Ross's analysis that it was a proactive Commission, during the Delors Presidency, which was able to advance its policy competence during a times uncertainty by pressurising member states to accept policy proposals based on rigorously argued knowledge-based policy documents (Ross 1995; also see Sandholtz & Zysman 1989 and Green-Cowles 1995).

While an entrepreneurial Commission had once again taken advantage of member state uncertainty to thrust research and technology to the forefront EU policy, the Commission recognised that if they were to achieve the core aim of the Lisbon Strategy they needed a mechanism for reducing fragmentation at the European level through the development of a European Research Area (ERA). This would involve increasing stakeholder involvement in research and technology policy through engaging key stakeholders and wide-ranging consultation including governmental and non-governmental organisations aimed at establishing a consensus regarding the most efficient and effective way to respond to the challenges. This was an approach grounded in the Community Method bequeathed by Monnet, used by Davignon in the first major overtures by the Commission into research and technology, and by Delors in the re-launch of the Community in the 1980s. The Commission working together with key stakeholders to advance policy is a key theme in the sphere of research and technology policy and an indicator that both institutional and actor-based models shed light on a complex process of governance in the EU.

The Development of a European Research Area

Part of the Commission's strategy in developing its competence in research and technology was to establish the idea of the need for a European Research Area (ERA) as a counter balance to the national research effort. This strategy was inextricably linked with the Lisbon Agenda, which was being developed simultaneously. In raising the idea of an ERA the Commission was able to generate a debate on addressing key issues in research and technology at the European level. This draws parallels with approaches adopted by both Monnet and Delors to establish a European agenda aimed at identifying potential European solutions to a given challenge.

The significance of research and technology was outlined in the Commission's 2000 communication 'Science, Society and the Citizen in Europe', that pointed out that the 'expectations of science and technology are getting higher and higher, and there are few problems facing European society where science and technology are not called upon, one way or another, to provide solutions.' (COM 2000b: 5). However, the Commission identified a number of barriers that were standing in the way of the development of a European dimension in research and technology policy and argued that these barriers could have had profound implications for the implementation of the Lisbon Strategy if they were not directly addressed. These barriers were identified as follows:

1. Insufficient investment in European research and technology;
2. Fragmentation of R&D efforts;
3. Closed and isolated national research systems;
4. Weak links between industry and research leading to an innovation gap.(COM 2000a; COM 2002a)

Despite over 20 years of EU involvement in research and technology this area of competence was still dominated by national research effort. In academic circles, this lack of policy coordination between the European and national level became the focus of increased criticism. This criticism focused on a 'governance gap' that had emerged in this policy area (Kuhlmann & Edler *et al.* 2000; Kaiser & Prange 2002; Edler *et al*. 2003; Delanghe *et al.* 2009). For example, Edler et al. (2003: 21) note that research and

technology policy 'has been characterised by a model of related, but largely separated, multi-level governance with a clear dominance of the national level.' They raised the issue of the need for a more coherent and linked approach with an increasing recognition of the emergence of the European dimension.

This lack of a coherent approach became a major concern for the Commission. They argued that the fragmentation of European research and technology policy was having a profound impact on the capacity of Europe to compete in an increasingly technology-driven global economy. The Commission acknowledged that 80% of European research and technology effort was being carried out at the national level, through national and regional research programmes and that this was an increasing barrier to the emergence of a more coordinated approach capable of establishing a critical mass of research effort that would improve Europe's capacity to compete with America and Japan and the newly emerging economies. The Commission was particularly concerned about the fact that European Union research and technology programmes ran in parallel with each other, but did not constitute a coherent whole (COM 2000a: 7).

In an attempt to address and overcome these problems, the Commission came up with the idea of a European Research Area (ERA). The aim of this new initiative was to contribute to the creation of a more favourable environment for research in Europe by 2010 (COM 2000a). Indeed, the idea of developing a European area in research and technology was not new; it was first raised by Jean Monnet and his Action Committee for Europe and given further impetus by Altiero Spinelli, as Commissioner for Industry in the early 1970s in an attempt to develop the research arm of his portfolio. Both suggested the development of a European Research Area along the lines of Euratom. However, the circumstances for a major policy initiative of this kind were not in place and there was little enthusiasm among the member states for such a move. Furthermore, the failure of Euratom to overcome the dominance of national research effort in this significant technology was not a sound foundation on which to build the initiative. The member states, in particular France, were determined to maintain national control of this critically important technology.

The Spinelli initiative was abandoned with the appointment in 1973 of the German sociologist Ralph Dahrendorf as Commissioner for research and technology (Ortoli Commission). Dahrendorf was sceptical of a European-wide response and took the pragmatic view that the principal agent in the area of research and technology was the nation state and that nearly all the research investment and infrastructure was already in place at the national level, and that the development of research and technology was perceived as a national priority as opposed to a European one. Since there was little point in duplicating the existing infrastructure at a European level, except in the case of major infrastructure investment in newly emerging technologies (as had been the case in relation to Euratom) the most effective role for the Commission was to develop a research policy that sought to develop the national infrastructure through a policy of coordination and collaboration.

The fact was that Dahrendorf recognised there was little interest amongst the member states in pursuing the type of federal response advocated by Spinelli and that a more pragmatic response was the most effective way forward for the Commission. The conditions of uncertainty that invariably leads to member states questioning the need for a European solution to a given problem were not present during this period. It was, therefore, Dahrendorf, and not Spinelli, who established the basic principles on which research and technology policy was developed up to the appointment of Davignon in the 1980s. Spinelli's grandiose design for a European dimension in research was sacrificed for a step-by-step approach of the type favoured by neo-functionalists in challenging the role of the nation state as the principal agent in this policy area. The revival of the idea of a European Research Area in 2000 formed part of a Commission initiative for the EU to establish itself as a principal agent in this policy area.

The key aims of the Commission's 2000 ERA proposal were as follows (COM 2000a):

- The creation of an 'internal market' in research designed to strengthen cooperation, stimulate competition and increase investment;

- Restructure European research programmes by improving the coordination of national research activities and policies;

- Enable the free movement of researchers to interact with and benefit from world class infrastructures to create strong networks between research institutions;

- Share, teach and use knowledge effectively for social business and policy purposes;

- Coordinate and open up European national and regional research programmes to bring together and increase support for the best researchers throughout Europe;

- Develop stronger links with partners around the world to benefit from global knowledge and take a leading role in international research and technology initiatives.

Another central aim of the Commission's approach was to increase investment in research and technology policy at the European level. The need for further investment was viewed as being particularly important and was stressed by the Commission as being vital for Europe's future evolution: 'more than ever, investing in research and technological development offers the most promise for the future. In Europe, however, the situation concerning research is worrying...Europe might not successfully achieve the transition to a knowledge-based economy.' (COM 2000a: 4) The focus on EU spending was to become central to the debate surrounding the overall EU budget in the European Council with some countries wanting to maintain the status quo, with a continued focus on agriculture, while others wanted greater investment in research and technology. This debate was summed up by the UK President of the European Council, Tony Blair in a speech to the House of Commons on Europe:

'Europe faces an immense global competitive challenge. Quite apart from the established economies of America and Japan, the rise of China, India and other Asian economies is creating a wholly new economic environment. It simply does not make sense, in this new

world, for Europe to spend over 40% of its budget on the common agricultural policy, representing 5% of the EU population producing 2% of Europe's output. Indeed, we are spending seven times as much on agriculture as on research and development, science, technology, education and support for innovation combined. This is not a budget fit for purpose in the 21st century.' (Blair 2005)

Again, the Commission used the Davignon approach of outlining a pessimistic prognosis as a mechanism for stimulating member state action in increasing investment. The success of this approach can be seen in Figure 5.2 (below) outlining the increase in the budgetary allocation to the Framework Programme for Research and technology. The budget has grown from 3.7million Euros in Framework Programme 1 (FP1) to 17.5 million Euros in Framework Programme 6 (FP6). However, the change between FP6 and FP7, which will be examined in greater detail later, has been dramatic, from 17.5 million to 50.5 Euro millions. Part of the increase is reflected in the fact that the FP changed from a four to a six year programme; however, this increase largely reflects the success of the European Commission's strategy and reflects the emergence of the EU as a key allocator of resources in the area of research and technology policy, now the third largest budget area in the EU.

Figure 5.2: Evolution of Framework Programme Budget FP1 to FP7
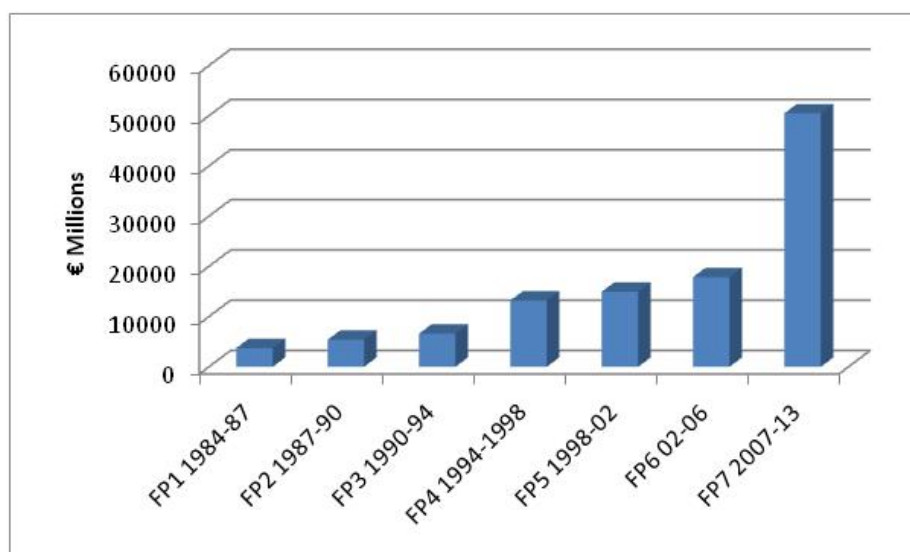
Source: Mulder *et al.* 2003

The Commission now needed to develop various instruments capable of making the European Research Area a reality. This required a more strategic approach in the allocation of resources from the Framework budget; for example in FP6, in line with the European Research Area strategy, new financial instruments were introduced aimed at coordinating centres of excellence and encouraging a more multi-disciplinary, multi-state approach in key research and technology areas. These new instruments were focused on funding larger and broader based projects and involved the establishment of:

- **Networks of Excellence (NoE):** They are networks designed to coordinate and strengthen research activities at the European, national and regional levels, by fostering a critical mass of knowledge and expertise through increasing co-operation between centres of excellence in universities, research centres, enterprises, including SMEs, and science and technological organisations (European Council 2002).

- **Integrated Projects (IPs):** They are designed to give increased impetus to the Community competitiveness in key areas of research and technology by mobilizing a critical mass of research and technological development resources and competencies (European Council 2002).

- **Article 169:** This was developed to allow the Community to use EU funds to stimulate cooperation and joint initiatives between member states in research and technology projects with the aim of coordinating and integrating research activity to reduce fragmentation (COM 2001c).

- **Networking of National Research Programmes in the European Research Areas (ERA-NETS):** ERA-NETS were designed to increase coordination between member states' national and regional

research and technology programmes with the aim of establishing long-term cooperation (2006c).

In addition to these new instruments, Specific Targeted Research Projects (STREPs) were retained as a mechanism for providing funds for narrowly focused, multi-disciplinary research effort aimed at improving European competitiveness. They usually involved projects of less than €4million.

The main aim of the new instruments was to reduce fragmentation of European research and technology programmes through fostering greater coordination and collaboration. IPs and STREPs focused on clearly defined scientific and technological problems with an emphasis on results-driven research and was an attempt by the Commission to improve Europe's ability to commercialise its research effort. The 1995 Commission Green Paper on Innovation pointed out that Europe was very good at knowledge production, but extremely poor at connecting knowledge with value creation (COM 1995). It identified Europe's innovation infrastructure as the main weakness in transforming knowledge and information into new ways of doing and making things. As Peterson & Sharp (1998: 46) point out, private firms 'play an especially important part in the process because they are (usually) the key institutions for transforming knowledge into commercially viable products and processes.'

The European focus on basic and pre-competitive research provided little incentive for industry, in particular small and medium-sized enterprises (SMEs), to get involved or invest in European research and technology projects. The bureaucratic complexity of bidding for European research funds and problems relating to confidentiality and intellectual property were a further disincentive for small research-intensive companies to become involved. There was a danger, therefore, that new research funding would become dominated by universities and research institutes whose priorities were research-focused rather than commercially-orientated. The Commission came to the conclusion that this balance had to be rectified and set a target of 15% SME representation on research projects in an attempt to incentivise universities to encourage SME involvement in their projects (COM 2006d). They also introduced a special part of the FP6 Programme aimed at directly addressing specific technical problems identified by SMEs in the development of new products and

services. In addition, they also addressed the problem of the growing gap between research and innovation by devoting part of the FP6 Programme to supporting the innovation infrastructure.

The NoE and IP projects differed from the small-scale projects that had gone before and were designed specifically to produce larger scale, longer term projects that involved a larger number of transnational participants. Through these networks, the Commission was deliberately trying to establish long-term bonds between stakeholders in which knowledge could be shared. What is equally significant is that these projects were partially funded by the Commission as well as from the participants themselves. For Edler *et al.* (2003: 21), 'the European Commission would gain more direct influence on research institutions through a long-term financing of networks of excellence that would be built around specific policy issues, be highly flexible and largely self-organised, but always accountable to the European Commission.' Indeed, this reflected the Commission strategy first developed by Davignon in the area of research and technology to establish a critical mass of key stakeholders in order to gain influence *vis-a-vis* the member states.

Furthermore, the development of IPs and STREPs and their focus on objective-driven research represented a concerted effort by the Commission to increase industry involvement in European projects, particularly SMEs, and improve links between industry and academia in an attempt to overcome the growing gap between research and innovation. These Commission initiatives were undoubtedly successful in mobilising stakeholder involvement. Indeed, there were 11, 700 expressions of interest sent to the Commission for NoE and IP projects (COM 2009a: 13). However, an analysis of stakeholder involvement indicates that research stakeholders still had greater involvement over industrial actors. This is reflected in Figure 5.3 (overleaf) which shows the relative decline of industry participation and the increase dominance of universities and research institutes in European programmes.

Figure 5.3: Sectoral Participation in Framework Programmes – FP3 to FP6
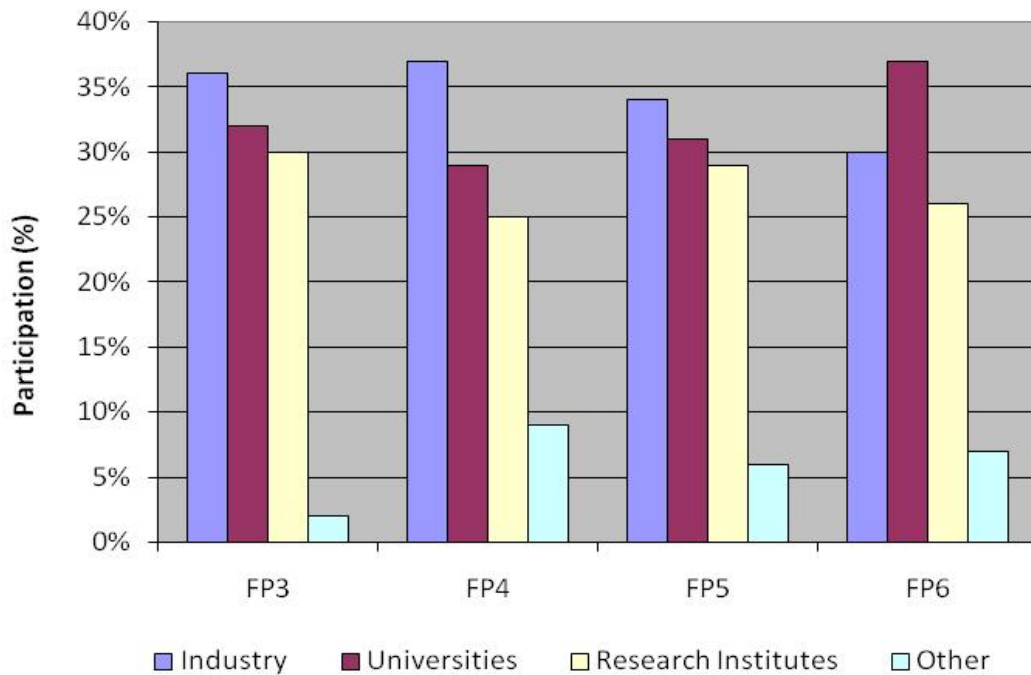
Source: COM 2004c

The main aim of the Commission's ERA strategy was to develop a genuine European dimension in the area of research and technology policy. As Edler *et al.* (2003: 3) point out, the development of an ERA is an attempt to overcome national and regional dominance in the multi-layer architecture of European research and technology governance, by building a genuine European research identity through effective and strategically planned pan-European cooperation and networks. As can be seen through the NoE, IP and EraNet initiatives, the Commission enhanced its role in fostering collaboration and the development of networks at the European level. There is an underlying neo-functionalist integrationist approach to the ERA initiative with an entrepreneurial Commission engaging in a process of integration through the coordination of national/regional programmes and the stimulation of transnational networks, with the aim of creating a European dimension in research and technology policy that slowly, but surely, shifts power away from the member states. This view is supported by Edler *et al.* (2003: 21) who note that 'from the perspective of governance theory, the structural integration of R&D and innovation policy in a European Research

Area would enlarge the competencies and the room to manoeuvre on the EU level at the expense of the nation state.'

The central problem for the European Commission was that the instruments they had introduced were not having the desired effect of widening participation in research and technology policy, but were in fact reducing the number of stakeholders involved. These instruments were formed around short-term, small to-medium-scale FP projects, and therefore, brought together small groups of stakeholders with shared interests around single issues. As a result, these instruments were increasingly reflecting the models outlined in the academic debate relating to closed and exclusive policy and epistemic communities, as they were dominated by the same actors, mainly representing the industry and research community, as Figure 5.3 above indicates. Furthermore, these instruments were only designed for the creation and implementation of predefined FP projects and made no contribution to knowledge production or policy formulation. The Commission required a mechanism that could simultaneously engage the widest possible number of stakeholders, particularly industry, but also provide knowledge and expertise to legitimise policy proposals – European Technology Platforms were developed as the solution.

European Technology Platforms – Development of the Concept and Key Aims

The European Technology Platforms initiative had its roots in the Task Forces concept introduced by Edith Cresson, the former Commissioner for Research, during the mid-1990s (Chapter 4). Task Forces were themselves an idea taken from the Jacques Delors 1993 White Paper on *Growth, Competiveness and Unemployment*. The Delors White Paper argued that research and innovation were vital in helping Europe escape recession and establishing a foundation for a knowledge-based economy. He emphasised that what had prevented Europe from taking this step was a failure to invest in turning scientific breakthroughs into commercial success (COM 1993). Delors, in reviving the Community Method, proposed the idea of creating Task Forces to bring together stakeholders from industry, research, public authorities and user groups to define research priorities in their respective policy areas, identify obstacles to innovation, coordinate research efforts and increase stakeholder involvement, especially industry, in European programmes. Eventually introduced under Cresson,

Task Forces, with their focus on industry and innovation and bringing together a wide range of stakeholders, reflected a Commission move towards developing deliberative forums and were to be the forerunner to the concept of industry-led ETPs.

As many Commission officials pointed out during interviews, the concept of European Technology Platforms was the brain child of the former Commissioner for Research, Phillippe Busquin (Interview 2008ii; Interview 2008xx). Busquin had been involved in the formulation of a new Advisory Council for Aeronautics Research in Europe (ACARE). Formed in 2001, ACARE brought together representatives from the Commission and member states and key stakeholders from manufacturing industry, airlines, airports, service providers, regulators, research and academia to commonly agree a Vision Document and Strategic Research Agenda that defined and outlined research priorities in the sphere of aeronautics for the next 20 years. In the same year the European Rail Research Advisory Council (ERRAC) was established in the same vein with the aim of revitalising Europe's rail sector by fostering increased innovation, coordination of research efforts and greater collaboration between stakeholders. ACARE and ERRAC are now regarded as the first European Technology Platforms and provided Busquin with a blue print for the ETP model that he was to develop and introduce (Interview 2008xx; Interview 2008xxii).

The concept of Technology Platforms was first introduced in December 2002 in the Commission Communication *Industrial Policy in an Enlarged Europe*. The Communication did not define what technology platforms were and how they would operate, but outlined the potential role they would play in European research and technology policy:

> 'Technological platforms could be considered to foster market places
> for cooperation among stakeholders and work out a long-term
> strategic plan for R&D for specific technologies involving major
> economic and societal challenges, such as the advent of hydrogen as a
> new technology. They would ensure synergy among public authorities,
> users, regulators, industry, consumers and poles of excellence viewed
> as places where basic research and technology transfer are closely
> linked.' (COM 2002a: 19)

From this early description of technology platforms, it was immediately clear that they represented something different to the funding instruments introduced by the Commission in FP6. They were designed to increase cooperation among stakeholders and provide a framework for sharing knowledge and networking. However, technology platforms were not going to be formed around small-scale European projects addressing narrow research driven problems, but to represent whole policy spheres vital to European competiveness and addressing important societal problems. Furthermore, unlike the FP6 instruments that brought together small groups of stakeholders with similar interests, ETP would bring together a wide range of stakeholders, right along the innovation continuum, with the aim of ensuring the relevance of research, both in commercial and societal terms.

However, what really distinguished technology platforms from the FP6 instruments, is that they were tasked with developing a European vision and strategic plan outlining policy and resource priorities. In other words, ETPs were not only going to play an important part in policy implementation, but, more importantly, they were going to be involved in policy formulation and design. Technology platforms were designed to provide the Commission with up-to-date knowledge and expertise on which to base their policy proposals. They were a vital tool in developing evidence-based policy analysis, supported by stakeholder consensus, aimed at shaping member state preference. They represented a good example of how the Commission uses knowledge to legitimise policy.

During 2004, the Commission participated in over 60 meetings, seminars and conferences involving industry, member states authorities, research institutes and universities during which the overall concept and rationale of ETPs was discussed and finalised (COM 2005a: 4). The ETP concept was formally introduced in the September 2004 Commission document *Technology Platforms: From Definition to Implementation of a Common Research Agenda*. This document identifies the overall aim of ETPs as 'defining a coherent and unified approach to tackling major, economic, technological or societal challenges of vital importance for Europe's future competitiveness and economic growth.' (COM 2004b: 15) This was to be achieved by 'uniting stakeholders around a common vision and approach for the development of the technologies

concerned, with specific focus on the definition of a Strategic Research Agenda and the mobilisation of the necessary critical mass of research and innovation.' (COM 2004b: 9). The Commission proposal outlined the key aims of ETPs:

- Support the development of key technologies that address the major economic, technological and societal challenges Europe faces;

- Support the objective of increasing European research and private investment;

- Increase European competitiveness by bringing research in line with industry needs;

- Increasing links between research and industry;

- Reduce fragmentation between, national, regional and European programmes through networking and sharing knowledge. (COM 2004b: 9-12)

As can be seen from the above, one of the central aims behind the creation of ETPs was to increase the role of industry at the European level. Despite continuous efforts by the Commission to increase industrial participation in FP programmes through the development initiatives such as STREPs, IPs and special SME instruments that were more focused on technical innovation than basic research, there was a declining trend in industrial participation in the Framework Programme (FP). While a small number of large industries have enjoyed the fruits of the FP, generally in areas such as Information Society Technologies (IST), Nanotechnology and nanosciences, knowledge-based multi-functional materials and new products, processes and devices (NMP) and Aerospace (areas that had a strong industrial involvement since the Davignon initiatives during the 1980s), the declining role of industry has continued steadily from FP4, through FP5 and FP6 (COM 2009a: 22). As can be seen from Figure 5.3, the Framework Programmes have become the preserve of university and research institutes mainly because of the pre-competitive nature of European research programmes and the fact that industry, in particular SMEs, do not have the resources, to get involved in a bureaucratic and time-consuming application process. The central

role allocated to industry in ETPs is another attempt by the Commission to redress this imbalance.

The primary role of industry was clearly stipulated in the first official Commission definition of the concept of ETPs introduced in: *Technology Platforms: First Status Report* (COM 2005a). The report described ETPs as follows:

> "Stakeholders, led by industry, getting together to define a Strategic Research Agenda on a number of strategically important issues with the high societal relevance where achieving Europe's future growth, competitiveness and sustainability objectives is dependent upon major research and technological advances in the medium to long term" (COM 2005a: 3).

From the outset, the Commission clearly identified a central role for industry in the work of ETPs; they were not just to include industry representatives, but were to be led and chaired by industry. From the Davignon initiatives during the late 1970s onwards, the Commission has come to recognise the significant role large industry has played in helping to expand the European dimension in the area of research and technology policy. Indeed, the role of industry has been essential in forming a critical mass of influential support for European collaboration capable of putting pressure on national governments to support increased European investment in this policy area. Equally important, was the recognition by the Commission of the role of industry in commercialising research, overcoming the innovation gap and increasing their own investment in research and technology policy. One of the significant features of American and Japanese investment as a percentage of GDP is the substantial role of the private sector in this process; this is something the Commission would like to replicate in EU spending.

On a practical level, ETPs provide the Commission with an effective and efficient mechanism for gathering knowledge and stakeholder opinion. Up until FP6, the Commission had consulted the views and opinions of expert stakeholders in preparation of the Framework Programme. However, this had been mainly carried out through a well established internal process involving a web of committees and

advisory groups, many of which had become dominated by the same core group of actors from industry, research and academia. As a result, the research and technology policymaking process had become closed and exclusive and dominated by the policy communities described by Richardson and Jordan (1979) and Marsh and Rhodes (1992).

In response to this, the Commission made efforts to increase openness and transparency in policymaking. During the preparation of FP6, the Commission introduced an 'on-line' expression of interest stage where all interested stakeholders could submit ideas for policy priorities. The consultation was met with a positive response, 11,700 expressions of interest were received (COM 2009: 13). While a fruitful source of information, the Commission was overwhelmed and lacked the human resources to deal effectively with such a large response. In addition, there was considerable duplication in the responses and it was concluded that this was a time-consuming and inefficient way of gathering information. This method of communication was abandoned in relation to stakeholder consultation in the preparation of FP7 (Interview 2008v; Interview 2008xvi). The establishment of ETPs provided the solution; it simply made more sense to bring stakeholders together and to task them with identifying a Strategic Research Agenda (SRA) upon which they were all agreed with regards technologies directly relevant to Europe's needs. For the Commission, it overcame the problem of embarking upon the kind of time-consuming and inefficient consultation process that had overwhelmed FP6. In contrast, the SRAs prepared by ETPs provided the Commission with clear, coherent and concise information on the key research priorities based on stakeholder consensus. ETPs had the advantage of reducing fragmentation and duplication of consultation on research priorities and, furthermore, provided an important source of knowledge and stakeholder legitimacy for policy priorities outlined in the Framework Programme.

The development of ETPs reflects the growing effort by the European Commission to increase stakeholder involvement in the formulation of European policy. By bringing together a wide range of stakeholders within ETPs and gaining their views and input, this increases the openness and transparency of the policymaking process and has the benefit of strengthening the quality of the policy output (Mulder

et al 2006: 143). The European Commission is Treaty-bound to consult a wide range of stakeholders and opinions in the formulation of policy (Amsterdam Treaty Protocol No 7). Because the Commission lacks electoral legitimacy for its policy initiatives, it has to place considerable emphasis on knowledge-driven, evidence-based policy analysis involving wide-ranging stakeholder consultation. Its source of legitimacy is, therefore, knowledge, which places considerable pressure on ensuring that the analysis is comprehensive and that as many key stakeholders are consulted as is possible, and the process is carried out in an open and transparent way. This approach was outlined in the Commission's White Paper, published in 2001, on European Governance which emphasised the need for greater stakeholder involvement in policymaking through wider consultation. This White Paper was a response to growing concerns about the democratic deficit in the EU model of governance. These concerns were particularly relevant to highly technical and specialist areas such as research and technology (COM 2001a; also see 2002b).

For the Commission, widespread stakeholder participation is regarded as a vital means of tackling the perceived democratic deficit in the EU. The 2001 White Paper proposed 'opening up the policymaking process to get more people and organisations involved in shaping and delivering EU policy'. It pointed out that 'legitimacy today depends on involvement and participation…this means that the linear model of dispensing policies from above must be replaced by a virtuous circle, based on feedback, networks and involvement from policy creation to implementation at all levels.' (COM 2001a: 11) Furthermore, the Commission recognises the importance of expert knowledge in policymaking as a source of legitimacy through high quality evidence based policy, noting that 'it is crucial that policy choices are based on the best available knowledge.' (COM 2002c:3; also see 2002b) The Commission's commitment to increasing openness and transparency and knowledge-based policy is reflected in their proposals for ETPs. ETPs provide the Commission with both the expertise and the critical mass of support with which to formulate research and technology policy and provide direction on the commitment of resources in relation to Framework Programmes. This makes it very difficult for member states to challenge proposals presented by the Commission in this area.

The significance of ETPs is that they expand the Community Method of policymaking through greater use of deliberation forums. They represent an attempt by the Commission to institutionalise the input of knowledge, ideas and stakeholder participation in the formulation of policy. This draws a link to Monnet and his view that through institutionalising methods and practices of policymaking, stakeholders become accustomed to certain ways of doing things (Monnet 1978: 384). Indeed, it can be argued that through informal institutionalisation, the Commission is trying to develop a European mentality amongst stakeholders, including member states representatives, when it comes to establishing policy in the area of research and technology policy. The need to reach a consensus through the formulation of a SRA, forces stakeholders to think in broader European terms in the knowledge that self-interest will be rooted out through the deliberative process. In doing so, a European mentality is created which will help the ERA become a reality. Indeed, it is clear that through the development of ETPs the Commission have developed a framework that simultaneously helps overcome several problems and enhances the European dimension. This explains why the Commission has played such a central role in their development and design.

The Role of the Commission in the Formulation of ETPs

The European Commission has played a central role in the formulation of European Technology Platforms. While the literature they have published may refer to a 'bottom-up' approach, the reality is they would not have come about without Commission direction and financial support (Interview 2008vii). This was confirmed by one Commission official who pointed out that 'without the European Commission there would be no European Technology Platforms.' (Interview 2008viii) What distinguishes ETPs from other actor-based models is that they have not emerged through natural stakeholder interaction in the way epistemic community and advocacy coalition would emerge. The formation of ETPs was directly influenced by the Commission through a policy initiative and financial support from the framework programme (COM 2004b).

The central role of the Commission in their development supports one of the main arguments within academic approaches that emphasise the role of institutions in

facilitating and shaping stakeholder involvement in policymaking (new institutionalism). The Commission played an integral part in the formulation of ETPs and an instrumental role in getting this initiative up and running. In the Commission's 2004 publication *Technology Platforms: From Definition to Implementation of a Common Research Agenda* it points out that, 'the first stage in launching a technology platform is to bring all the key stakeholders together. Whilst industry must play a leading and initiating role, the drive of the Commission, in harness with the industrial commitment, has often proven instrumental, especially during the start up phase.' (COM 2004b: 12)

The Commission's role in the establishment of ETPs and the encouragement of stakeholder involvement has been particularly entrepreneurial. The Commission claims that it 'has no unique decisional role in respect of whether or not to set up a technology platform. Rather, it is for all the interested stakeholders, with the high involvement of the main industries concerned, to decide whether or not to go ahead.' (COM 2005a: 4). It can, however, influence the process both in terms of encouragement and funding in support of the setting up costs. Furthermore, the Commission suggested and invited stakeholders to set up platforms in a number of areas they thought particularly important in relation to Europe's future competitiveness (Interview 2008xxxiv; Interview 2008xxxv). There is no question that the Commission's intellectual and financial support was a key factor in the establishment of ETPs. Once the process was up and running, however, there was evidence that certain stakeholders recognised the significance of this development and made their own overtures to the Commission about the establishment of an ETP in their area of interest. This distinction is usually reflected in whether they received financial support for their setting up costs, which is outlined in the Table 5.2 overleaf.

Table 5.2: Full List of ETPs indicating Commission financial support			Commission Funding	
The HFP and IMI ETPs have now become JTIs (see chapter 6).				
Name	Acronym	Launch Date	FP6	FP7
Advisory Council for Aeronautics Research in Europe	ACARE	Jun-01		
European Rail Research Advisory Council	ERRAC	Sep-01	✓	✓
European Road Transport Research Advisory Council	ERTRAC	Jun-03	✓	✓
European Steel Technology Platform	ESTEP	Mar-04		
Innovative Medicines Initiative*	IMI	May-04	✓	
European Nanoelectronics Initiative Advisory Council	ENIAC	Jun-04	✓	
Plants for the Future	EPSO	Jun-04	✓	
Sustainable Chemistry	SusChem	Jun-04	✓	
Water Supply and Sanitation Technology Platform	WSSTP	Jun-04	✓	
Advanced Research and Technology for Embedded Intelligence and Systems	ARTEMIS	Jun-04	✓	
The European Construction Technology Platform	ECTP	Jul-04	✓	
European Photovoltaics Technology Platform	Photovoltaics	Sep-04	✓	✓
European Space Technology Platform	ESTP	Sep-04		
Global Animal Health	GAH	Dec-04	✓	
Future Manufacturing Technologies	MANUFUTURE	Dec-04	✓	✓
Future Textiles and Clothing	FTC	Dec-04		
Waterborne TP	Waterborne	Jan-05	✓	✓
European Technology Platform for the Electricity Networks for the Future	SmartGrids	Jan-05	✓	✓
Forest Based Sector Technology Platform	FTP	Feb-05		
Hydrogen and Fuel Cell Platform*	HFP	Mar-05	✓	✓
Mobile and Wireless Communications	eMobility	Mar-05	✓	✓
European Technology Platform on Sustainable Mineral Development	ETP SMR	Mar-05		
European Technology Platform on Industrial Safety	ETPIS	Jun-05		
Networked and Electronic Media	NEM	Jun-05		✓
Food for Life	Food	Jul-05	✓	
Nanotechnologies for Medical Applications	NanoMedicine	Sep-05		✓
Networked European Software and Services Initiative	NESSI	Sep-05	✓	✓
European Robotics Platform	EUROP	Oct-05	✓	
Photonics for the 21st Century	Photonics21	Dec-05		✓
Zero Emission Fossil Fuel Power Plants	ZEP	Dec-05		✓
Integral Satcom Initiative	ISI	Feb-06		✓
Farm Animal and Breeding ETP	FABRE	Mar-06	✓	
European Biofuels Technology Platform	EBTP	May-06	✓	✓
Advanced Engineering Materials and Technologies	EuMaT	Jun-06		
European Platform on Smart Systems Integration	EPoSS	Jul-06		✓
European Technology Platform for Wind Energy	TPWind	Sep-06	✓	
Sustainable Nuclear Technology Platform	SNETP	Sep-07		
Renewable Heating and Cooling	RHC	Sep-10		

The decision about which technology platforms were funded was largely determined by whether the Commission allocated part of a given work programme for FP6 to the establishment of an ETP. This clearly reflected the Commission's own priorities and the tendency to fund areas which were of contemporary significance in relation to European competitiveness or societal requirements; for example, climate change, renewable energy, nanoscience and bioscience. In addition, it was noted during that interviews that certain ETPs have also received national funding from governments in areas of strategic national importance (Interview 2008xlii; Interview 2008xlvi). Those ETPs that did not receive funding in FP6 generally received funding in FP7. Those that received no funding from either FP6 or FP7 were either ETPs that involved a number of large and wealthy industry backers such as ACARE; those such as the Steel ETP that receives funds from an alternative source such the European Fund for Coal and Steel (EFCS); or ETPs in areas such as Industrial Safety and Textiles that were not topically relevant to the Commission (Interview 2008xvii; Interview 2008xiv).

In the *First Status Report on ETPs* the Commission thought it necessary to clearly define the nature and character of its role in relation to ETPs:

- The Commission is not the 'owner' of technology platforms, nor is it directing the way in which they are undertaking their activities.
- The Commission is however encouraging this bottom-up, industry-led approach to defining medium to long-term research needs through:
  o Its active participation as an observer in many of the platforms;
  o Playing a guiding role where necessary;
  o Proving limited Community Financial support for operational entities (for example a Secretariat to some of the platforms where their objectives and activities correspond with the thematic areas of the current 6th Framework Programme (FP6);
  o Maintaining the Community's sponsoring role through the continued funding, where appropriate, of collaborative research projects in many of the areas concerned.

- Whilst not bound by the views of technology platforms, the Commission services are closely co-ordinating their activities in this area, monitoring developments on an ongoing basis and, where appropriate, using their deliverables in the course of developing research policy. (2005a: 5).

As can be seen above, the Commission has been very careful in the language used to define its role in relation and implementation of ETPs. Commission Officials interviewed were keen to stress the Commission's role in the process has been that of an observer and to provide guidance, where necessary, but they have played no active part in the formulation of ETP SRAs (Interviews 2008v; Interview 2998ix). The Commission has been equally keen to stress that they are not bound by the priorities and agendas outlined in the SRAs:

'Whilst the Commission services are providing various measures to support platforms, it is important to note that the Commission is not in any way bound by the views, results or recommendations arising from the activities of any of the technology platforms...Equally, it should be made clear that the setting up of a technology platform in a given field is by no means a pre-condition for inclusion of support for that field within the FP VII.' (COM 2004b: 12)

It is vital for the Commission to be seen to be maintaining an impartial and neutral role in ETPs, in order to prevent accusations that they have been formulated merely to be a tool of the Commission and rubber stamp their policies. Furthermore, ETP membership provided stakeholders with no guarantee of FP funding; ETPs will 'be subject to the normal rules and procedures of the Seventh Framework Programme, including submission and evaluation of proposals in response to open calls.' (COM 2005b: 9) The Commission has explicitly stated that ETP involvement does not necessary guarantee an influence over FP content and access to funds; however, it was clear through interviews with ETP members that this did not inhibit their participation. This was reflected in the reasons given for their participation in the process; including the expectation of improving their contacts with the Commission and being able to

better position themselves in terms of improving their access to funding regimes (Interviews 2008).

One of the most important aspects of ETPs was the Commission decision that they had to be led by industry. This reflected a desire to ensure that the activities would be relevant to Europe's competitiveness and societal needs and not be driven by researchers and technologists. Furthermore, it was aligned with the approach adopted by Davignon in the formation of the Round Table, made up of the Heads of Europe's largest industries. This serves to confirm the Commission's view that the role and support of industry is crucial in the development of European research and technology policy. Furthermore, with the support of industry and other key stakeholders additional weight is given to Commission policy proposals aimed at shaping member state preference. It also reflected the Commission's desire to reverse the declining involvement of industry in European research and technology programmes which had been a source of concern for the Commission. The involvement of industry is particularly important in overcoming the innovation gap and ensuring research is commercialised.

Following the Davignon approach used to advance European research and technology policy during the late 1970s and early 1980s, the first step the Commission adopted in the formulation of ETPs was to bring together Europe's leading industries in various policy areas key to Europe's future competitiveness and growth. The Commission went to great lengths to ensure that the top level management were there to represent Europe's leading industries as it was 'essential that European Technology Platforms have strong leadership with the credibility to bring together and mobilise stakeholders.' (COM 2005b: 6) This did not prove to be difficult, as there was widespread enthusiasm for the ETP concept. As several ETP members pointed out, stakeholders were enthusiastic about the ETP project as they recognised that this was the most effective way to influence policymaking; there was greater potential to influence the Commission as a sector than there was as individual companies and stakeholders (Various Interviews 2008). Within many European research and technology sectors there already existed a number of closed networks dominated by key European industries, particularly those policy sectors with a long history of

European collaboration. Indeed, it comes as no surprise that the first ETPs were formulated in areas such as Aeronautics, Rail Transport, Road Transport, Steel and Mobile and Network Communications, that had a strong industrial base with a long history of European involvement, both prior to, during, and after the Davignon years. Indeed, many ETPs have been built upon these already existing networks; for example, the Innovative Medicines ETP is coordinated by the Federation of Pharmaceutical Industries and Associations (EFPIA).

The first step in the formulation of ETPs was for the Commission to bring together the heads of leading industries within a High-level Grouping in which they were tasked with developing a 'Vision Document' that identified the key research and technology priorities in their specific field over a 10 to 20 years period and to design a suitable structure for stakeholder involvement in the ETP (COM 2004b: 12). Unquestionably, Europe's leading industries had a large role to play in the formulation of ETPs. Through the Vision Document they were able to define key policy priorities that would come to form the basis of the consultation process, involving all other ETP stakeholders, for the development of a Strategic Research Agenda. However, a prominent role for leading industry in the set-up of ETPs is understandable given that increasing industrial involvement in European programmes was a central aim of the ETP project. In addition, without the support of Europe's largest companies there was little chance of the ETPs getting off the ground, as the Commission was reliant on the support of large industry for the key resources of time and money to help launch the initiative.

The vitally important role of industry in the development and maintenance of ETPs potentially exposes them to the threat of technocracy and domination by one sector. The Commission has designed ETPs in order to widen participation in an area that had become dominated by a small number of stakeholders. The Commission needs to balance the need for a central role for industry whilst ensuring the widest possible participation to prevent ETPs becoming closed shops and the property and mouthpiece of industry. This is the reason why the Commission has gone to such great lengths to provide a clear code of openness and transparency for ETPs.

Stakeholder Involvement in European Technology Platforms - Ensuring Openness and Transparency

Chapter 3 outlined the importance of the Community Method in ensuring wide-ranging stakeholder involvement in the European policy dimension as a means of overcoming the critique of the EU as technocratic in nature and character. The Commission is particularly sensitive to this critique and growing concerns about a democratic deficit in the way policy is developed and implemented. This critique explains why the Commission places so much importance on ensuring openness and transparency in relation to the establishment of expert groups to support policy formulation. It is particularly important in the area of research and technology policy because of the highly sophisticated nature of the activities involved and the fact that if a policy area is open, it is vulnerable to rule by experts (technocracy). Interviews with Commission officials confirmed their sensitivity about this matter and why they have gone to such great lengths to publish working documents advising on the governance of ETPs (Interview 2008i; Interview 2008xiv). It is also particularly important because there is a history of dominance by large industry and universities in relation to involvement in Framework Programmes. Furthermore, if ETPs were to emerge as meaningful deliberative forums then it is clearly vitally important to avoid domination by any homogeneous epistemic communities or advocacy coalition, by ensuring that membership is heterogeneous, covering a wide-range of governmental and non-governmental, societal and industrial interests.

Since FP4, there has been an overall decline in industry participation in Framework Programmes (Figure 5.3); however, there is still a small group of high profile industries, mostly multi-national companies, who are firmly entrenched in these programmes, particularly those that have been involved in FP since the Davignon initiatives were introduced. These companies have a long history of involvement, a good working relationship with the Commission and a sound understanding of the funding process. Rolls Royce has a permanent member of staff based in Brussels with a defined role to develop links with the Commission. Furthermore, they regularly second staff to the Commission; for example, a member of staff from Rolls Royce seconded to

the Commission was a leading member of the Commission team who drafted the Security Programme in FP7 (Interview 2005 viii).

Rolls Royce has a very high success rate in relation to its FP funding applications and, during the course of an interview with a consultant for this research, it was pointed out that the reasons for their high success rate was that they had good working links with other European companies in their sector. Furthermore, they were working on a number of high profile European Aeronautics initiatives and as an elite grouping they had good links with the Commission and were influential in the drafting of work programmes, and knew how to put a good application together (Interview 2005viii). It should be noted, however, that when this criticism was put to the Commission they acknowledge this was a problem they were aware of and were doing everything to counter it. They further pointed out that Aeronautics was a particularly unique area because of the major European initiatives and the need to counteract American domination of the sector. It was further added, that this was one of the reasons why the Commission was so keen to avoid this type of domination through the development of ETPs (Interview 2005viii).

While a prominent role for leading European industries, both in relation to Framework Programmes and ETPs is inevitable, and even desirable in relation to Europe's future competitiveness, it is also a source of potential tension and requires vigilance on the part of the Commission to ensure that they do not totally dominate the process to the exclusion of other groups. The Commission made this clear in its policy statement on openness and transparency. It stipulated that:

> 'European Technology Platforms must be open and avoid becoming "closed shops" of narrow industry groupings or other stakeholders lobbies. Each platform must have "clear rules of the game" that ensure openness to all relevant stakeholders of all sizes. In this regard, industrial leaders of European Technology Platforms have signed up to a voluntary code of good practice on openness and transparency *vis-a-vis* all relevant stakeholders, including notably small and medium enterprises as well as groups representing wider societal interests.' (COM 2005b: 8)

From the outset, the Commission stipulated that ETPs need to involve a wide range of stakeholders, representing actors along the whole innovation process from research idea to product launch; including industry (large, medium and small), public authorities, governmental actors, research centres, universities, regulators, financial community and other relevant societal interests (user and consumer groups) (COM 2004b). A balance between all key stakeholders that reside within a policy areas is essential for the legitimacy and credibility of the ETPs themselves and important in going some way towards meeting the criteria of the Commission's White Paper on Governance. The need to meet the latter criteria explains why the Commission has played an integral role is ensuring ETPs are inclusive to all relevant stakeholders with open and transparent operational procedures.

The degree and extent to which the Commission has been successful in ensuring wide-ranging participation in ETPs was measured as part of an independent evaluation commissioned to exam the effectiveness of ETPs. This evaluation was based on a comprehensive survey sent out to all ETP members to identify which sector they represented, their level of involvement and participation in platform activities, and their overall levels of satisfaction with what had been achieved in relation to the original goals. One of the most interesting features of the evaluation is the breakdown of statistics with regard to stakeholder involvement. The following pie chart outlines stakeholder involvement by sector.

Figure 5.4: ETPs – Sectoral Involvement
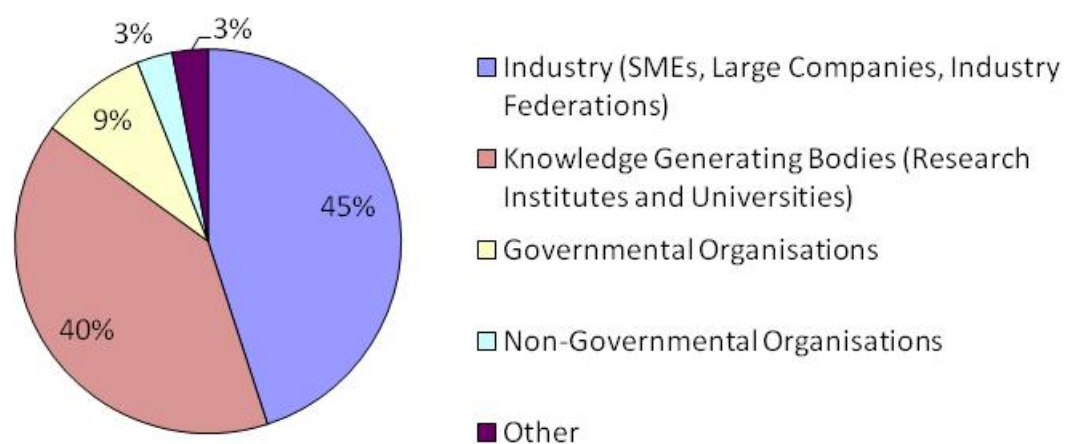
Source: COM 2008a

The results in Figure 5.4 indicate that 45% of participants are from the industrial sector. Given the focus of ETPs on competitiveness and the fact that the Commission favoured an industry-led response the result is in line with what might have been anticipated. This also reflects the close working relationship the Commission has developed with industry in the expansion of its policy competence in research and technology. The significant involvement of knowledge generating bodies (universities, research institutes) within ETPs (40%) is again not surprising given their historically high levels of involvement in FP programmes (see Figure 5.4). The smaller representation of governmental bodies (9%) can be attributable to the fact that they have other sources of contact with the Commission in relation to the development of policy in this area. For example, all member states have research specialists working through permanent programme committees that act as the liaison between the Council of Ministers/Coreper and the Commission. The member states have an internal role in the formulation of the FP and their presence within ETPs is more likely based on a desire to keep up to date on the latest technological developments than a desire to influence the process.

Figure 5.5: ETPs - Breakdown of Sectoral Involvement by Type of Organisation
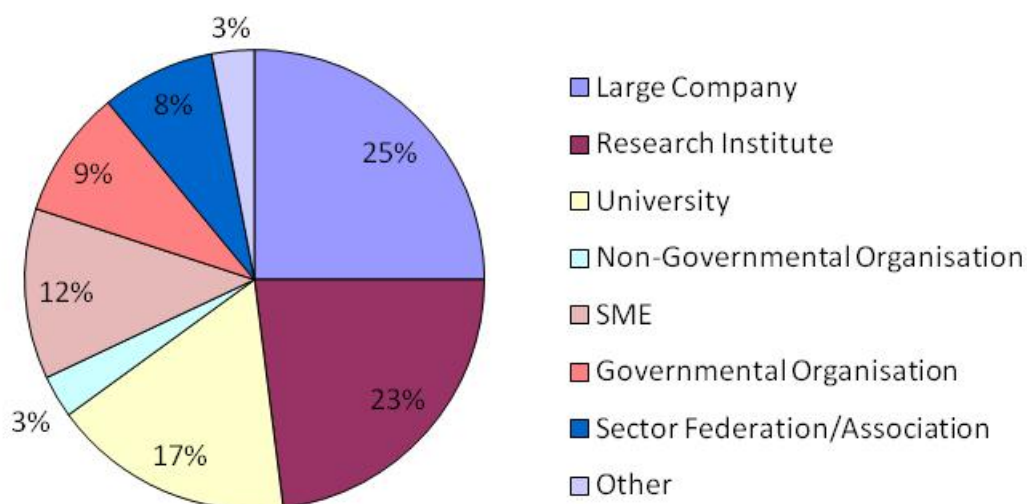
Source: COM 2008a

Figure 5.5 above shows a further breakdown of participation of ETPs and indicates that while large industry constitutes 25% of industrial involvement in ETPs, SMEs remain significantly underrepresented. The lack of involvement and underrepresentation of SMEs within European research programmes is something the Commission has repeatedly tried to remedy; for example it set up a Task Force to identify ways in which action could be taken to improve SME involvement. The underlying problem, indicated in several interviews with both the Commission and ETP representatives, is that SMEs lack the time and resources to participate in what can often be a long drawn out application process for FP funding (various Interviews 2008).

Lack of resources is also the reason behind lower levels of involvement in ETPs; they cannot afford the time and cost of participating in ETP activities. It is a particular problem because SMEs represent over 90% of companies in the industrial sector in Europe and are the main source of employment. More significantly, there is evidence emerging that in key research driven sectors, such as biotechnology, the life sciences and environmental technology, small boutique research-driven companies are emerging as leaders in their field. An increasing number of these companies are spin-outs from universities. Their involvement in ETPs is, therefore, important in informing an increasingly significant trend in high value-added technology sectors. The Commission has introduced a range of measures designed to increase SME participation; including, simplifying the application process for FP projects, ensuring a 15% SME participation rate in FP projects and earmarking 15% of the FP budget for SMEs (COM 2006d). They also encourage large industry and universities to include SMEs in their proposals. An FP consultant interview said that most universities would endeavour to include SMEs in their proposals for the purpose of improving their evaluation assessment (Interview 2010vii).

Figures 5.4 and 5.5 indicate that while there is a broad representation of sectoral groups within ETPs, some sectors are overrepresented at the expense of others. However, it is still possible to say from an analysis of the make-up of ETPs that a broad range of stakeholders are represented, to varying degrees, within them. It is the wide-ranging nature of ETP membership that distinguishes them from the closed and exclusive policy communities and makes them more diverse and heterogeneous

than the homogeneous membership of epistemic communities. In this regard, the diverse membership of advocacy coalitions is better reflected in the ETP model. Stakeholders within the actor-based groups discussed in Chapter two are linked by shared beliefs and values and are formed around narrowly defined issue areas. This is not reflected in ETPs where stakeholders are too diverse to be linked by shared values, understanding and interests. Indeed, different stakeholders bring a wide range of competing interests within the ETP forum. For example, the interests of the researchers and academia will not always reflect those of industry and society groups. ETPs are a mechanism for bringing stakeholders together, including actor-based groups, such as epistemic communities and advocacy coalitions. In this respect, ETPs represent a deliberative forum in which stakeholders are brought together to analyse and discuss competing interests as part of a process aimed at establishing a consensus around the future direction of a given technology set out in a SRA.

The evaluation also sought to establish whether stakeholders themselves believed all relevant stakeholders were represented within ETPs, the results are outlined in Figure 5.6. below.

Figure 5.6: ETPs – Relevant Stakeholder Involvement

Source: COM 2008a

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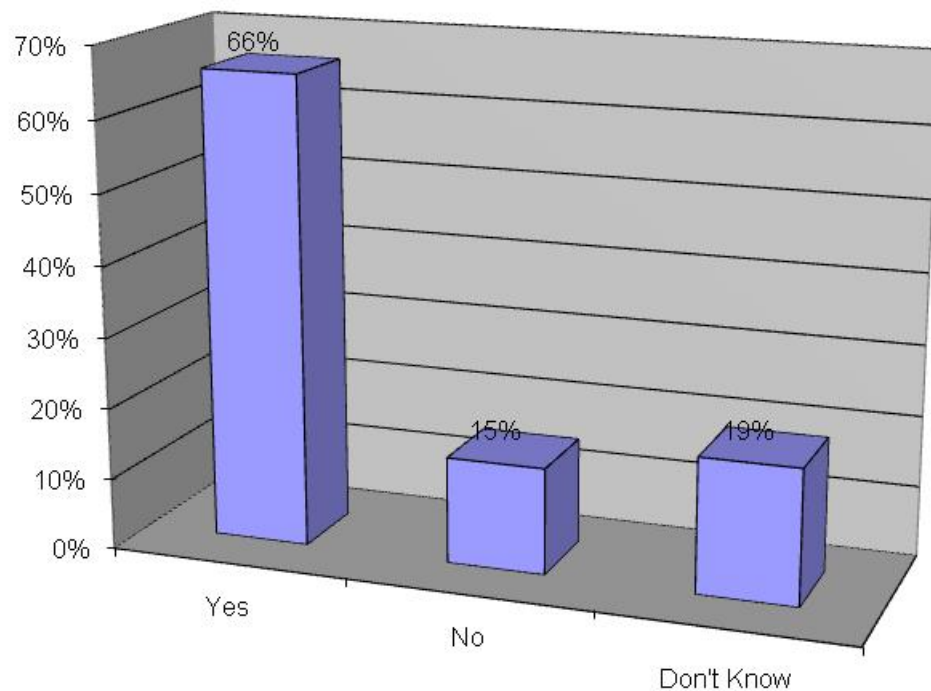
A majority of ETP members (66%) thought that all relevant stakeholders are represented within their platform (COM 2008). These statistics, however, could be seriously distorted by the fact that over 80% of representation on ETPs comes from the industrial and knowledge-driven sectors and this would inevitably weight the response in favour of a positive outcome. With regard to the 15% of respondents who are not satisfied that all key groups are represented, this could reflect the underrepresentation of SMEs, as noted above, but more worrying for ETPs is the underrepresentation of NGOs accounting for only 3% of ETP members.

The underrepresentation of NGOs is significant given that they provide a link between ETPs, society and individuals who do not have an educational grounding in research and technology, and therefore, cannot engage in the debate. As with SMEs, many NGOs will lack the time, resources and finance to become regularly involved in ETP activities, but a greater effort to involve NGOs is required if the Commission is to be genuinely seen as actively promoting its 2002 aspirations to bring science and the society closer together. If ETPs are to reflect future market needs then consumers, end users and civil society must be represented through greater NGO and societal involvement (COM 2006b; 2009c). The underrepresentation of societal groups raises concerns about the nature of representation. The underrepresentation of these groups has been recognised by the Commission, with a 2009 document stating the need for increasing their involvement, including providing them with the financial resources for greater participation (COM 2009c).

Despite the concerns outlined above, participating stakeholders appear to be satisfied that ETPs meet the openness and transparency criteria set by the Commission, as illustrated in Figure 5.7 below. Interviews with ETP members also confirmed a view that they were representative in terms of participation with some stating that they had gone to great lengths to ensuring broad representation (Various Interviews 2008). However, concerns could be raised about the statistics in Figure 5.7 because it is difficult to benchmark them in relation to stakeholders that have not participated in the process and taken part in the evaluation. If a range of stakeholders beyond ETP members had been surveyed these results might have different.

Figure 5.7: ETPs – Degree of Openness and Transparency (1=completely   disagree; 2=disagree; 3=agree; 4=completely agree)
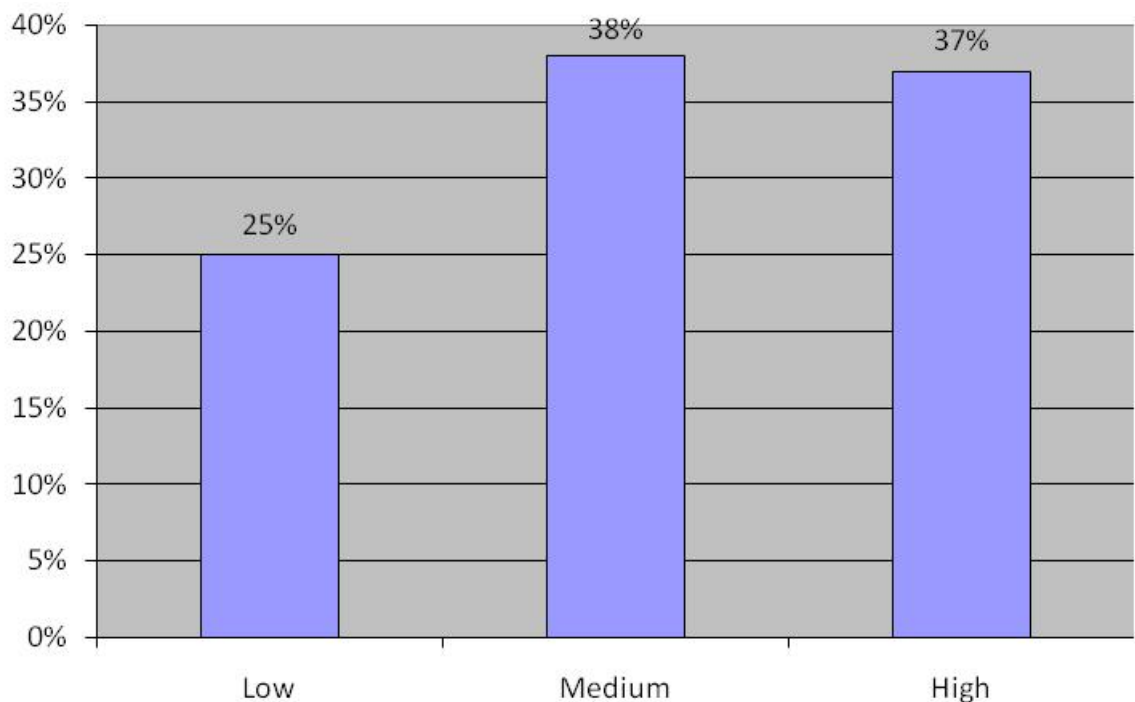

Source: COM 2008a

For the Commission, 'openness refers to the degree to which a European Technology Platform encourages and allows the participation of a broad range of stakeholders in its activities' and "transparency" as referring to the 'measures taken by European Technology Platforms to communicate openly with their target audiences, including the general public, and to provide full and up-to-date information about their current status and activities.' (COM 2006b: 3) In keeping with this need for openness and transparency, ETPs hold regular events to encourage stakeholder participation and are careful to ensure that all ETP documents are available for public consumption. This is achieved through on-line communication, public consultation, discussion forums, stakeholder meetings, conferences and the setting up of ETP and Commission websites.

There is a worry, however, that the Commission's code on openness and transparency is purely cosmetic. During interviews, it was openly acknowledged that in some ETPs membership was predicated on the knowledge and expertise they could bring to the deliberation and that some groups were denied access on the grounds

that they offered little 'added value' to what was already available (Interview 2008xxvii; Interview 2008xxxvii; Interview 2008xlvi). This is a cause for some concern both in terms of equality of access and the fact it raises doubts about the Commission's code of openness and transparency. Furthermore, it significantly increases the risk of ETPs becoming closed shops and exclusive policy communities. The Commission has been taking an active lead in ensuring that its code of openness is implemented in full to ensure equality of access by ensuring that any group that thinks it has a contribution to make to the process has the right of access and is able to participate in ETP activities. The evaluation made little attempt to analyse whether any groups have had difficulty in gaining access to ETPs.

With reference to the active involvement of stakeholders in ETPs, Figure 5.8 below indicates a high level of enthusiasm with 75% of respondents indicating a medium to high level involvement in ETP activities:

Figure 5.8: ETPs - Level of Involvement in ETP

Source: COM 2008a

Where actor-based models note that stakeholders are brought together by shared understandings and interests, usually around a single issue, ETP members are brought together out of practical needs and motivated by self-interests and personal gains. Indeed, interviews with ETP members indicated the main reasons for involvement are (Various Interviews with ETP members 2008):

- To influence the FP agenda;

- Meet potential project partners;

- Form networks;

- Share information;

- Receive greater funding from the FP.

The Commission has been keen to stress that high levels of stakeholder involvement are vital to the success and legitimacy of ETPs. One ETP member pointed out that if you are not actively involved in ETP activities then you cannot complain about ETP outputs and cannot expect to receive the benefits that ETP membership can bring (Interview 2008xli). This would appear to be a reasonable point of view, but as noted above, the potential for high levels of involvement in ETP activities is restricted to those with the resources and expert knowledge to be able to participate. The Commission can do little about the latter, as in highly complex and technical areas knowledge is a prerequisite to participate in the debate. However, the Commission has been actively seeking measures to be able to increase the levels of involvement of groups that lack the resources to be able to contribute effectively and consistently.

ETPs have been designed by the Commission to involve a wide-range of key stakeholders within a policy sector. In this regard, ETPs are reflected more accurately by the broad and inclusive definition offered by advocacy coalition and deliberative forum approaches than the narrow and restrictive definition of membership suggested by the epistemic community approach. Indeed, ETPs are more heterogeneous than the homogeneous groups as identified by Haas (P. Haas 1992). Where ETPs are similar to epistemic communities is that it is the knowledge and expertise they offer that provides them with the potential to influence policy change. However, what

distinguishes them from epistemic communities is that this knowledge and expertise is inextricably linked to stakeholder interests and not based on a scientific and technocratic methodology; in this respect they more closely resemble advocacy coalitions. Indeed, it is the fact that ETPs provide a framework for a wide range of stakeholders with competing knowledge to debate and discuss issues that provides the clearest distinguishing feature between the actor-based models and provides the clearest link with the concept of deliberative forums.

ETPs are knowledge-generating bodies designed to provide the Commission with information and advice. While predicating an open and inclusive membership policy, membership of ETPs is predicated on a high level of knowledge and expertise. As a number of ETP representatives pointed out, members must bring added value to the platform in the shape of knowledge and expertise they offer (Interviews 2008). Indeed, ETP SRAs are highly technical documents; therefore, knowledge and expertise are a pre-requisite for an involvement in the formulation of an SRA and an understanding of the information within. Those without the necessary knowledge and expertise will have difficulty accessing the process. This is a significant critique of ETPs if they emerge as largely driven by the interests of industry and the research community, since this raises the potential for them to become homogenous epistemic communities, policy communities or advocacy coalitions. This would clearly be a major source of concern for the Commission and would lay it open to the claim that it is an emerging technocracy. However, it is the deliberative structure on which ETPs are designed and establish policy that should act as a mechanism for preventing the domination of one group.

The Structure of European Technology Platforms

During the formulation of ETPs, the Commission stated that 'Platforms must have the freedom to determine the most appropriate organisational structure. A "one size fits all' approach is not appropriate.' (COM 2005b: 8) However, what has emerged is a universal model for the structure and organisation of ETPs. ETPs were allowed to construct their own institutional structure, but within Commission parameters. These parameters were the Commission requirements that ETPs were to be open and inclusive with widespread stakeholder participation in the development of platform

policy positions, in order to ensure they do not become industry-dominated closed shops. The institutional structure established by the first ETPs to emerge was closely followed and developed by newly emerging platforms. The model on which all ETPs have been designed can be seen in Figure 5.9 below:

Figure 5.9: Structure of ETPs
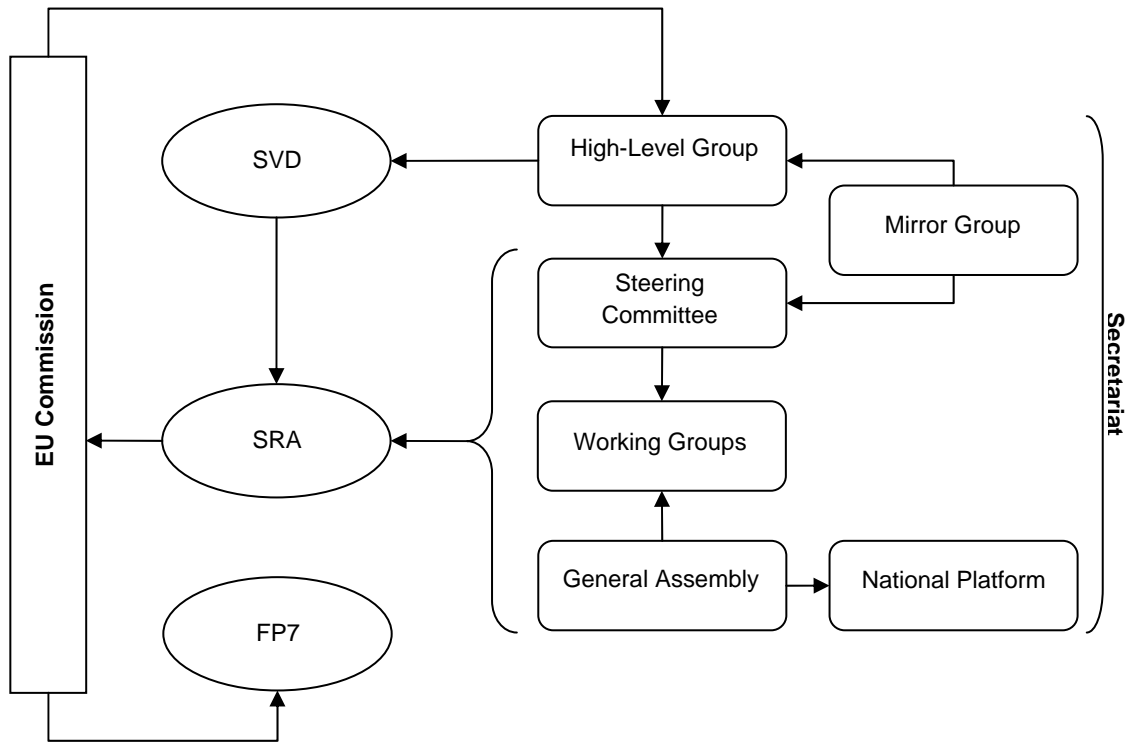
The role and function of various key bodies within an ETP remain the same, but the names often differ from ETP to ETP. Based on an analysis of the ETP literature it is possible to identify the key acting bodies within an ETP and their role and function (COM 2004b; COM 2005a; COM 2005b; COM 2006a; COM 2007b):

- **High-Level Group:** This is composed of the top executives from Europe's leading industries brought together by the Commission. They are responsible for the development of a 'Vision Document' that has three main aims; one, explain the strategic importance of forming an ETP; two, explain why European level action is required in the policy sector; and finally, identify the medium to long-term objectives of the platform (COM 2005a). The High-Level Group is also responsible for developing the structure of the Platform,

endorsing ETP policy initiatives and providing investment for ETP activities.

- **Steering Committee (also known as Advisory Council):** This is made up of a small number of representatives from the High-Level Group and other key ETP stakeholder groups; in many cases, member states and the Commission will also be represented. The main function of the Steering Committee/Advisory Council is to formulate, support and guide the working groups in the formulation of the SRA. The membership of the Steering Committee is rotated.

- **Working Groups:** They are established by the Steering Committee to help with the development of the Strategic Research Agenda. Working groups are organised around the main thematic areas of the SRA and are composed of experts made up of each of the key stakeholder groups represented in the ETP (membership rotated). Working Groups contribute the relevant scientific and technical knowledge required for the formulation of the SRA and synthesise information provided by stakeholders in the General Assembly to ensure all views are represented in the SRA.

- **General Assembly (also known as Stakeholder Forum):** This is a consultative forum in which all ETP stakeholders are represented and can participate. The General Assembly is consulted and offers its opinion on the final draft of the SRA to ensure that all ETP members are satisfied that their views and interests are represented in a common vision. The General Assembly also provides a forum in which stakeholders can exchange information, meet project partners and establish networks.

- **Mirror Groups:** Consists of representatives from member state governments (including accession states and associated countries). The Mirror Groups' role is to develop synergies and coordinate national programmes to reduce inefficiency and duplication of research and resources.

- **National Platforms:** In some research and technology sub-sectors platforms have been established at the national level by national stakeholders (involved at ETP level) in an effort to coordinate national research and technology policy and encourage the exchange of information between national stakeholders and government officials.

- **Secretariat:** The Secretariat provides all necessary administrative support for an ETP including organising ETP events. They are also the first point of contact for all stakeholders interested in ETP activities or becoming a member.

An interesting development, shown in Figure 5.9, is the creation of Mirror Groups and National Platforms that represent an attempt to spread the ETP policy priorities to the national level as a means of enhancing coordination between different levels of governance. As can be seen in Figure 5.9, the structure that has emerged reflects the need to balance a large and important role for industry with an open system that is inclusive of a wide range of stakeholders. The governing board and steering committee is often made up of the same members and has a central role to play within an ETP in developing the platforms and providing a structure for the debate around the formulation of the SRA. However, it is the openness of the system and the deliberative process that ETPs undergo in the formulation of the SRA, through the working groups and general assembly, that prevents the governing board becoming dominant.

The Formulation of the Strategic Research Agenda

What distinguishes ETPs from other FP arrangements and actor-based groups, is that they represent a deliberation forum that helps inform Commission decisions in relation to the policy process in research and technology and, more specifically, the work programmes in the Framework Programme. The purpose of the Strategic Research Agenda (SRA) is to inform the Commission about research and technological priorities in the medium and long-term. The SRAs complement other sources of advice and information that the Commission receives and have made significant contributions to FP7 work programmes**.** The process of developing the SRA was designed to be open

and inclusive of all ETP stakeholders with the aim of arriving at a consensus about the most effective way forward around clearly identified priorities.

Figure 5.10 (overleaf) shows the level of involvement of members in key ETP activities including the development of the SRA.

Figure 5.10: ETPs – Level of Involvement in Specific Activities (1=Never; 5=regular basis)
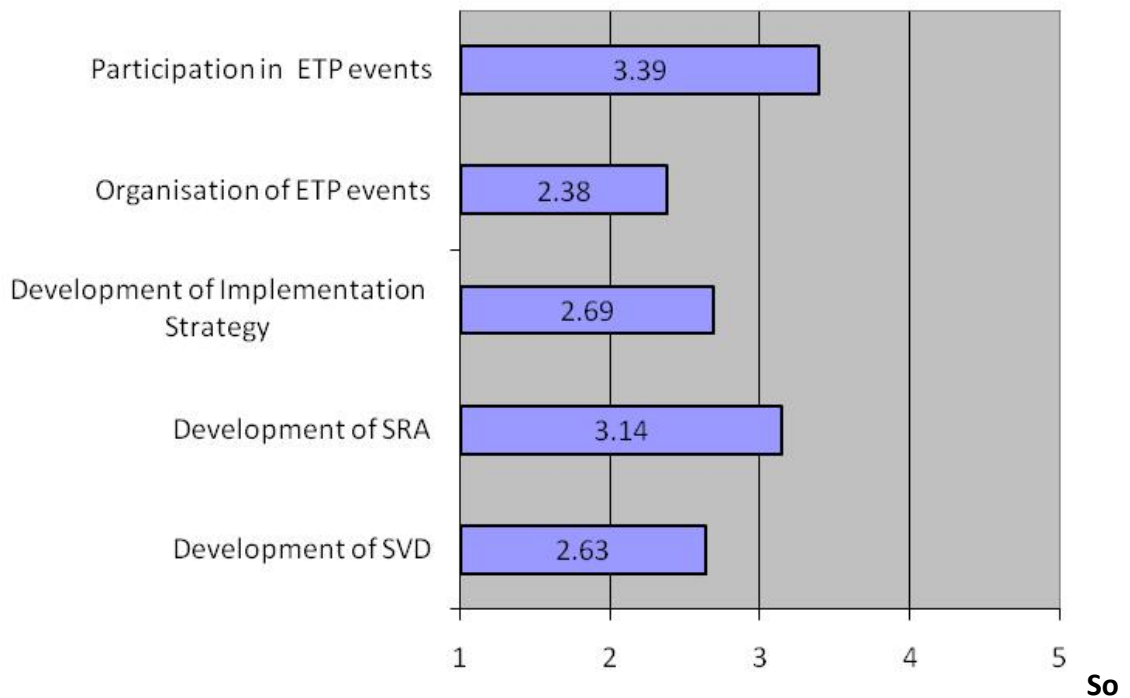
Figure 5.10 above shows that members have been significantly involved in a wide range of ETP activities. The smaller degree of involvement in the development of the SVD and Implementation Plan can be explained by the fact that responsibility for these activities lies with the Governing Board (as shown in Figure 5.9 above). The SVD forms the basis for the debate and discussion around the formulation of the SRA. The wider ETP membership contributes to the formulation of the SRA through their involvement working groups and the general assembly (as shown in Figure 5.9 above). It is the responsibility of the Governing Board and Steering Committee, supported by the Secretariat, in line with the Commission openness and transparency rules regarding ETP governance, to ensure that a broad range of members are involved in the preparation of the SRA. In addition, they were required to hold an open consultation for those members who have not been able to fully participate in any of

these activities due to resource constraints. Figure 5.10 shows that there was a good spread of involvement by members in the formulation of the SRA, with over half of them confirming they had contributed to its development. There is clearly always scope to increase stakeholder involvement, particularly in relation to the preparation of the SRA to counter balance the input of the Governing Board and Steering Committees. Indeed, widespread participation is particularly important in ensuring that no one ETP body/sectoral group dominates the process and that the SRA is reflective of a European consensus.

The Commission has gone to great lengths to ensure that the structure and policymaking procedures of ETPs is open to all stakeholders that wish to participate in order to ensure that industry does not come to dominate proceedings through the Governing Board. Industry leaders themselves recognise that it is potentially counter-productive for them to dominate the process, because their views would be open to criticism as representing a narrow self-interest, rather than a European dimension, once subjected to peer review. Furthermore, it is mistaken to assume that in the key technology areas represented by ETPs a homogeneous industrial perspective would prevail. The reality is, there is as much disagreement with regard to the direction of strategic scientific investment in industrial circles as there is in academic or research world. Furthermore, the Commission's insistence on opening up the activities of ETPs to the full glare of publicity through a transparency agenda and peer review acts as a further safeguard to the domination of any one group.

Figure 5.11 indicates high levels of satisfaction amongst ETP members that the platform and SRA represents key technological and economic challenges. This level of satisfaction would appear to corroborate the findings in Figure 5.10 regarding the level of involvement of ETP members in the development of the SRA. This suggests that ETP SRAs reflect a consensus of member interests.

Figure 5.11: ETPs - Stakeholder Satisfaction (1=completely disagree; 4=completely agree)
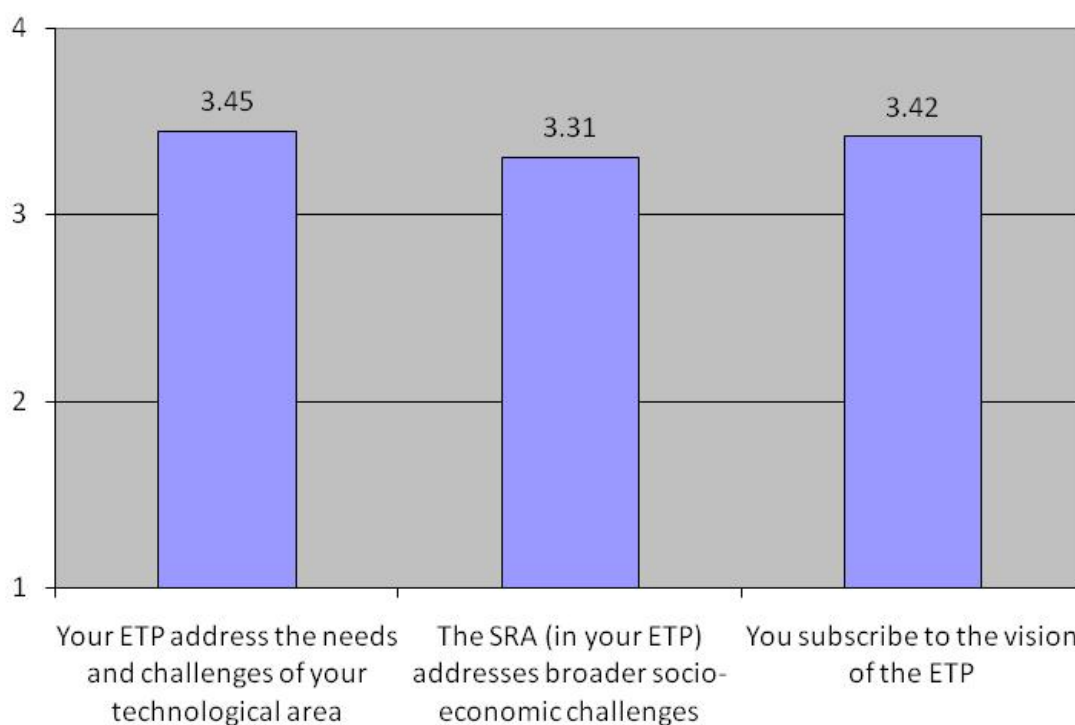
Source: COM 2008a

Moreover, Commission officials and ETP members, interviewed in the course of this research, pointed out that the issues dealt with in SRAs were so broad that it was not difficult to ensure a wide range of member interests are represented and that this explains the high levels of satisfaction with the process (Interview 2008xxxii; Interview 2008xxx). This raises questions about how deliberative these platforms actually are and whether competing ideas and interests are openly debated on the basis of reciprocal persuasion for the purpose of arriving at a European-wide consensus that is greater than the sum of the parts. This is an important point; however, the wide-range of stakeholder involvement often representing competing interests goes some way towards ensuring that discussion will take place with regard to the priorities outlined in the SRA and that no one group can dominate the process. Furthermore, there is rarely an absolute truth in relation to scientific discourse and many of the issues addressed are contentious; for example, genetic engineering and stem cell research, genetically modified crops, climate change, renewable energies. This further suggests that some debate regarding priorities is unavoidable. This lends further weight to the

argument that ETPs differ from epistemic communities, advocacy coalitions and policy communities in that the SRA represents a range of different interests and views, rather than a particular sectoral interest. If the SRA becomes dominated by any one group this would seriously undermine its credibility and its potential contribution to the framework programme policy process.

ETP SRAs are based on expert technical knowledge provided by the platform stakeholders. Indeed, as with epistemic communities and advocacy coalitions it is the knowledge and expertise that ETPs contribute that provides them with the capacity to influence the process and promote policy change. However, ETPs provide greater legitimacy than epistemic communities and advocacy coalitions, as it is not just knowledge and expertise that confer legitimacy upon ETPs, but widespread stakeholder support. Indeed, ETPs and the SRA they produce are formulated by, and represent the views of, all stakeholders within a policy sector. Both Commission officials and ETPs member interviewed were in agreement that what gives an ETP their influence is that they represent the voice not of individuals and groups, but of a whole sector; they have more influence and can exert greater pressure together than they can alone (Various Interviews 2008). On this basis, ETPs provide a dual source of legitimacy to Commission policy proposals, expert knowledge and wide-ranging stakeholder support, which reflects the importance of stakeholders in policymaking.

Conclusion

European Technology Platforms reflect a move by the Commission to establish deliberative forums as a means of strengthening the evidence-base for policy initiatives. This move towards a forum approach was initially recognised by the academic community in the 1990s. Richardson noted that: 'Commission officials are moving towards institutional structures which....bring together groups of actors in a forum be they epistemic communities, advocacy coalitions or different policy communities.' (Richardson 1996: 45-46) Since this was written, further evidence has emerged in the form of comitology committees, given definition by the Lisbon Treaty and established in highly-complex areas of regulatory policy. ETPs represent the next step forward in the use of this model. They are grounded in the Community Method aimed at ensuring wide-ranging stakeholder consultation about the future direction of

leading edge technologies. The aim is to establish an evidence–based strategic assessment for the purpose of identifying the most effective way of allocating resources.

The Commission initiative for the development of ETPs represented the need to widen stakeholder participation in policymaking and transcend a narrow funding approach by adopting a more strategic mode that was broader in scope and which looked to the future. The Commission's aim was to establish technology platforms to include key stakeholders within the sector for the purpose of informing future policy direction. Based on the Davignon approach, ETPs were designed to be informal, industry-led networks that were to bring together all relevant expert stakeholders within an agreed technology area. They were to involve a wide range of stakeholders along the research/innovation continuum; from the leading edge research community to end-users of the technology. Their overall aim was to signpost the Commission on the future direction of policy in key areas of research and technology relevant to the creation of a knowledge-based economy and the implementation of the Lisbon Agenda. They were also seen as strategic in addressing Europe's innovation gap.

What distinguished ETPs from the FP6 instruments was: firstly, they were not tasked with solving immediate research-driven problems; secondly, they were more broadly based in terms of their membership; thirdly, they were designed specifically to have a consultative role in the formulation of the future direction of research and technology policy; fourthly, the SRA was to inform the priorities of work programmes in the cooperation pillar of the FP7 programme. Their significance was that they provided the Commission with an important knowledge resource based on a key stakeholder consensus for the purpose of strengthening its policy proposals and shaping member state preference.

The premise for the ETP model was built upon the Monnet/Community Method that all governmental and non-governmental stakeholders, including member states, were involved in the process of forming policy priorities. Central to this approach is that all stakeholder interests are represented; every voice is heard and discussed, before an evidence-based consensus on research priorities is established and enshrined within a long-term strategic plan. This method is clearly encapsulated within

both the wide-ranging membership of ETPs and the process for developing the ETP's SRA. The Commission's ETP initiative not only seeks to build upon the Community Method, but aims to develop the neo-functionalist idea that a European identity would eventually develop amongst key stakeholders in support of European research and technology agenda through their active involvement and participation in ETPs.

The entrepreneurial role of the Commission in developing and endorsing the concept of ETPs lends support to one of the main criticisms of actor-based models; namely that such models do not take into account the important role that the supranational institutional architecture plays in both the development and implementation of policy. The fact that the Commission could use a constellation of circumstances to develop a principal agent role in the creation of European-wide networks is significant because it allows them to build policy proposals based on the dual legitimacy of expert knowledge and the support of a critical mass of stakeholders. It provides evidence of the way in which institutions can inform and mould actor behaviour in the policy process.

What distinguishes ETPs from actor-based models is not only the role of formal institutions, such as the Commission, in the process, but that they represent deliberative forums that embrace wide-ranging and competing sectoral and societal interests; they are a heterogeneous model rather than the more homogeneous membership of epistemic communities and advocacy coalitions. What brings the stakeholders together is not shared values and understandings, as with epistemic communities and advocacy coalitions, it is a shared interest in the policy area, but often based on competing ideas and self-interest. The role of the ETP is to provide a forum for this interaction to take place. It is essentially an umbrella under which the key stakeholders can outline their views and challenge and defend their interests. The key to the forum approach is that they bring together competing interests with the aim of establishing a consensus about the most effective way forward in relation to highly sophisticated and complex areas of policy. The ETP aims to represent the whole policy sector, not just a component part or single issue within that sector. The ETP claims to represent all stakeholders and represents the idea that working together will have a

greater impact on the policy process and shaping member state preferences than working apart.

ETPs are heterogeneous groups of stakeholders representing different groups, with often divergent interests, along the innovation continuum. This is reflected in the broad scope of ETP SRAs that are formulated through a consultation process involving all ETP stakeholders and are designed to ensure all stakeholder interests are represented. Stakeholder involvement in ETPs does not appear to be driven by shared bonds or values, but by self interest at the potential gains that can be made from involvement. Indeed, ETPs are not intellectually homogeneous, nor do they simply rely on expert knowledge. They are broadly based in terms of membership, including intellectual and non intellectual élites, and embrace conflicting opinions. They include industry, regulators, public officials, academia, researchers and venture capitalists. They start from the premise that there is no agreed perspective in relation to any given technology and their aim is to create a consensus with regard to the present and future direction of the technology. Whereas advocacy coalitions and epistemic community would have difficulty in embracing the conflicting views of climate change advocates and sceptics, ETPs would make a point of addressing the conflict with the aim of establishing a consensus about the most effective way to proceed.

The establishment of deliberative forums such as ETPs are not without their dangers and will require vigilance on the part of the Commission to ensure they do not become dominated by a particular sectoral interest, epistemic community or advocacy coalition, pushing a particular technology-driven approach; for example that they are not taken over by climate change sceptics or advocates or opponents of genetic engineering. Science is not without its controversies and the expert is not free of interests and values. Indeed, technology-driven expertise can often be to the detriment of societal interest. In relation to the present structure of ETPs, there is a clear concern about the relative domination of the industrial sector and the research community in their present formation. The Commission has come to recognise the need to ensure an increased involvement of non-governmental and societal groups, independent of the industrial and academic community and that all ETP documentation should be subject to pro-active public scrutiny and peer review. The

key to the forum approach is that all knowledge, experience and interests are mobilised in addressing a particular problem in a process of argument, discussion, intellectual scepticism and 'reciprocal persuasion' (Majone 1989: 2). ETPs, at present, may fall short of this objective, but they would appear to be an effective and efficient way of proceeding down highly sophisticated and complex policy routes.

Chapter 6

The Role of European Technology Platforms in the Formulation of the Seventh Framework Programme in Research and Technology

Chapter Outline

The Commission has evolved the Community Method as the means by which it can fulfil its Treaty obligations to consult, as widely as possible, as part of the policy formulation process in the EU. In April 2004, it embarked upon a wide ranging consultation as part of the preparation of the new Seventh Framework Programme in Research and Technology (FP7) for the period 2007-2013. During the early stages of this process, the Commission encouraged and supported the establishment of European Technology Platforms (ETPs) for the purpose of preparing Strategic Research Agendas (SRAs) relating to leading-edge technologies, as an additional source of intelligence to what was already an extensive and complex consultation process.

This chapter will focus on this consultation process, examining the internal and external sources that informed this complex process. It will locate and analyse the role of ETPs within the process with the aim of establishing what impact they had in the preparation of the overall structure of the FP7 programme and the contents of the various thematic area work programmes that identify research priorities (see figure 6.3). It will attempt to identify the impact of the ETP Strategic Research Agendas (SRAs) in relation to the contents of the FP7 work programmes. This analysis is based on Commission consultation documents, ETP SRAs and interviews with Commission officials and key stakeholders involved in the process; particularly ETP members.

ETPs and the FP7 Policy Formulation Process

One of the unique features of the EU is the role conferred upon an appointed Commission, acting independently of the member states, as the source of policy initiation. The various treaties make clear, however, that in relation to this role the Commission is required to develop an open and comprehensive consultation process with key stakeholders; for example, Protocol 7, Annex to the Amsterdam Treaty, requires the Commission to 'consult widely before proposing legislation and, wherever

appropriate, publish consultation documents' (Amsterdam Treaty 1997). This requirement of the treaties has become an integral feature of what is now described as the Community Method of policymaking. It is the key feature of the policy formulation process in the EU and the emergence of ETPs is deeply rooted in this approach.

As the nature of technology has become increasingly more complex, knowledge and expertise has become a vital component of the policymaking process. As one Commission official made clear during interview, the Commission cannot make policy in a vacuum. He pointed out that without an extensive consultation process, their ability to function efficiently in highly complex areas of technology would be seriously limited (Interview 2005i). One of the distinguishing features of this consultation process is the way in which the Commission mobilizes external knowledge and expertise for the purpose of establishing a policy consensus. This involves establishing formal and informal modes of communication using a wide range of media and establishing contact with all interested stakeholders. It is an approach that has particular relevance for the complex policy area of research and technology policy.

The emergence of ETPs and their role in establishing Strategic Research Agendas in leading-edge technologies is a reflection of the need of the Commission to ensure that the most appropriate expertise and knowledge is available to inform the policy process. As the Commission made clear in its own policy documents, the aim of ETPs was to 'provide important forums in which stakeholders can formulate their views and provide policymakers with advice on ways to develop coherent and effective policies and programmes to tackle the challenges in the technological area concerned.' (COM 2004b: 11) The Commission made clear that 'where industrially relevant, the definition of work programmes will draw on the Strategic Research Agendas developed by industry-led technology platforms.' (COM 2005g: 8)

Those ETPs that were in existence or that were about to be launched had published, or were about to publish, their SRAs and it was clear through discussion with ETP members that they were keen to ensure that the contents of the SRAs influenced the themes, priorities and work programmes of the main research element (Cooperation) of FP7 (Various Interviews 2008). It was also evident from discussions

that one of the key motivations behind the involvement of some stakeholders in ETPs was the belief they would gain a greater insight into the preparation of FP7 work programmes and, therefore, they would be better positioned to raise their level of involvement in the programme (Interview 2008xxix; Interview 2008ix). This is, and remains, a potential source of tension as the Commission is not bound to accept the recommendations of the SRAs, nor are they keen to be seen to be giving advantage to groups actively involved in the preparation of SRAs and the submission of proposals for funding. This was stressed by one Commission official who pointed out that while SRAs were an important source of information, they were just one source in a much broader consultation process, involving a range of other groups and stakeholders (Interview 2008xxiv).

The FP7 Consultation Process

The Commission's consultation process for the formulation of FP7 began well in advance of the completion of FP6. The process began with the Commission releasing it first policy document in April 2004 entitled *Science and Technology, The Key to Europe's Future – Guidelines for Future European Union Policy to Support Research* (COM 2004a). This document identified the Commission's 6 main priorities for European research and technology policy in FP7, including:

- Creating Centres of Excellence through collaboration between laboratories;
- Launching European Technology Platforms and Joint Technology Initiatives;
- Stimulating the creativity of basic research through competition between teams at the European level;
- Making Europe more attractive to the best researchers;
- Developing research infrastructures of European interest;
- Improving the coordination of national research programmes. (COM 2004a)

Table 6.1: Key Dates in the Formulation of FP7 and ETPs (Source: Cordis 2006-2010)

Date	FP7 Consultation Process	ETP Formulation Process
Jan 2004		European Research Advisory Board (EURAB) Report on European Technology Platforms
Apr 2004	Workshops and Consultation on Future European Research in Information and Communication Technologies (ICT)	
Jun 2004	Commission release Communication "Science and Technology, The Key to Europe's Future – Guidelines for the Future European Union Policy to Support Research"	
Jul-Oct 2004	Online Consultation on Research Themes in FP7	
Sept 2004		Commission publish "Technology Platforms: From Definition to Implementation of a Common Research Agenda"
Nov-Dec 2004	Online Consultation on Social Sciences and Humanities in FP7	
Feb 2005		Commission publish "Technology Platforms: First Status Report: Development of Technology Platforms"
Mar 2005	Results of online consultation of FP7 Research Themes published	
Apr 2005	Commission publishes its proposals for FP7 in Communication to Council and Parliament.	
Jun 2005		Commission Staff Working Document: Report on Technology Platforms
Sept 2005	Commission publishes it proposals for FP7 Specific Programmes	
Dec 2005	European Council agrees FP7 Budget	
Jan-Apr 2006	Commission embarks upon Work Programme Consultation Process	
Apr 2006	European Parliament approves FP7 Budget	
Apr-Jul 2006	Commission Develop Draft Work Programmes	
May 2006	Commission publishes amended proposals on FP7 Specific Programmes	
May 2006		Commission publish "Technology Platforms Second Status Report: Development of Technology Platforms"
Jun 2006	Commission Publish Amended Proposals on FP7	
Sept-Oct 2006	Interservice Consultation on Draft Work Programmes	
Nov 2006	Draft Work Programmes Approved by Programme Committee	
Nov2006	European Parliament Approve FP7 Proposals	
Dec 2006	European Council Approve FP7 Proposals	
Dec 2006	First FP7 Work Programmes/Calls for Proposals	
Mar 2007		Commission publish "Technology Platforms Third Status Report: At the Launch of FP7"

The 2004 Guidelines published by the Commission set the agenda for the FP7 consultation process. Until the development of the Sixth Framework Programme (FP6), stakeholder involvement in the formulation of research and technology policy had been largely dominated by a small number of key stakeholders representing industry and the research community. As Chapter 4 shows, the decision-making process in this policy sphere had become what Richardson and Jordan (1979)/Marsh and Rhodes (1992) had described as closed and exclusive policy communities. The process was being dominated by the Commission working with specialist advisory groups, member state working committees and a handful of dominant industrial groupings, such as the European Roundtable of Industrialists and other key expert groups in specific areas such as aeronautics, steel, microelectronics and telecommunications.

While the role of industry and the research community in the policy preparation for Framework Programmes is, to some extent, inevitable given their significance in all aspects of the research, technology and innovation process, there is a continual danger that they come to dominate the process. Although, given that they represent competing interests, it is overtly-simplistic to represent them as a homogeneous grouping in the form of epistemic communities, advocacy coalitions and policy communities, there is a requirement for constant vigilance to ensure that they do not totally dominate the whole process. The reason why the Commission is so sensitive about this issue is that there is widespread criticism that the Framework Programmes are made up of an 'élite club' of large industry and leading universities and that they not only inform decisions about research priorities, but are the main beneficiaries of these decisions (Interview 2008i; Interview 2008ii).

Arising from these concerns, the policy formulation period for FP6 coincided with Commission attempts to widen stakeholder involvement and improve openness and transparency in the process. The Commission was increasingly aware that the legitimacy of their proposals rested not just on expert evidence-based knowledge, but on an open and transparent consultation process, which was not dominated by particular stakeholders (COM 2001a; 2001b; 2001c). FP6 provided the first opportunity for the Commission to turn these concerns into action. The theme of openness and transparency became an important aspect of the consultation process surrounding

FP7, as the Commission opened up and expanded the process to a wide range of consultative bodies and stakeholders.

Through an analysis of the Commission's consultation sources, it is possible to make a distinction between the internal and external sources of information as shown in Table 6.2 below.

Table 6.2: Commission's Internal and External Sources of Information

	External Sources	
Internal Sources	**Recognised Stakeholder Groups**	**Other External Sources**
COREPER	European Technology Platforms	Online Consultation Process (open to all stakeholders)
Programme Committee	Expert Groups	Stakeholder Position Papers (e.g.universities, research centres and technology transfer organisations such as the Fraunhofer Gesellschaft)
Advisory Groups/Task Forces		FP Open Days and Conferences (attendee perspectives)
Consultative Bodies (including EESC, CoR, JRC, EURAB, CREST, ITRE, ERC, EIT)		Workshops (attendee perspectives)
Previous Framework Programmes		Expressions of Interest (open to all stakeholders)

The internal sources include EU institutions and their respective research and technology advisory bodies, and a number of consultative bodies that have a permanent role in the process. The external sources include ETPs, experts groups, the Commission's on-line consultation process, expressions of interest, conferences,

workshops and position papers. Table 6.2 identifies two different types of external sources, recognised stakeholder groups and other external sources. This is an important distinction to make because recognised stakeholder groups often have a close relationship with the Commission that has been established over a long period of time and these groups, therefore, have a greater potential to influence policy than other external sources.

Indeed, while ETPs are independent of the formal internal process, the influence of the Commission in their formation and the role they have been tasked to perform means they are significantly better placed to influence the process than other external sources. There are other sectoral and expert groupings that have a close working relationship with the Commission which also gives them an advantageous position in the policy formulation process; for example, the European Roundtable of Industrialists (ERT), the European Telecommunications Standards Institute (ETSI) and Digital Europe. These groups have evolved out of the Davignon Roundtable, the Gyllenhammar and Bangemann Groups, and have been involved in the FP process from the very beginning. They continue to play an influential role because of the close working relationship they have been able to develop with the Commission and member state governments. It is also important to note that a number of major companies and groups of companies in specific sectoral areas such as telecommunications, aeronautics and space, micro-electronics, coal and steel and atomic energy also form part of an insider grouping.

Some of these sectoral and expert groups reflect the epistemic communities and advocacy coalitions identified in the academic literature, in that they represent homogeneous groupings for the purpose of promoting a particular issue or preference. What distinguishes ETPs from these groups is the heterogeneous nature of their membership, the fact that they embrace competing sectoral and societal interests and their task is to establish an evidence-based European consensus about the future direction of a given technology. This is an important distinction because it adds further credibility to the role of ETPs in the process.

Dan Andrée, from the Swedish Research Office, perceptively notes that the central weakness of other external sources is that their 'consultations have limitations

and the results are difficult to use for the Commission in practice. The outputs from these consultations are either very general or very specific. Very few inputs address aspects such as European Added Value, creating critical mass, tackling fragmentation.'(Andrée 2009: 51) This view is also reflected in the academic literature on European research and technology policy. Mulder *et al.* (2006) argue that groups representing a broad membership and long-term European policy priorities have more influence than single sector groups. This is supported by Peterson and Sharp (1998: 64) who note that 'considerable autonomy and power to determine policy is usually on offer to networks that can present a common front, while linking a wide array of actors in European technology policy.' ETPs are a classic representation of this approach. As more than one Commission official made clear, 'we are much more prepared to listen to groups that represent a whole policy sector and European-wide perspectives than those putting forward individual preferences and sectoral group interests.' (Interview 2008xxx; Interview 2008xxxiii)

This is a point not lost on a number of key actors in the process, which is why there is a significant cross-fertilisation in membership of ETPs and other 'insider' groupings. Indeed, certain sectoral groupings are represented on some of the Commission's internal sources, such as the European Research Advisory Board (EURAB), the Joint Research Council (JRC) and Advisory Groups, as well as several ETPs. Furthermore, a number are represented on the newly developed European Research Council (ERC) and European Institute of Technology. During the course of the research, it became clear that these insider groups rarely bother with external sources of consultation set up by the Commission, such as the Expression of Interest (EoI) process in FP6 and the online process in FP7, because they have more effective ways of influencing the process.

With regard to the Commission's internal processes, Advisory Groups are a significant source of information during the formulation of a Framework Programme. In the formulation of FP7, 14 Advisory Groups were established, mainly around the key thematic areas of the Cooperation Pillar of FP7. Stakeholders with the necessary expertise can put themselves forward to become a member of an Advisory Group. Peterson and Sharp (1998: 63) argue that there tends to be an inner core of advisors

that remain in their positions. However, an analysis of Advisory Group membership from FP5 to FP7 suggests not continuity, but a constantly changing composition and rotating membership to ensure that all sexes, nationalities and stakeholder groups are represented, including, large companies, universities, research institutes, SMEs and individual consultants (Cordis 2010a).

There are several other internal bodies that the Commission is required to consult with in the preparation of the Framework Programme, including the European Economic and Social Committee (EESC) and the Committee of the Regions (CoR). The views of the European Parliament are represented by the Committee on Industry, Research and Energy (ITRE). This is a particularly influential committee, and the Commission works closely with it to keep members informed and to invite opinions on important areas of the FP. The Parliament is an important source of support for the Commission in their dealings with the Council of Ministers and COREPER. These internal bodies can contribute to the development of the FP through the production of position papers recommending priorities as well as by commenting and suggesting amendments to Commission proposals. The capacity of these groups to contribute to the detailed content of the Framework Programmes is limited because of a general lack of expertise; however, there is evidence that they do resort to the use of experts to advise them on submissions they make. With the exception of the ITRE, some permanent internal bodies are less influential than some of the other expert external sources identified above.

The views and opinions of the member states are represented through COREPER, the Scientific and Technical Research Committee (CREST) and the Programme Committee. As several Commission officials noted, the Programme Committee, in particular, has a very important role to play in the formulation of a Framework Programme (Interview 2008xxi; Interview 2008xxii). Not only does the Programme Committee contribute to the overall content of the FP, but it also has the power to amend draft work programmes and has the final say on whether individual work programmes can be adopted. It should be noted, however, that much of this discussion goes on behind the scenes and the Commission is constantly amending the work programmes to take account of the views of the Programme Committee and the

member states. This effectively means that when the final draft of the work programme goes to the Programme Committee for approval it is often a rubberstamping exercise (Interview 2008xiv; Interview 2008xxv). One of the important aspects of the ETP's role is that the SRA provides detailed evidence-based analysis that can often be important in neutralising member state criticisms and amendments to work programmes. The importance of the SRA is that it forces the member states and Programme Committee to produce equally coherent evidence to suggest an alternative course of action to that identified in the work programme. This is why ETPs are such an invaluable source of information for the Commission.

In relation to the FP7 consultation, although the Commission has tried to open up the process not all stakeholders have equality of access. Some organisations by virtue of the fact they: represent a European-wide interest; or a company or companies in a key sector of European competitiveness; or a group representing critical expertise, will always be better positioned to influence this process. As Mulder *et al.* (2006:147) rather understates 'the opinion of the advisory groups, government bodies, industry associations, or well-organised lobby groups may carry more weight than the opinion of unorganised minorities, while the views of large multi-nationals may have more influence than those of a small unknown company or of an individual.' Those with an internal consultative role, or those with close links with the Commission, such as ETPs and some expert groups, clearly have more potential to influence the process. The potential implications of this are, however, that policymaking becomes closed and exclusive. One of the values of ETPs is that they represent a wide range of sectoral and societal interests and provide a forum for competing ideas to be analysed and challenged before a consensus is arrived at.

One of the preconditions the Commission laid down before an ETP consortium could access support to assist their establishment and running costs was that they included a wide range of interests representing those organisations that supply research and technology and the demand side (e.g. end-users), including governmental agencies, regulators and finance providers that support innovation. This was particularly important because there are not only disputes between industries within sectors and competing sectors about research and technology priorities, but there are

also major disputes in the scientific community and contentious issues relating to socio-economic impacts (e.g. stem cell research, genetically modified crops, climate change, renewable energies).

The aim was for ETPs to address these debates, rather than reflect a homogeneous perspective aimed at promoting a particular theme relating to the technology. SRAs were to be the product of deliberation amongst stakeholders that included a broad range of sectors reflecting competing interests. It was made clear to participants that the SRA was not meant to be a document outlining a wish list of participating stakeholder interests. The purpose of the document was to prepare an evidence-based analysis of the present state of the technology and its potential future direction. It was to be put together in an open and transparent way based on reciprocal persuasion with the aim of producing a strategy that was meant to be greater than the sum of its parts. The aim was to avoid domination by any one group, or groups. The ETP places emphasis on encouraging heterogeneity rather than homogeneity both in terms of membership and outcomes.

A further important aspect of ETPs was the emphasis on openness and transparency of both the deliberations and the publication of results. This means that their activities and publications are always subject to external independent scrutiny. This is particularly important because the legitimacy of their findings could be seriously undermined by accusations that they have favoured or promoted a particular technological research activity. One of the important aspects of the Community Method is to ensure that the evidence-based analysis is sufficiently robust to withstand challenge within the EU legislative process and from external criticism. This is one of the important constraints on Commission policy proposals.

The SRA provided the Commission with independent external verification regarding the present and future direction of leading-edge technologies and how this relates to the themes and priorities of particular research programmes in FP7. They provided the Commission with a diagnostic tool for measuring their own perceptions and a way of identifying vested interested in proposals put forward by member states and other key stakeholders. This is particularly important to the Commission, not only

in terms of the knowledge and expertise it provides, but that it provides a solution to the criticism of closed and elite networks dominating the FP7 consultation process.

ETPs represent an attempt by the Commission to manage the knowledge process in a highly complex and sophisticated area of policy. In terms of categorising the ETPs, they lie somewhere between the internal and external consultation process, as their role in the process is more formal and less ad hoc than other external sources. ETPs ultimately have the potential to become an internal source of information to the Commission. Nevertheless their future capacity to influence the process lies in the continued active enthusiasm and financial contributions of ETP members, their commitment to continually updating their SRAs and policy positions. Equally as important, will be their continued commitment to ensuring ETPs remain, open and transparent, represent the whole policy subsector and that they do not become the mouth piece of one group of stakeholders (e.g. an epistemic community or advocacy coalition). The difficulty will be in balancing the role of preparing an objective analysis of the future direction of a leading-edge technology with an organisation's specific self-interest. This is particularly important because research and technology is in a constant state of uncertainty and there are always going to be competing ideas and contentious issues that will need to be resolved before an agenda for action can be agreed. In establishing ETPs, the Commission has been successful in encouraging competing interests to get together to agree an agenda for progress that forces each group to re-evaluate their research perspective in relation to the overall challenges facing Europe.

The Online Consultation Process for FP7

For the preparation of FP7, the Commission organised a number of workshops and conferences and developed an online questionnaire as part of their Interactive Policymaking Initiative (IPM) aimed at broadening participation and gaining a wider range of stakeholder views and opinions. The online consultation is worthy of analysis, as it provides an example of the minimal capacity of those stakeholders outside the internal process and not involved in ETPs or experts groups to influence the process. The Commission's first online consultation was implemented between the 30th July and 15th October 2004; it was, however, a controlled process, in that stakeholders were invited to respond to a number of carefully prepared questions on the Commission's

proposals laid out in the 2004 Guidelines document. Between the 1st November and 31st December 2004, a second consultation process was undertaken by the Commission. This allowed interested stakeholders to put forward their priorities regarding the thematic areas to be included in FP7. One Commission official who participated in the consultation process, pointed out that, in the past, the response to the Commission's initial proposals usually came from a limited number of stakeholders, in particular, industry and universities. He noted that for FP7, the Commission deliberately went out to widen the consultation to ensure it received a more representative and balanced picture of what stakeholders wanted included in the new framework (Interview 2005ii).

The Commission received 1,727 responses to the online questionnaire and a total of 1824 contributions were received in relation to the thematic areas for FP7 (COM 20044e; 2004f). The breakdown of those stakeholders that responded to both consultations is set out in Figure 6.1 (above) and 6.2 (below).

**Figure 6.1: Stakeholder Response to Online Consultation Process**
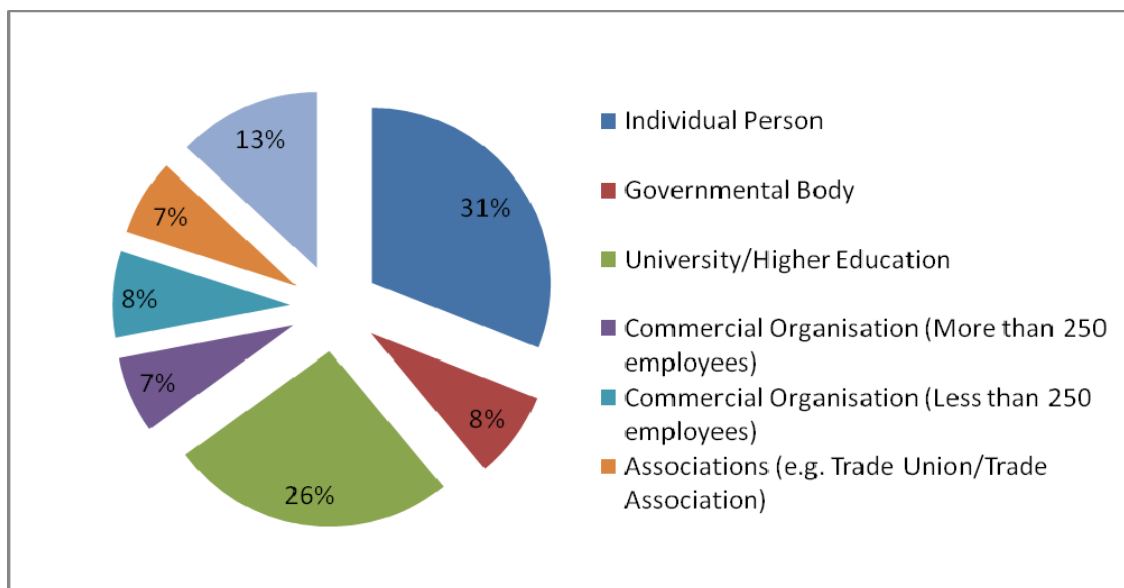
Source: Commission (2004e; 2004f)

It is interesting to note that the Commission appeared to achieve its objectives of a more representative response to the online process in that the largest response

came from individuals, followed by, unsurprisingly, universities. The lowest response was from associations and companies with more than 250 employees.

Figure 6.2: Stakeholder Response to the Consultation of Research Themes in FP7
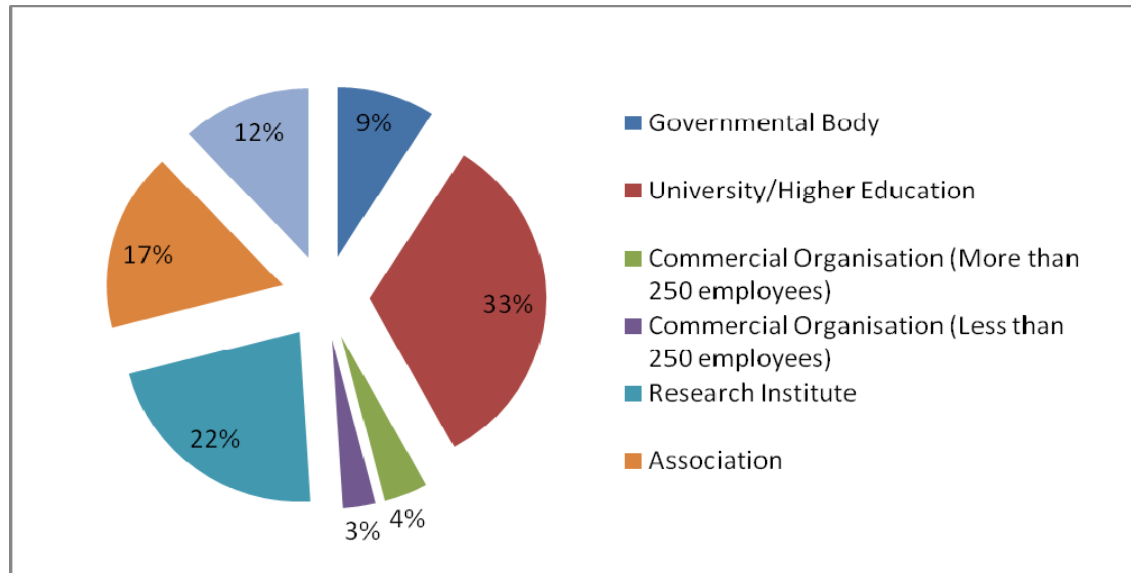
Source: Commission (2005e)

Universities and research institutes, who are significant sponsors of projects in FP6, dominated the consultation on the thematic areas to be included in FP7. Two FP7 consultants interviewed noted that most universities actively involved in European Framework Programmes would always give greater emphasis to influencing the detailed contents of the thematic work programmes than general policy areas. Another FP7 consultant interviewed pointed out that those universities that were very successful in accessing FP funding would rarely bother with the online process. They use their close links with Commission officials through their work on existing FP research projects to generate new ideas and influence the direction of future FP programmes (Interviews 2005vii, 2005viii).

Although industry would appear to be under-represented in the process, this almost certainly reflects the fact that a large number of industries are insider groups and have a close working relationship with the Commission and, therefore, do not have to resort to this type of online process. The reality is, they have more productive and influential ways of getting their voices heard, in this process. Indeed, it was explained by a Commission official, that while universities and associations tend to

make individual contributions, industry tends to approach the Commission through European-wide sectoral groupings (Interview 2005i). Furthermore, as noted earlier, many industries are represented in Commission Advisory Groups and consultative bodies outlined in Table 6.2.

It is also interesting to analyse the response to the consultation process by member states, accession states and associate states who are all involved in framework programmes. This response is set out in the Table 6.3 and Table 6.4 below.

Table 6.3: Country Responses to the Commission's On-line Consultation Process

Country of Response	Number of Responses	%	Country of Response	Number of Responses	%
Austria	79	4.6	Malta	5	0.3
Belgium	142	8.2	Netherlands	89	5.1
Cyprus	12	0.7	Poland	16	0.9
Czech Republic	10	0.6	Portugal	81	4.7
Germany	258	14.9	Slovak Republic	7	0.4
Denmark	28	1.6	Slovenia	6	0.3
Estonia	10	0.6	Sweden	68	3.9
Greece	80	4.6	United Kingdom	157	9.1
Spain	123	7.1	Bulgaria	8	0.5
Finland	22	1.3	Switzerland	25	1.4
France	132	7.6	Israel	17	1
Hungary	10	0.6	Iceland	1	0.1
Ireland	33	1.9	Norway	31	1.8
Italy	147	8.5	Romania	29	1.7
Lithuania	22	1.3	Turkey	44	2.5
Luxembourg	1	0.1	Other	30	1.7
Latvia	4	0.4	Total	1727	100

Source: Commission (2004e; 2004f)

Table 6.4: Country Responses to the Consultation of Research Themes in FP7

Country of Response	Number of Responses	%	Country of Response	Number of Responses	%
Austria	41	2.2	Malta	10	0.5
Belgium	85	4.7	Netherlands	209	11.5
Cyprus	4	0.2	Poland	35	1.9
Czech Republic	6	0.3	Portugal	44	2.4
Germany	239	13.1	Slovak Republic	4	0.2
Denmark	33	1.8	Slovenia	8	0.4
Estonia	15	0.4	Sweden	72	3.9
Greece	33	1.8	United Kingdom	276	15.1
Spain	151	8.3	Bulgaria	6	0.3
Finland	65	3.6	Switzerland	28	1.5
France	154	8.4	Israel	13	1
Hungary	9	0.5	Iceland	0	0
Ireland	22	1.2	Norway	37	2.0
Italy	97	5.3	Romania	3	0.2
Lithuania	22	1.2	Turkey	11	0.6
Luxembourg	0	0.0	Other	88	4.8
Latvia	4	0.2	Total	1824	100

Source: COM (2004e; 2004f)

Both Tables 6.3 and 6.4 indicate that stakeholders from the more established EU member states, in particular, France, Germany, Netherlands and the UK, have contributed most to the policy consultation on FP7. These statistics suggest that newer member states are significantly underrepresented in this process. A Commission official pointed out that the Commission were disappointed with these results, as they had deliberately designed the consultation to encourage the widest possible participation (Interview 2005ii). However, it was acknowledged by other interviewees that the divergence between larger and smaller member states is inevitable because they have a smaller research infrastructure, they are not particularly well represented in advanced technology areas and they have a much lower level of participation in FP programmes (Interview 2005i; 2005iii).

A former MEP pointed out that organisations from France, Germany and the UK have taken approximately 70% of the budget of previous frameworks and they have a vested interest in influencing the process. He also pointed out that it is important to understand this within the context of the fact that they are the largest contributors to the EU (Interview 2005iii). This probably explains their level of interest and desire to get some of their contributions back, by ensuring national comparative advantage in research and technology is fully reflected in the proposals. This was reflected in the negotiations surrounding FP7, when an unlikely coalition of France, Germany and the UK, insisted that decisions regarding the allocation of resources in FP7 should reflect research excellence and not be influenced by issues relating to social cohesion. While acknowledging that the research infrastructure of the new member states was inadequate, they argued this should be dealt with through the structural funds and not the research funds. These proposals received support from the Commission, which effectively ensured the continued dominance of FP7 by the larger and more established member states (Interview 2005vii; 2005viii). One Commission official also pointed out that organisations in the older member states have gained knowledge and experience from their involvement with earlier Framework Programmes and this has impacted on their level of engagement. On a more positive note, he added, that the contribution of the smaller states to the policymaking process would increase as they gain more experience of working in the system (Interview 2005i).

While the Commission's online consultation process indicates that a wide range of actors have informed the debate, it is unclear whether the process has had a significant influence on the Commission's thinking. Indeed, it could be argued that the way in which this process was prepared and implemented appears to suggest that its role was largely cosmetic and the Commission has used it as a means of legitimising its own proposals. There were, for example, a number of leading questions such as:

- 'Do you agree that the support for research at a European level should be strengthened?'

- 'Do you think that a strengthened European level research support will contribute to Europe's competitiveness, social welfare and sustainability?' (COM 2004d)

Respondents were provided with five possible responses which they could choose from (i.e. 'mostly agree', 'agree', 'disagree', 'mostly disagree' and 'don't know'). It is interesting to note the way in which the results of the questionnaire were presented.

The report of the questionnaire highlighted those areas where the Commission received a very high response rate often confirming their policy agenda. For example, the questions noted above received a positive response in the 'mostly agree' or 'agree' categories from over 90% of the respondents (COM 2004d). As the majority of respondents would have a vested interest in the expansion of the Framework Programme, this response was hardly surprising. Virtually all the Commission's proposals received a positive response. This would appear to confirm that the Commission was using this process as a means of legitimising its proposals.

ETPs and the Formulation of the Overall Structure and Thematic Areas of FP7

The research for this thesis provides little evidence that the Commission's consultation process for FP7 had a large impact on influencing the overall structure and key thematic areas of FP7. As noted above, the Commission's online consultation on the thematic areas of FP7 was used as little more than a rubber stamp for its own proposals.

Furthermore, as Tables 5.2 and 6.1 show because the consultation process was already underway as ETPs were in the process of being established, their input into the overall structure of FP7 was minimal. Even those ETPs that were fully formed had little impact, mainly because SRAs are designed to provide detailed knowledge for the content of FP Work Programmes and do not suggest ways to developed and design the overall structure of the FP. The FP7 framework is outlined in Figure 6. 3 overleaf:

Figure 6.3: Structure of FP7 (Source: Cordis, 2010c)

Specific Programmes	Thematic Areas	Budget €billions
COOPERATION [64%]	Health	6.10
	Food, Agriculture and Biotechnology	1.93
	Information & Communication Technologies	9.05
	Nanotechnologies, Materials & Production	3.47
	Energy	2.35
	Environment	1.89
	Transport	4.16
	Security	1.40
	Socio-economic Sciences & the Humanities	0.62
	Space	1.43
		32.41
IDEAS [15%] ERC	Starting Independent Researcher Grants	
	Advanced Investigator Grants	
		7.51
PEOPLE [9%]	Initial Training	
	Life-long Training	
	Industry-Academia	
	International Dimension	
	Specific Actions	
		4.75
CAPACITIES [8%]	Research Infrastructures	1.71
	Research for the benefit of SMEs	1.33
	Regions of Knowledge	0.12
	Research Potential	0.34
	Science in Society	0.33
	Coherent development of research policies	0.07
	Activities of International Co-operation	0.18
		4.09
Non-Nuclear JRC Actions [3%]		1.75
FRAMEWORK PROGRAMME 7 BUDGET		50.52
EURATOM Research & Training		2.75

This research appears to confirm the view put forward by Peterson and Sharp (1998) that at the systemic level of research and technology policymaking, historical new institutional approaches provide an effective analytical tool. Mulder *et al.* (2006: 122) point out that a rigid predefined structure can make it more difficult to accommodate change. Indeed, there is a strong element of continuity from one Framework Programme to another, which suggests a certain degree of path dependency, a central tenet of historical new institutional approaches.

Indeed, the capacity of stakeholders to influence the underpinning structure of the Framework Programme is constrained by a strong element of continuity that has guided the development of this programme since its inception. The issue of continuity in FP7 was recently confirmed in a speech by the former Commissioner for Research, Innovation and Science, Janez Potočnik, who vacated his role in 2010. He pointed out that in relation to FP7: 'We have struck a balance between what has gone before and addressing the new challenges Europe faces. We're not changing everything. The scientific community needs and wants continuity and the thematic areas are practically the same – on the outside it (FP7) looks the same as FP6.' (Potočnik 2005)

There is also a strong element of continuity in the way the FP has evolved. It was initially based on ICT, telecommunications, material and health technologies and has grown in response to new technological advances and an expanded budget. The overall structure of each new Framework Programme tends to reflect that of the previous programmes with one or two adjustments to take account of new themes and new challenges. The collaborative research component of FP7, the Specific Programme on Cooperation, is organised around 10 thematic areas which tends to confirm the path of dependency and continuity between the thematic areas of the Cooperation Programme. One Commission official pointed out that the successes and failures of FP6 influenced what went into the new programme and what was left out (Interview 2008v; Interview 2008xv). This evidence of continuity can be seen by contrasting the main thematic areas of FP6 with the proposals for FP7, as illustrated in Figure 6.5 overleaf:

Table 6.5: Continuity in Thematic Areas of the Cooperation Pillar between FP6 & FP7

FP6 Thematic Areas	FP7 Thematic Areas
Life science, genomics and biotechnology for health	Health
Information society technologies	Information & communication technologies
Nanotechnologies and nanoscience, knowledge-based functional materials, new production processes and devices	Nanosciences and nanotechnologies, materials and new production technologies
Aeronautics & space	Space
Food quality & safety	Food, agriculture, fisheries & biotechnology
Sustainable development, global change and ecosystems (including transport and energy)	Environment & climate change
Citizens and governance in a knowledge-based society	Socio-economic sciences and the humanities
	Transport
	Energy
	Security

Source: Cordis 2010b, 2010c

One FP consultant interviewed pointed out that continuity is a product of an in-built institutionalism that influences decision-making in the Commission. The consultant argues that the Commission has, as part of the process of developing the previous six framework programmes, established an agenda that now drives the evolution of the policy (Interview 2005vii).

There are a number of institutional constraints that prohibit the expansion and change to existing thematic areas particularly in the Cooperation Programme; an area where ETPs are likely to have the most potential to impact. The rigidity of the thematic structure has been a source of much controversy and conjecture amongst both ETP members and Commission officials alike. Two Commission officials interviewed complained that the Commission had become too institutionalised and the structure FP inhibits significant change and limits new policy direction (Interview 2005i; Interview 2008xvii; Interview 2008xxxii). The frustration of ETP members at their incapacity to change the thematic structure of the Specific Programme on Cooperation was also evident in interviews. A number of ETP members interviewed pointed out that the main problem with the current thematic structure of the FP is that some themes house very few ETPs, whereas others are overcrowded with ETPs. Those ETPs in overcrowded themes have less chance of influencing the content of the work programmes and receive a smaller section of the budget (Interview 2008xxxi). Furthermore, ETP members noted that sometimes the themes are so broad, it is difficult to assess which SRA topics go into which themes and some topics end up getting lost as a result (Interview 2008xliv; Interview 2008xxix).

One ETP representative argued that with the support of the ETPs behind them, the Commission missed a good opportunity to redress the thematic imbalances identified in FP6 (Interview 2008xxxi). The capacity of ETPs to influence the overall thematic structure of FP7 was diminished as during the period that the Commission was formulating its thematic areas and holding an online consultation on FP7 themes, only a small number of ETPs were fully established, while others were about to be launched or were in the early stages of development. Now that all ETPs are fully established it will be interesting to note their capacity to influence a change in the overall thematic structure of the Framework Programmes when the Commission embarks upon their consultation process for the development of the Eighth Framework Programme in research and technology (FP8).

Although there was a strong element of continuity in FP7, there were some significant changes. One of those changes was the introduction of the Ideas Programme and the establishment of an independent European Research Council to

administer this programme. The aim of the Ideas Programme was to create a funding instrument to support frontier research. In proposing the establishment of this Programme, the Commission was responding to a growing awareness in the research community and industry that the Framework Programme tended to concentrate on known technologies that were likely to have immediate application at the expense of more risky 'Blue Sky' research with longer time lines to market. For example, a number of academics and consultants interviewed for this thesis confirmed that the way previous Framework Programmes had operated meant it was unlikely that highly speculative research of the type carried out by Crick and Watson on DNA and Berners-Lee and Cailliau on the establishment of the World Wide Web would have been funded by the Framework Programme. There was general agreement that because of the high level of risk associated with this work, it would have almost certainly received low evaluation marks. A similar problem arises in relation to research ideas that challenge academic orthodoxy. There was again general agreement that this type of project receives low marks at evaluation (Interview 2010i; Interview 2010ii).

This view had been articulated in the evaluation of FP6 and had been the source of pressure by the research community and industry for the inclusion of a frontier research component to FP7. These pressures found favour with the Commission and a proposal outlining the Ideas Programme was submitted to the Council of Ministers. Despite concerns in the Council that the Ideas Programme would duplicate national research effort, the power of the Commission's evidence-based proposal aligned to strong stakeholder support emphasising the strategic added-value from the establishment of a critical mass of research effort in coordination with the national programmes would significantly improve Europe's potential to exploit leading edge technologies. The objectives of the Ideas Programme are outlined below.

> 'The "Ideas" programme, implemented through the European Research Council (ERC), will boost Europe's Competitiveness by helping to attract and retain the most talented scientists, supporting risk-taking and high-impact research, and promoting world-class scientific research in new, fast emerging fields…Frontier research is a key driver of wealth and social progress because it offers new opportunities for

scientific knowledge and technological advancement, and is instrumental in producing new knowledge leading to future applications and markets.' (COM 2006e: 17)

The other changes involved mainly adaptations to the existing pillars, including two new themes in the Cooperation Programme. The first new theme, the Security Programme reflected the changing policy environment and potential threats to Europe from terrorism and an over dependence on other states in relation to satellite technology. This threat was exacerbated by the speed with which newly emerging economies, in particular, China and India were developing this technology. It is important to note, however, that the Security Theme referred to civil and not military research. The Framework Programme is precluded from supporting defence-related research. The second new theme was the Socio-economic Sciences and Humanities Programme. Although this forms a very small part of the Cooperation Programme, it reflected increasing recognition by the Commission of the need to fund socio-economic and humanities research directly relevant to some of the major societal problems Europe was now facing; for example, demographic pressures, immigration and trafficking. There were also some minor adjustments to the Capacities Programme aimed at improving research infrastructure, increasing SME involvement in the Framework Programme and linking European regions in the knowledge process. The significance of innovation was also recognised; however, the budget for innovation was removed from the Framework Programme and a new Competitiveness and Innovation Programme (CIP) was established, which was to be administered by DG Enterprise.

The most significant change, however, was the major increase in the budgetary allocation to research and technology. Although the Commission's original proposal a €72billion budget found little favour with the European Council and was rejected, they did agree on a budget of €50.52 billion over 7 years, a two year expansion on the FP6 programme timetable. In real terms it represented a 68% increase in the budget (Cordis 2010c). This remains one of the most significant financial advances in budgetary allocation to the Framework Programme which now represents the third largest budget in the EU. It is interesting to note that while budget growth has been

relatively slow until FP7, each framework has involved an increase and there have been no arguments for a reduction in the budget reflecting a growing awareness among the member states of the increasing importance of this policy area.

European Technology Platforms and the Formulation of Work Programmes in the Thematic Areas of the Cooperation Pillar of FP7

While noted earlier, the capacity of ETPs to influence the main structure of FP7 and the choice of thematic areas was limited because of programme continuity and the fact that early discussions coincided with the formation of ETPs, there was a very real opportunity to have a direct impact on the contents and priorities of the work programmes for specific research areas of the Cooperation pillar. These work programmes are prepared annually and contain the funding research priorities for calls for proposals to be issued in the following year. The Commission has made increasing reference to the role of ETPs in the preparation of these programmes; for example, the 2008 Work Programme for Theme 2, Food, Agriculture and Fisheries and Biotechnology made the following reference to the organisations that had influenced the content of the programme:

> 'The content of the research topics selected for the 2008 call is based on the input received from the Advisory Group and the Programme Committee of this Theme, the Standing Committee for Agricultural Research (SCAR) & the Advisory Committee for Fisheries and Aquaculture (ACFA), on external inputs from the research community and interested organisations, expert workshops, outputs from conferences, studies, analysis of ongoing research, policy needs etc. The strategic research agendas (SRA) of the European Technology Platforms relevant to Theme 2 have been taken into account in defining the priorities for defining this work programme.' (COM 2007c: 6)

In a footnote, this Work Programme referenced the ETPs that had played a significant role in the process: Plants for the Future, FABRE, Global Animal Health, Food for Life, Forest Based ETP, BFTP and Suschem, have all been cited as providing an input to this particular work programme (COM 2007c: 6).

The sole responsibility for preparing the work programme lies with the Commission; Article 6 of the Specific Programme states:

'The Commission shall draw up a Work Programme for the implementation of this Specific Programme, setting out in greater detail the objectives and scientific and technological priorities set out in Annex I, the funding scheme to be used for the topic on which proposals are invited, and the timetable for implementation.' (Andrée 2008: 17)

The formulation of the work programme is an annual process that usually begins one year before the first calls for proposals are announced. As one set of work programmes are published, the consultation process for the next year gets underway; for example, the 2008 Work Programme quoted above was published in autumn 2007, on the 29th of January, 2008, the Commission published an *Extended Reflection Paper on Activity 2.3 Life Sciences, Biotechnology and Biochemistry for Sustainable Non-Food Products and Processes* outlining potential priorities for funding in the 2009 element of the Food Programme. The purpose of this document was to inform the internal and external consultation process. This is a preliminary document that will inform the first draft of the 2009 work programme.

The process for establishing the individual work programmes, outlined in Figure (6.4) below, begins with the Commission consulting both internal and external stakeholders regarding the potential content of the first draft of the document. This is an important phase in the consultation process and is the main opportunity for actors, such as ETPs, to influence the content of the work programme. Following the publication of the first draft, the Commission embarks upon a process of inter-service debate involving discussion between Commission DGs and the Programme Committee representing the member states. At this point, only the Commission and the Programme Committee have the power to make amendments to the draft work programme, although it should be noted that both remain sensitive to internal and external sources of influence, mainly to ensure no important priorities are missed. The next stage involves the preparation of the final draft to go to the Programme Committee for final agreement. As one Commission official pointed out, by the time

the final draft reaches the Programme Committee, most of the issues between the Commission and the member states have been resolved and, at this point, it becomes a rubberstamping exercise. He pointed out that it was very rare for amendments to be made to the document at this final stage (Interview 2008xiv; Interview 2008xxv). This process is outlined in Figure 6.4 below:

**Figure 6.4: The Formulation Process for Individual Work Programmes**
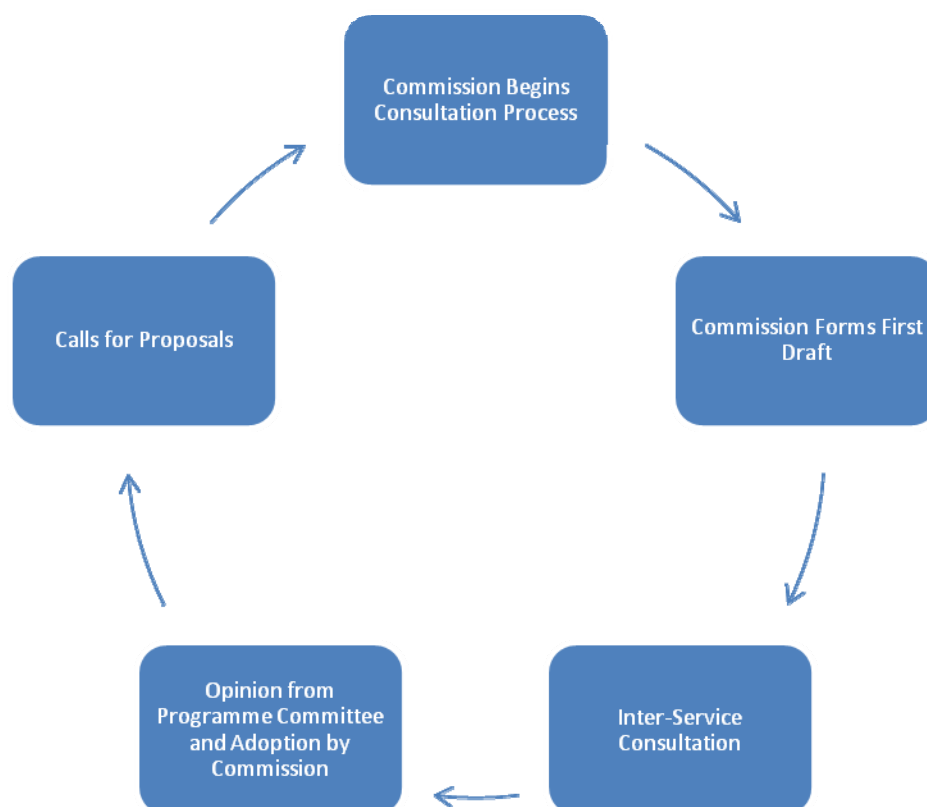
Once the draft work programme has been prepared, ETPs and other stakeholders can have minimal influence over its content which means there is a limited window of opportunity in the three to four month period prior to the preparation of the first draft when they can influence the process (Andrée 2008). This confirms Kingdon's (1984: 1) view that there tends to be a 'window of opportunity' for influencing the policy process and it is important for groups to identify this window and take advantage of the opportunity while it presents itself. The research agenda is subject to constant and rapid change in responding to new ideas and technological challenges and it is, therefore, important to build flexibility into the policy process. As

one Commission official pointed out, research and technology policy is in a constant state of flux and we need to be able to respond rapidly to changes in direction and ETPs can help us do this through the foresighting element of the SRA (Interview 2008ii). What is interesting about research and technology given its rapidly changing nature is that expert groups are not are not constrained by specific moments of uncertainty as suggested in the academic literature on epistemic communities (Haas 1992). Work programmes are produced annually which means that the areas of uncertainty within research and technology can be responded to fairly quickly Organisations, such as ETPs, which are in a process of continual interaction with the Commission are in a favourable position to influence responses to these changes. The knowledge and expertise that ETPs represent becomes an essential source of information for the Commission in the preparation of work programmes.

The degree and extent to which a particular ETP can influence the content of a specific work programme in relation to thematic areas of the Cooperation pillar is largely dependent upon how closely the research interests of the ETP are aligned with a relevant thematic area. The degree and extent of their influence will become apparent in the two examples studied later in this chapter. In the *Third Status Report 2007* the Commission prepared a table comparing the coverage of SRAs with specific thematic areas in the FP7 Cooperation pillar. It should be noted that the names of ETPs in Figure 6.5 (overleaf), reflects those in existence at the time the document was put together and differs slightly from the current list of ETPs.

Figure 6.5: Coverage of SRAs in the Thematic Areas of the Cooperation Pillar of FP7
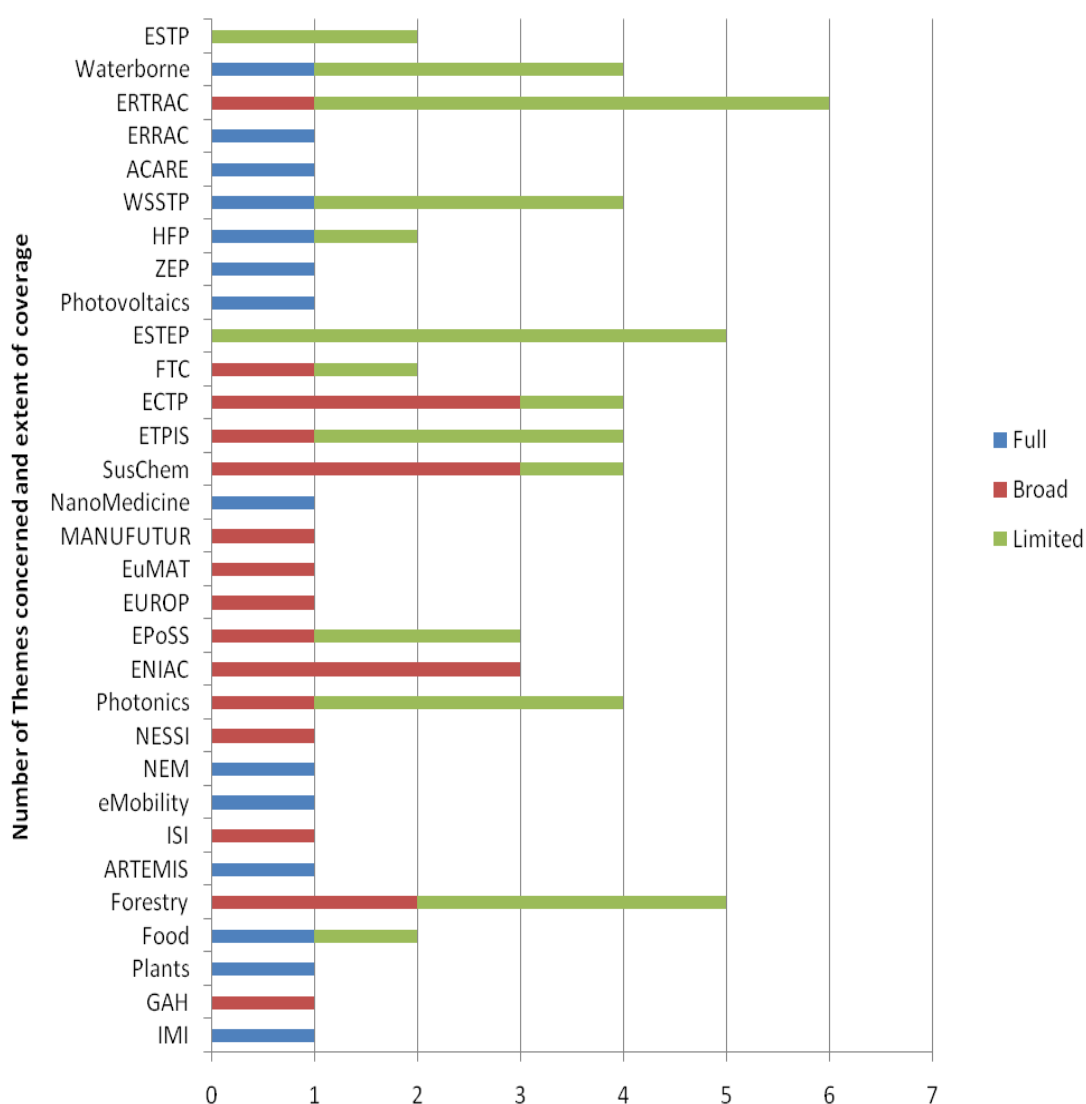
Source: European Commission (2007b)

As can be seen from Figure 6.5 above, twenty-nine of the thirty-one ETPs are fully or broadly aligned with thematic areas of the Cooperation Programme and fourteen are fully aligned with one specific programme. Only two ETPs (the European Space Technology Platform ESTP and the European Steel Technology Platform ESTEP) have limited coverage, although in the case of the latter, this involves five thematic areas. In areas such as space, aeronautics and steel, there is a long history of industry representatives working closely with the Commission on sectoral research priorities; and ETPs were essentially a continuation of this working relationship. Indeed, it is arguable that in these areas, the existence of the ETP made little difference in their

continuing influence on the development of research priorities. However, the value of the SRA in these areas was that it made this relationship more transparent in that the research priorities of these sectors were openly published and made available for public scrutiny.

These results confirm the Commission's influence regarding the design of ETPs to shadow thematic areas of the Cooperation Programme. This close alignment is particularly significant in relation to the potential influence of the SRA on the formulation of research priorities in the work programmes for specific thematic areas. The evidence from the Figure 6.5 above, supported by interviews with Commission officials, ETP members, consultants working in FP7 and the two examples discussed later in this chapter, suggests that the more focused the research interest of an ETP, the more likely they were to influence a specific work programme. A further important factor is the relevance of the work of an ETP in an area that has been given a high priority by the Commission in relation to European competitiveness or specific societal challenges. For example, the Zero Emission Fossil Fuel Power Plants (ZEP), the Hydrogen and Fuel Cell (HFP), the European Biofuels Technology Platform (EBTP) and the European Photovoltaics Technology Platform (Photovoltaics) are all directly relevant to major environmental concerns and have been prioritised in the Energy Work Programme. In the case of HFP and EBTP, they offer alternative sources to fossil fuels and, therefore, the SRA is closely aligned with the interests of the Energy Thematic Area and this is reflected in the close working relationship that has been developed with the Commission (Interview 2008xliv; Interview 2008xxxvi). A further example is the growing impact of innovative Medicines Initiative (IMI) in relation to regenerative medicine and the emergence of personalised medicine (genetic engineering and stem cell research) and the potential profound implications for healthcare systems in response to societal changes and the cost of healthcare are emerging as increasingly important issues and, this is reflected in a close alignment with the priorities of the Health Programme.

One Commission official confirmed the close working relationship between the Commission and ETPs in areas that were closely aligned to specific thematic areas (Interview 2008ii; also Interview 2010i). One Commission Official highlighted the

Hydrogen and Fuel Cells ETP (HTP) as having a substantial role in the formulation of the energy work programme. This point was confirmed by an ETP member, who acknowledged the HFP SRA had directly informed the priorities of the work programme (Interview 2008xl; Interview 2008xxvi). The impact of the very research-focused ETPs referred to above, contrasts with the more sectorally focused ETPs such as the Future Textiles and Clothing ETP (FTC), the Forest Based Sector Technology Platform (FTP) and the European Technology Platform on Industrial Safety (ETPIS). Since these ETPs comprise a broad range of interests and the fact that they are not specifically research-focused, their potential impact on the work programme was inevitably constrained. This was confirmed in interviews; for example, the Forest Based Sector Technology Platform and Industrially Safety ETP acknowledged that they had had very little influence on the preparation of work programmes (Interview 2008xi; Interview 2008xii; Interview 2008xxxvi) and the Future Textiles and Clothing ETP expressed open dissatisfaction about their influence on the work programmes (Interview 2008xxxi). This contrasts with the Sustainable Chemistry ETP (SusChem), which is particularly important and influential across a number of thematic research areas. They acknowledged that they consulted closely with the Commission in the preparation of the SRA to ensure relevance with thematic areas and they thought this paid significant dividends in that the contents of the SRA formed the 'back-bone' in a number of areas of two work programmes (Interview 2008i; Interview 2008xxviii).

ETP Influence on the Content of FP7 Work Programmes

Since SRAs focus on current and future research priorities in specific leading-edge technologies these were a natural knowledge resource for the Commission in the preparation of thematic work programmes in the Cooperation pillar of FP7. It is clear from interviews with both the Commission and members of ETPs that the SRAs were influential in identifying future work programme priorities. As noted earlier what gave the SRAs credibility was that they were the product of stakeholder consensus and, although, the Commission was not bound to accept the findings of the SRA, it would have been manifestly short-sighted to ignore the range of knowledge, expertise and industrial experience they represented.

The impact of ETP SRAs on work programmes is analysed in a little more detail in the following two examples. They involve the Energy and the Food, Agriculture, Fisheries and Biotechnology Work Programmes for 2008; it is possible to identify where specific ETPs had a direct influence on the preparation of both work programmes. These examples were prepared on the basis of interviews with Commission officials and ETP members and an analysis of the relevant SRAs and work programmes. In addition, advice from Bruce Reed, Managing Director of Research for European Economic Development Services, who kindly made company briefing notes on FP7 work programmes available to assist the analysis.

Example 1: 2008 Energy Work Programme

A close examination of the FP7 Cooperation Themes Energy Work Programme published on the 29th of November 2007, provides clear evidence of the influence SRAs whereby the interests of the ETP are closely aligned with thematic priorities. During interviews with Commission officials and ETP members, it was clear that there was a very close relationship between the Commission and the Hydrogen and Fuel Cell Technology Platform (HFP). Indeed, a Commission official acknowledged that they worked very closely with the ETP on the priorities for this element of the work programme and the SRA was particularly influential in identifying research funding priorities (Interview 2008xl). The symbiotic relationship that developed in this research area has inevitably manifested itself in the contents of the work programme. ETPs were also influential in the following areas of the 2008 Energy Work Programme:

- *Area Energy 2.1*: Photovoltaics. The focus of this activity area was on the funding of research into the development and demonstration into the next generation of photovoltaics and new processes for manufacturing. Because the focus of the SRA was directly in line with this thematic area, its influence on the preparation of the work programme was significant.

- *Activity Energy 3*: Renewable Fuel Production. An important focus of this activity area and topics called was on the development of new types of biofuel and the further development of existing

biofuels. The priorities of this area of the Energy Work Programme were strongly influenced by the Biofuels Technology Platform's SRA. Again, mainly because of the very close alignment between the thematic area and the work of the Technology Platform.

- *Activity Energy 5*: CO_2 Capture and Storage Technologies for Zero Emission Power Generation and *Activity Energy 6*: Clean Coal Technologies: These are two complementary activities and were closely linked to the work of the Zero Emissions Fossil Fuel Power Plants Platform (ZEP). In Activity Energy 5, the focus of funding activity is research, development and demonstration of activities to drastically reduce the adverse environmental impact of fossil fuel use aiming at highly efficient and cost effective power and/or steam generation plants with near zero emissions, based on CO_2 capture and storage technologies, in particular, underground storage. In Activity Energy 6, the focus of funding activity is on substantially improving plant efficiency (also reliability and cost) of coal and other solid hydro-carbon (including oil shale), conversion technologies producing secondary energy carriers (including hydrogen) and liquid or gaseous fuels. The funding priorities outlined above were largely determined by the ZEP SRA. The work of ZEP is particularly influential because one of its missions is identifying integrated solutions for zero emission fossil fuel based power by 2020. Clearly, the highly specialised work of this Technology Platform is particularly important in informing the Commission's research priorities in these areas and, in particular, the EU's commitment to the implementation of the UN Framework Convention on Climate Change (Kyoto Protocol).

- *Area Energy 8.1*: Efficient Energy Use in the Manufacturing Industry. This is a particularly important area for the Commission because manufacturing industry is consuming large quantities of energy – electricity, heat, cold, fuels – for the production of

industrial and consumer goods. Any increase in energy efficiency in the manufacturing processes would deliver significant benefits on security of energy supply, as well as reduction of greenhouse gas emissions, while reducing the cost of manufacturing goods. The focus of this element of the work programme is on research and demonstration of innovative production processes in manufacturing with significant energy saving and improved environmental performance. These areas were covered by a number of ETPs, including the European Steel Technology Platform (ESTEP), Sustainable Chemistry (Suschem) and the Forest Based Technology Platform (FTP), the SRAs from all three were influential with regards the contents of the work programme.

Example 2: Food Agriculture and Fisheries and Biotechnology Work Programme 2009

The preparation of this case study was based on interviews with Commission Officials and an analysis of a Commission's internal draft working document with regards to the preparation of the 2009 draft work programme; in addition to an analysis of ETP SRAs and interviews with ETP members. It was clear from these interviews that a very close relationship exists between the Commission and ETPs and it is clear from the Commission documents that ETPs were particularly influential in the development of potential topics to be included in FP7 Theme 2, Food, Agriculture and Fisheries, and Biotechnology. Table 6.6 (overleaf) identifies the topic line and what source the Commission used for identifying its inclusion in the work programme.

Table 6.6: Commission Sources used in the formulation of Topics for 2009 Draft Work Programme – Cooperation Theme 2: Food, Agriculture and Fisheries, and Biotechnology

Draft Work Programme Topics	Source(s) influencing scope and selection of topic
Enhanced metabolic pathways for novel bioproducts	Programme Committee, ETPs (EPSO, FTC, FTP)
Optimisation of secondary metabolite production in plants: localisation, transport, storage and stability	Programme Committee, ETPs (EPSO, FTC, FTP)
Improving the production of plants for biomaterials and biofuels	Programme Committee, ETPs (EPSO, EBTP, FTC, MANUFACTURE, FTP)
Jatropha curcas – breeding strategy – towards a sustainable crop for biomaterials and fuels	ERA-PG Report on the forward look activity 'Plant Genomics meets new challenges', EC-US working group on plant biotechnology research
Prospecting the biological diversity for the production of commercially valuable compounds	Programme Committee, ETP (EPSO)
Bioactive compounds from marine organisms	Programme Committee, Advisory Group, EC-US Task Force on Biotechnology Research
Learning from research projects: specific dissemination action to potential users in marine genomics	EC-US Task Force on Biotechnology Research
Algae for bioproducts and bio-energy	Programme Committee, ETP (EBTP), EPOBIO Study
Biomass from micro- and macro-algae for industrial application	Programme Committee, ETP (EBTP), EPOBIO Study
Novel and improved biocatalysts	Programme Committee, ETP (SusChem)
Pathway engineering for novel molecules and functions	Programme Committee, ETP (SusChem)
Novel industrial microorganisms with optimised metabolic pathways	Programme Committee, ETP (SusChem)
Optimising multiphase/multistep bioreactors	ETP (SusChem)
Robust, multiphase industrial bioreactors	ETP (SusChem)
Integrated multi-enzyme, multistep biocatalytic engineering	ETP (SusChem)
Novel and robust production micro-organisms for industrial process	Programme Committee, ETP (SusChem)
By-products of biomass-based industries into bioproducts	Programme Committee, ETP (EBTP, SusChem)
Novel conversion of glycerol-rich streams of the biodiesel industry	ETP (EBTP, SusChem)
Second generation biofuels	ETP (EBTP), EC-US Biotechnology Task Force
Draft Work Programme Topics	**Source(s) influencing scope and selection of topic**

Sustainable advanced biofuels	ETP (EBTP), EC-US Biotechnology Task Force
Pre-treatment of lignocelluloses	ETP (EBTP, SusChem), Sao Paulo Workshop (April 2007)
Biomass into chemical building blocks	ETP (EBTP, SusChem)
Biomass integration in chemical production chains: chemical building blocks	ETP (EBTP, SusChem)
Integrated biorefinery concepts, socioeconomic and environmental aspects	ETP (EBTP, SusChem, FTP)
Biomass and bioproducts: sustainability certification and socioeconomic implications	DG AGRI, DG TRADE, International Energy Agency – Task Bioenergy Trade
Bioremediation of recalcitrant compounds	Programme Committee, EC-US Task Force on Biotechnology Research
Molecular approaches to bioremediation of poly-aromatic hydrocarbon	Literature (Critical Opinion in Biotechnology 2007, 2006, 2005), Third European Bioremediation Conference, EC-US Task Force on Biotechnology Research
Development of biotechnology-based eco-efficient processes	ETP (SusChem)
Innovation biotechnology approaches as eco-efficient alternative to industrial processes	ETP (SusChem), Environmental Technologies Action Plan
Microbial diversity and metagenomics	Programme Committee, Advisory Group, EC-US Task Force on Biotechnology Research
Nano-biotechnologies	Programme Committee, Advisory Group; EC-US Task Force on Biotechnology Research, ETP (SusChem), Nanotechnology Action Plan
Smart nano-biotechnology devices to study bio-molecule dynamics in real time	Coordination with NMP theme, EC-US Task Force on Nanotechnology, Nanotechnology in the EU – Bioanalytical and Biodiagnostic Techniques, Nanoforum Frontiers NoE
Nano-biotechnology for functionalised membranes	Coordination with NMP theme, EC-US Task Force on Nanotechnology, Nanotechnology Action Plan
Analysis of the ethical, safety, regulatory and socioeconomic aspects of nano-technology	Programme Committee, Advisory Group, Nanosciences and Nanotechnology (N&N) Code of Conduct, Nanotechnology Action Plan, Coordination with the Nano Theme
Bioinformatics for biotechnology	EC-US Task Force on Biotechnology Research, ETP (SusChem)
Synthetic biology	EC-US Task Force on Biotechnology Research, ETP (SusChem)
Synthetic biology for biotechnological applications	FP6/NEST projects, Synthetic Biology 1 (2005), 2 (2006), 3 (2007), ESF Conference (2007), EC-US Task Force on Biotechnology Research (2006), KBBE-Tarpol
Systems biology	EC-US Task Force on Biotechnology Research, ETP (SusChem)

Source: COM 2008b

This internal Commission document clearly identifies the sources of influence on the preparation of the Food, Agriculture, Fisheries and Biotechnology work programme. It identifies the impact that ETPs, relevant to this research area, have had on the preparation of the work programme. It further confirms interviews with Commission Officials who indicated that the more powerful the argument that the ETPs present in their SRAs the greater the impact the SRA will have on the content of work programme (Interviews 2008). This emphasises the significance of the SRA and the way in which a carefully considered and convincing argument can impact on Commission perspectives and influence the content of work programmes.

Although the table provides a limited snapshot, it is indicative of the influence an ETP can have in providing the knowledge and expertise that informs the content of the work programmes and the direction of research expenditure. ETPs are, unquestionably, a very important source of valuable knowledge and information that not only assists the Commission in identifying priorities for the work programmes, but are valuable as a diagnostic tool in identifying self-interest driven submissions from other sources (e.g. member states, industry, the research community). In addition, they provide the necessary intellectual ammunition that is essential to the preparation of an evidence-based analysis which is capable of shaping the policy preferences and priorities of EU institutions, the member states and other key stakeholders.

The evaluation of ETPs surveyed members to gauge their level of satisfaction with the degree of influence the SRA had over the preparation of work programmes. The results are shown in Figure 6.6 below.

Figure 6.6: Evaluation of the Impact of ETP SRAs on Work Programmes (1=no impact; 2=low impact; 3=high impact)

Source: COM 2008a

The results of this survey show a high level of satisfaction amongst the participating stakeholders. Interviews conducted for this thesis confirm these statistics, also revealing high levels of satisfaction amongst ETP members on the impact of ETP SRAs on individual work programmes (Various interviews 2008). High levels of satisfaction amongst different sectoral groupings within an ETP, as indicated in figure 6.6 above also serve to indicate that the SRAs of individual ETPs reflected a consensus of stakeholder interests.

ETPs and the Formulation of JTIs

One of the major developments linked to the establishment of ETPs has been the Joint Technology Initiative (JTI). JTIs represent a new mechanism for performing research at the EU level. JTIs are public-private partnerships that bring together the Commission, member state governments and key stakeholders from industry and research, to implement policy priorities from ETP SRAs that are too large in scope to be implemented under the Framework programme mechanism. They are managed within a dedicated structure based on Article 187 of the Treaty of Lisbon (ex Article 171 of the Maastricht Treaty). A further interesting development is that some ETPs have evolved

into Joint Technology Initiatives (JTIs). There are now six JTIs in existence in areas of research critical to Europe's future competitiveness and the quality of life of EU citizens:

1. Innovative Medicines Initiative (IMI)

2. Embedded Computing Systems (ARTEMIS)

3. Aeronautics and Air Transport (Clean Sky)

4. Nanoelectronics Technologies 2020 (ENIAC)

5. Hydrogen and Fuel Cells Initiative (ENIAC)

6. Global Monitoring for Environment and Security

Table 6.7: ETPs and JTIs – Key Features

	European Technology Platforms	**Joint Technology Initiatives**
General Status	Informal grouping of interested stakeholders from public and private sector	Formal grouping of interested stakeholders from public and private sector
Legal Status	Informally constituted	Must be legally constituted (legal entity)
Link to EU	Independent of EU	Independent of EU
Funding	Majority of ETPs received financial support from FP6 for start up and running costs	50% funded by Commission and 50% by industry/member states/research community (anticipated most of this money will come from industry)
Role	Their role is to provide a platform for all interested stakeholders to collaborate in the development of technology policy, strategy and investment priorities relevant to a specific area of technology, e.g. innovative medicines. Its role is purely advisory	To identify strategic technology priorities, fund initiatives and implement projects.
Grants	Does not administer grant regime	Administers grant regime

Whereas ETPs represent a forum for deliberation and identification of research priorities outlined in an SRA, JTIs are formally and legally constituted and have the power to fund and implement strategic research initiatives. Interviews with Commission officials suggest that implementing JTIs has not been an easy process and they have suffered from a number of 'teething problems'. There have been a number of vociferous disputes between the Commission, industry and member state governments over the structures of financial contributions to projects and industry worries over Intellectual Property Rights. It was suggested during these interviews that because of these complications the development of further JTIs is doubtful (Interview 2008; Interview 2010iii).

Five of the six existing JTIs have evolved out of ETPs with their policy priorities based on the relevant SRA and the membership of the JTIs pattern match those of the relevant ETP. However, one Commission Official pointed out, many ETPs are not suited to the JTI model given the complex stakeholder structure and financial arrangements required and he thought the Commission would have to return to the drawing board in seeking new ways of implementing large scale projects at the European level (Interview 2008iv; Interview 2008vi). A further major criticism of JTIs is that they have become 'closed shops' and are mainly a mechanism for large industry to get their hands on significant European funding to support favoured projects (Interview 2010iv). Nevertheless, JTIs remain an interesting example of how the Commission is always seeking new mechanisms for implementing research and technology policy and resources at the European level.

ETPs: New Directions

At this moment in time the future of ETPs remains unclear. Through the ETP framework the Commission has developed an effective tool for gathering knowledge and stakeholder support. For stakeholders, ETPs present an effective mechanism for influencing the content of research and technology policy. The continuation of the ETP project is beneficial for all involved; however, the life span of ETPs is very much dependent on the commitment and enthusiasm of their members. The extent of member enthusiasm will be determined on the perceived benefits of remaining involved and the continued influence of ETPs on policymaking.

In interviews with Commission officials many pointed out that too many ETPs had now been developed leading to crossover and duplication in specific sectors. The Commission has made it clear that no new ETPs will be developed in the future and they are more interested in fostering collaboration between existing platforms (Interviews 2008xi; Interview 2008xii). In October 2009 a report published by a Commission ETP Expert Group entitled *Strengthening the Role of European Technology Platforms in Addressing Europe's Grand Societal Challenges* proposed that existing ETPs should cluster together within new bodies to be referred to as European Technology and Innovation Platforms (ETIPs). ETIPs should focus on key societal challenges such as:

1. Climate Change and clean energy
2. Sustainable transport
3. Sustainable consumption and production e.g. genetically modified crops
4. Conservation and management of natural resources
5. Health e.g. genetic engineering and stem cell research
6. Social Inclusion, demography and migration
7. Global poverty and sustainable development challenges (COM 2009c: 81)

The aim of this proposal is to increase the representation and participation of civil society groups within ETPs:

'(ETIPs) must match the aspirations and needs of society. In order to ensure this match, structured and appropriate links must be set up between ETIPs and relevant societal actors. The latter would provide the ETIPs with their expertise and knowledge not only of the needs and expectation of society, but also of the attitudes and behaviour of citizens (and economic actors) that have to be taken into consideration when designing research and innovation strategies. Early engagement of societal actors would channel the reflections of the ETIPs into those areas that are most relevant to society.' (COM 2009c: 30)

Evidently, the Commission has come to recognise that certain groups are underrepresented within ETPs, in particular societal groups. The report recognises that societal groups do not have the resources to regularly participate in ETP activities and they are, therefore, seeking mechanisms to increase their involvement, including providing the financial means to ensure their participation (COM 2009c: 32). Other measures proposed to increase participation include:

- Invitations extended to the largest feasible number of representatives of different societal actors, on top of those that would be more closely linked to work of the ETIP, in order to engage with all facets of society;

- Engagement of these actors facilitated by granting them the time and financial resources to contribute;

- Clearly defined rules that guarantee effective consideration is given to the contribution of societal actors and that the latter contribute constructively to the work within the limits of their expertise, knowledge and specific tasks under ETIP. (COM 2009: 34).

The report makes clear that increasing the role of societal groups is vital to the credibility and legitimacy of ETPs and a failure to do so leaves them open to the criticism that their openness and transparency rules are purely 'cosmetic' (COM 2009: 74- 77). Another interesting suggestion in the report is that the Commission should develop a mechanism for dissenting opinion to be recorded (COM 2009: 79). While ETP SRAs are transparent and easy to access, no mechanism exists for challenging its content once it is in the public domain; in this regard, the charge of 'cosmetic transparency' could be levelled. The report suggests that if a genuinely deliberative process is to be established, there needs to be a mechanism for those groups that cannot contribute directly to the development of the SRAs due to a lack of resources to be able to comment after it comes into the public domain (COM 2009).

To date, there has been little support amongst ETPs for the ETIP concept with most preferring to maintain their focus on innovation, rather than societal issues. The Commission has, however, continued to foster collaboration between ETPs as means

of reducing duplication and crossover in areas of policy. They have also recognised that some of the wider proposals on openness and transparency suggested in 2009 publication need to be enforced as an effective means of increasing ETP legitimacy (COM 2009).

Conclusion

Knowledge is the single most important source of legitimacy for Commission policy initiatives. It is one of the most important features of the Community Method of policymaking. The significance of ETPs is that they are a perfect fit with this knowledge agenda. Given the lack of an electoral mandate, the only way for the Commission to get its policy proposals accepted is to ensure that the proposals are grounded in evidence-based analysis, gathered through wide-ranging consultation and presented with an intellectual rigour that forces the member states to come up with counter proposals that are equally rigorously argued. This represents one of the most important dynamics in the EU policymaking process. It is an approach that is particularly well suited to the research and technology area. This is an area that is becoming more complex in relation to the rapidly changing nature of research-driven technology and increasingly more influential in addressing many of the major challenges faced by society.

The complexity of this policy area is reflected in the approach the Commission has adopted in establishing an elaborate system of internal and external consultation procedures. The establishment of ETPs in leading-edge technologies was a further attempt by the Commission to manage the knowledge agenda in this policy area. Rather than operating on the basis of individual submissions from stakeholders, the Commission has used ETPs to consolidate this process by bringing together a wide-range of stakeholders from different, and often competing sectoral interests. By bringing these stakeholders together in a deliberative forum tasked with the preparation of an SRA, the Commission could overcome the bureaucratic problem of wading through a large number of individual submissions, while encouraging stakeholders to establish a consensus with regard to the best way forward in leading-edge technologies critical to Europe's future economic competitiveness and solving some of society's major challenges. In addition, the SRA provided the Commission with

information and knowledge critical to shaping the future research agenda. It also had the added advantage of placing the emphasis on stakeholder deliberation aimed at avoiding domination by a single interest group or a homogeneous group promoting a particular technology. A further important feature of the SRA was that it could be used as a diagnostic tool in assessing the value of submissions from member states and other interested parties in relation to the future direction of priorities in this programme. It provided a way of measuring and identifying the self-interest component of a submission.

Because ETPs were in the process of being established during the early phase of the FP7 consultation process, there was little opportunity to influence the main pillars and themes of the programme. However, it is important to point out that the potential for external sources to influence this part of the process is limited by the high degree of continuity that tends to exist between programmes. There is a strong degree of path dependency and continuity in relation to the overall structure of the Framework Programme. Indeed, the Commission appears to adopt a building block approach that involves minor adjustments to the programme reflecting new research challenges rather than a process of radical restructuring. It is also at this level that Treaty competence and controversial political areas manifest themselves. For example, the Commission has no competence in the area of defence and, therefore, defence-related research is excluded from the Framework Programme. This is a significant constraint because, as noted earlier, the research into generic technologies, funded by the defence sector invariably have a dual purpose that spills over into civilian application, often capable of solving some of society's major challenges. Politics also manifested itself in relation to research in Stem Cell technology. The Green Parties and the Christian Democratic Parties were able to block research funding using Embryonic Stem Cells in the Framework Programme. This was a significant development in relation to Regenerative Medicine, a source of much public and private sector investment across the world.

The potential influence of ETPs on the overall structure of the Framework Programme will only become apparent during the consultation process for FP8. All the evidence suggests, however, that any influence that they have in relation to the overall

structure of FP8 will be dependent on working in close collaboration with the Commission and will be largely focused on whether new research challenges have been identified that would require new thematic areas to the programme. Their main impact will continue to be in relation to influencing the detailed research priorities set out in the various work programmes for the thematic areas. This has certainly been the case in relation to FP7. Furthermore, the capacity to influence priorities in specific work programmes should not be underestimated because it provided the Commission with vital information about where to focus research investment in the specific work programmes.

It is important, however, to place ETPs within the context of an existing wide-ranging consultation process, which embraces a range of different stakeholders in relation to the formulation of FP7. This consultation included an internal process that involved advisory bodies that retain a permanent role in the process such as Advisory Groups and the Programme Committee, and an external process that opened up the process to other stakeholders and manifested itself through workshops, conferences and included an online consultation process. ETPs would appear to have a hybrid role in this process. They are not part of the formal internal process and they cannot be easily located in the external process because of their close and influential role with the Commission. Their role is unique and can best be described as an informal part of the formal process. They clearly have an 'insider' role because they have a membership that covers a wide range of competing interests and the SRA is clearly an important influence in relation to the direction of investment. Their main influence, however, is that they add significantly to the knowledge-base in highly complex areas of technology and are an important source of policy information for the Commission. The significance of ETPs is that their purpose is to bring these groups together into a forum aimed at establishing a collective European perspective in relation to a given technology. From the Commission's perspective this gives greater weight to the argument about the future direction of investment in a particular technology.

It is for the reasons outlined above that ETPs are qualitatively different from the range of industrially-led expert groups that have traditionally had a large influence over the research and technology policymaking process; for example, expert groups

such as the ERT and Digital Europe that evolved from the Davignon Big 12; Gyllenhammer and Bangemann Groups. While these groups brought knowledge and expertise to the table, they were driven by industrial and sectoral interests. If ETPs were to revert to this model, their value would be significantly diminished in relation to their contribution to the knowledge agenda.

The main influence of ETPs in the policymaking process is at the sub-systemic level where the detailed and technical content of the Work Programme is determined. In encouraging the formation of ETPs, the Commission ensured there was a close alignment with the thematic areas of the Cooperation Programme. Twenty-nine of the thirty-one ETPs are fully or broadly related to the research interests of thematic areas in the Cooperation Programme. From the evidence examined in this thesis, it is clear that the more focused the research interest of the ETP in relation to a specific thematic area is, the more influence it will have in assisting the Commission prepare the research priorities outlined in the work programme. For example, ETPs have made a significant contribution in relation to the Energy and the Food, Agriculture and Fisheries, and Biotechnology Programmes. In these areas very close working relationships have emerged between ETP officials and the Commission. Where ETPs are engaged in specific research areas relating to societal challenges their contribution can be significant. For example, ZEP, HFP and EBTP have been particularly influential because of the contribution they make to resolving increasingly important environmental concerns that have become reflected in work programme priorities. In all of these areas, a close working relationship has evolved between the ETP and Commission officials. This is reflected in the fact that one of the first JTIs to be established was in the area of Hydrogen and Fuel Cells. In other areas such as Health, the focus on innovative medicine gives the ETP significant influence in relation to the new frontier areas of scientific research. With reference to other areas of Health, the Commission is more reliant upon the member states and other Advisory Groups. This is in reflection of the fact that health remains a competence of the member states and the Commission's role is one of coordination.

ETPs represent an attempt by the Commission to establish deliberation forums for managing knowledge in a highly complex policy area. Integral to this process is the

need to ensure that the key principles of their 2001 Communications are realised with regards the need for a process of openness, transparency and bringing science and technology closer to the citizen. The significance for stakeholders is that it gives them an informal role in the formal policymaking process in this policy area. The importance of having some form of direct involvement in the policy process, whether formal or informal, has been highlighted by Haas (1992) in relation to epistemic communities. He argues that this type of involvement significantly improves the capacity of groups to influence the process. ETPs are officially external sources of information for the Commission and do not have a formal established role in the policy process similar to that of the Programme Committee and other internally formalised consultative bodies. They do have the potential, however, arising from their knowledge-base and the fact they represent a cross sectoral European-based strategy to have a direct influence on the Commission, particularly in relation to research investment priorities in relation to the thematic work programmes.

The continued development and influence of ETPs in this process is, however, dependent on the continued active support of ETP members and the financial support of large industries. If participant stakeholders retain their enthusiasm for acting as an important source of information and continue to up-date the SRAs, they will have the potential to become permanent players in relation to identifying research funding priorities. This is not without its problems: there is already evidence that members with the necessary resources, both financial and human, are likely to play a full and active part in the process, whilst the problem of getting SMEs involved is already manifest because they lack the resources to play a full and active part.

A further source of tension has become apparent in relation to the unfulfilled ambitions for some organisations that participated in the establishment of ETPs and the preparation of SRAs. There is little doubt that some organisations became actively involved in the anticipation of gaining an advantage both in terms of influencing the selection of research priorities and being able to access financial resources from FP7. They anticipated more successful applications because of the insider knowledge they would gain from participating. However, the increasingly competitive nature of EU research funding and the fact FP7 has seen a move away from the funding of a large

number of small projects to the funding of a smaller number of larger projects has reduced the amount of funding for a significant number of organisations that have previously been very successful in accessing these funds. The tension arising from this type of thwarted ambition will unquestionably have an impact on enthusiasm to commit further resources and time and effort into the preparation of future SRAs. This could potentially lead to a reversion to the Davignon model and the dominant role that industry played in the early years of the Framework Programmes. This could lead to ETPs emerging as forums representing a specific sector or knowledge-base, which would significantly undermine their role as deliberative forums. To avoid this will require constant vigilance by the Commission.

As we noted at the outset, the central feature of policymaking in research and technology is the Community Method. The Commission's strategy in this policy area has been to bring together a range of key stakeholders along the research and innovation continuum, with the aim of establishing a knowledge-base capable of providing future direction in leading-edge technologies. The creation of ETPs represents an extension of the Community Method in relation to the use of deliberation forums in highly complex areas of policy. In establishing these forums, the Commission has created an important source of knowledge and expertise which informs the policy process in this rapidly expanding area of policy.

Chapter 7

Conclusions

The main theme of this research is that the development of European Technology Platforms forms part of an emerging deliberative policy forum model of policymaking that is having a significant impact on the evolving nature of governance in the EU. The EU system of governance is in a state of being and becoming and it is, therefore, difficult 'to formulate reliable descriptions, let alone theoretical models which will capture more than a few aspects of the policy process as a whole.' (Richardson 1996: 27) The analysis of this system of governance is further complicated by the unique supranational institutional architecture of the EU, with an appointed Commission at the epicentre of the policymaking process and the complex interrelationships that this has unleashed between the institutions and key stakeholders in a range of policy areas.

The range of theories, concepts and models that have emerged have enriched the debate and provided an insight into the emerging EU political system. However, while they have helped to highlight significant key variables and provide a focus for the selection of information, it is increasingly clear that no one theory, concept or model, either state-centric, neo-functionalist, actor-based or institutionally focussed, can fully capture the complex reality that the EU polity has come to represent. The impression created is of a group of political scientists working on various aspects of a tapestry without any real idea about how the pattern will match and if a coherent overall image will emerge. Similar concerns have also been expressed by Puchala (1972), Peterson (1995b) and Richardson (1996a) using various metaphors and similes. Despite these concerns, the various approaches examined capture snapshots of the policy process and highlight the key variables that have informed this process, therefore, providing a very useful insight into the nature of policymaking and governance at the EU level.

The emphasis in this thesis on an entrepreneurial Commission interacting with a broad range of governmental and non-governmental stakeholders in establishing ETPs firmly locates this analysis within the broad range of academic literature analysing the EU as an emerging system of governance. This governance literature

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challenges the idea that the EU can best be understood by adopting a state-centric approach in which the Commission is viewed as an agent of the member states brokering their interests. One of the main weaknesses of the state-centric approach is that it fails to capture the sheer complexity of the nature of governance at the EU level and the fact that the member states, in placing the Commission at the epicentre of policymaking, has unleashed a process in which their control is less than complete. This control is further undermined when faced with knowledge-driven, evidence-based policy proposals presented by the Commission, based on a stakeholder consensus arrived at through wide-ranging consultation and deliberation. The analysis of the process that has driven the emergence of research and technology policy and the ETP initiative provides further evidence of the capacity of the Commission, using the Community Method, to establish policy proposals representing a European interest that is greater than the sum of its parts (member state interests).

The development of the governance approach has stimulated the emergence of a number of actor-based models that identify the increasingly significant role of expert groups in the EU policymaking process. The analytical framework represented by policy networks, epistemic communities and advocacy coalitions correctly recognises that in highly complex and technical areas of policymaking, such as research and technology, EU institutions are reliant upon the knowledge, expertise and ideas expert groups can provide in the formulation of policy at the agenda-setting level. However, while elements of these actor-based approaches are present in ETPs, they do not easily fit or describe the ETP model. One of the main weaknesses of these approaches is that they fail to capture the fact that ETPs have not formed organically through stakeholder interaction, but have been developed by an entrepreneurial Commission establishing a forum for managing knowledge-based contributions from a range of stakeholders. Actor-based models are, however, an important point of reference in identifying the significance of uncertainty in the policy process and the increasingly important role of knowledge as a means of overcoming this uncertainty in providing policy choices for decision-makers.

The main weakness of the actor-based approach is that policy outcomes cannot be solely explained as a product of the aggregation of societal behaviour or as a

derivative of a straightforward interplay of actor interests and expert group activity. Actor-based models fail to take significant account of the way in which actor interaction can be influenced and shaped by the institutional structures that they come into contact with. Nowhere is this more apparent than in the complex institutional structure of the EU and, in particular, the role of the Commission and its use of the Community Method in coordinating actor involvement in the policy process. The significance of this institutional complexity and its impact on the policy process has generated a range of academic perspectives that seek to restore the balance of institutional involvement in the policymaking process. Central to these new institutional approaches (neo-institutionalism) is the idea that institutions define the process, place boundaries on activity and create the culture and framework in which stakeholder interaction occurs.

The weakness of new institutional approaches is that they give too much prominence to institutions over actors and the complex interaction between the two. In this regard, it is interesting to note that if we leave aside the grandiose claims and normative features of neo-functionalism, it still remains an important contribution in its analysis of the interaction between institutions and stakeholders in the policymaking process in the EU. The significance of this complex dynamic is nowhere more clearly manifest than in the central role of the Commission in the development of research and technology policy at the European level and the role of the ETPs in the policymaking process. The way in which ETPs have emerged and developed serves to highlight the importance of both institutions and actors in this policymaking process and the close interrelationship between the two.

The analysis of the emergence of ETPs, as an important part of EU research and technology policy, suggests that the Commission is moving towards developing deliberative forums in complex policy areas, as a way of managing knowledge, expertise and stakeholder involvement. This process was acknowledged in the Lisbon Treaty (2009) through the retrospective recognition of the emerging role of comitology committees in complex areas of EU regulation. The Commission has now adopted a similar approach through the establishment of ETPs, as a means of introducing an informal institutional process for managing policy issues in complex areas involving

leading-edge technology. ETPs were the brainchild of the Commission and it was instrumental in developing their aims and objectives, issues relating to equality of access and the funding of their early years of development. As noted earlier in this thesis, one Commission official pointed out that, 'without the European Commission there would be no European Technology Platforms.' (Interview 2008viii)

The significance of this forum approach is that it embraces policy networks, epistemic communities and advocacy coalitions in the deliberation process. In this sense, actor-based models are an integral part, and make an important contribution to the policy process. The issue for the Commission, and the reasons why forums such as ETPs are so important, is that they provide a platform for the exchange of knowledge and expert discussion based on wide ranging stakeholder consultation. They are also significant in that they provide a way of managing knowledge in highly technical and complex policy areas. The challenge for the Commission is ensuring that no one group, technology or sectoral interest dominates this process and as many voices as is possible are heard.

In relation to the academic literature, the importance of capturing the dynamic interaction between institutions and actors remains an elusive goal. Without being able to explain the dynamic that has driven this process, we are left with little more than a snapshot of the policy process at a given moment in time. This is particularly relevant to research and technology because of the way in which it has organically evolved from a brief reference in relation to the sectoral communities (ECSC, EURATOM) to being the central pillar of the Lisbon Strategy. The task for theorists, therefore, remains how to explain the dynamics of the policy process and, in particular, the complex interrelationship between Community institutional structures and actor-based approaches, if we are to arrive at a meaningful understanding of the forces that drive the policy process in the EU. The identification of the central role of the Commission in the formulation of deliberative forums may go some way towards contributing to this. While this thesis makes no claims to the formulation of a theory of being and becoming in the policy process; it does identify, through an analysis of the emergence of research and technology and the role of ETPs, the way in which key

stakeholders interact in the development of the process and, therefore, provides a fresh insight into the policymaking process expressed in the following section.

The Policy Drivers of European Research and Technology Policy

The emergence of the EU as a key arbiter of policy and allocator of resources in the area of research and technology represents one of the most significant developments in the expansion of EU competence in recent years; at the very heart of this expansion has been an entrepreneurial European Commission. One of the most important aspects of the development of this area of policy competence has been the role of an entrepreneurial Commission in the formation of alliances with key stakeholders and the development of a complex web of policy support mechanisms and consultation tools. The formulation of ETPs is the most significant recent example of this and a reflection of how the Commission has become reliant on the knowledge and expertise of expert groups and stakeholders to formulate policy in highly complex and technical areas. In order to fully understand ETPs and why they have been developed, it is firstly important to recognise the policy context in which they have emerged. It is of particular importance to understand the context and key policy drivers in the area of research and technology policy that have led to the Commission formulation of ETPs. In analysing the constellation of circumstances that have been significant in the evolution of research and technology policy and development of ETPs, three key policy drivers have emerged:

Uncertainty and Changing Contexts:	Member state concerns regarding the growing technology gap with major competitors exacerbated by the threat from newly emerging economies.
An Entrepreneurial Commission and the Community Method:	The emergence of the Commission as the key agenda- setting agent in relation to policy proposals involving a well- developed Community Method that engages key stakeholders in a wide

Knowledge and Expertise:	Legitimising policy initiatives through strongly argued evidence-based policy proposals capable of shaping member state preference in relation to expanding the EU policy dimension in research and technology.

These themes are clearly interlinked and have been instrumental in the emergence of EU policy competence in the area of research and technology. The complex policymaking process that has evolved is enabling the Commission to manage knowledge and expertise through the creation of experts groups such as ETPs. These themes and their significance in the development of ETPs will be explored in more detail below.

Uncertainty and Changing Contexts

Uncertainty has been one of the key drivers in the expansion of EU policy competence. One of the central claims of epistemic community approaches is that it is during times of uncertainty that experts groups can influence policymakers. This was a view also espoused by Jean Monnet who thought that a period of crisis presented moments of opportunity that policy entrepreneurs could exploit. An analysis of the evolution of research and technology policy shows that it is not just expert stakeholders and groups, but also institutions that can turn crisis into opportunity. Uncertainty creates opportunities for the proactive stakeholder, whether this takes the form of an epistemic community, advocacy coalition or policy community, to provide the analysis and direction for new policy initiatives. In relation to the EU policy process, however, the unique supranational institutional architecture, with the Commission at the epicentre of the policy process, is clearly a significant variable that needs to be taken into account in relation to the degree and extent to which these policy initiatives are pursued. More significantly, during times of uncertainty the Commission itself has become entrepreneurial and proactive in utilising circumstances to advance its agenda.

Indeed, it was a period of uncertainty that allowed the Commission to expand its competence in the area of research and technology policy during the re-launch of the Community during the 1980s. Under the entrepreneurial leadership of the Commissioner for Research, Viscount Davignon, the Commission was able to advance European policy in the area by developing a policy narrative around the growing threat of American and Japanese market domination created by a perceived technology gap in an increasingly technology-driven globalised economy. The Commission was able to effectively use these perceived economic and technological threats to shape member state preference that led to the development of a number of European programmes in the policy sphere.

This was an approach also used successfully by Jacques Delors, during his Presidency of the Commission. He used the lack of progress surrounding the creation of the Single Market and Economic and Monetary Union to advance an industrial policy initiative, including a significant expansion of Community competence in research and technology policy. By taking advantage of moments of member state uncertainty arising from perceptions of a growing technology gap, Delors was able to extend EU policy competence by establishing a European Framework Programme in Research and Technology that involved the bringing together of a number of existing ad hoc research initiatives. This Framework Programme has now become the means by which the Commission can expand its competence in research and technology and has provided the foundation for its most recent significant policy initiative – the Lisbon Strategy.

The momentum driving member state support and backing for the Lisbon Strategy was the concern and uncertainty created by the emergence of research and technology as the key drivers of a modern, knowledge-based economy and the perceived threat this posed to Europe's competitive position, both in terms of a technology gap and the newly emerging economies. This involved an increasing recognition that world-leading scientific research capability, coupled with a well developed innovation infrastructure and the ability to commercialise research was the key to the development of sustainable economic growth, improved competitiveness and the creation of new companies and high value-added jobs in the newly emerging

sectors that were driving this economy: information and communication technology, biotechnology, nanotechnology and environmental technology. These developments provided the Commission with the ammunition necessary to develop the Lisbon Agenda, which involved the aspiration to make Europe the largest knowledge-based economy, in the world, by 2010. It also included a commitment to double the EU budget on research and to raise the European level of investment in research and technology to an average of 3% of GDP. This created the context for the Commission to introduce its 2000 proposals for the creation of a European Research Area from which ETPs emerged as a key instrument for achieving this goal. Without the political and economic uncertainties outlined above, it is unlikely that the momentum to drive these policies forward and shape member state preferences would have been present.

Uncertainty creates opportunities, but only if there are actors and institutions capable of taking advantage of them. Uncertainty alone, however, does not lead to policy change. The significance of the unique architecture of the EU is nowhere more apparent than in the way in which the Commission, has been able to exploit these uncertainties through a well-established 'Community Method' in forming alliances with a wide range of key stakeholders, in order to expand the EU's policy competence in the area of research and technology policy. The method of pressurising member states through stakeholder support is as important as the contextual changes created by uncertainty. The central role of the Commission and the wide range of stakeholders involved in policymaking provide evidence that challenges the state-centric approach to policymaking and the view that the Commission is merely an agent of the member states. The nature of governance in the EU is highly complex and requires a theoretical approach that embraces this complexity.

An Entrepreneurial Commission and the Community Method

At the very heart of the expansion of EU competence in this policy area has been the entrepreneurial role of the European Commission. Given the complexity and specialist nature of research and technology, the Commission has adopted a strategy of involving a range of actors in the consultation and formulation of EU R&D policy, including scientists, industrialists, civil servants, academics and politicians. This is illustrated in Chapter 6 of this thesis that provides an assessment of the Commission's

wide-ranging internal and external consultation process for FP7. The latest manifestation of this approach has been in the Commission's initiative and financial support for the development of ETPs.

The significance of an entrepreneurial Commission, at the epicentre of the policy process, is probably the single most important legacy left by Jean Monnet, the Founding Father of the EU. The importance of this legacy is fully acknowledged by both supporters and opponents of the EU model of governance. The Commission, with the competence to initiate policy has not only become the focal point of interest group activity in areas of policy and regulatory competence defined by the Treaties, but has the ability to generate new policy agendas to meet the challenges generated by a constantly changing economic and political environment. Although the Commission is clearly inhibited by the lack of a direct electoral mandate for policy initiatives, it has compensated for this by developing an approach based on knowledge-driven, evidence-based policy supported by wide-ranging stakeholder consultation in a process aimed at establishing a consensus for action in a given policy area. The issue here is not that the Commission is colonised by epistemic communities, advocacy coalitions or policy communities, but that it embraces these groups as an integral part of the Community Method.

Central to this approach is what has become known as the Community Method, which has its roots in the French Planning Commission, was adopted by the High Authority of the ECSC under the leadership of Jean Monnet and which is now the foundation of the contemporary Commission approach to policy formulation. The Community Method involves the following:

- the adoption of an entrepreneurial role by the Commission in the policy process uninhibited by national interest;

- an extensive process of engagement with national governmental and non-governmental stakeholders in the development of policy initiatives in expanding the European policy dimension and the mindset of those participating in the process (the idea of

'spillover' developed by Haas (1958), Lindberg and Scheingold (1970) as part of the neo-functionalist model);

- the development of knowledge-driven, evidence-based policy analysis based on a consensus of stakeholder opinion aimed at shaping member state preference;

- a close working relationship with the European Parliament in promoting the European dimension;

- support from the European Court of Justice in reinforcing the legal authority of the Community regime;

- using Community resources to sustain the method including the financing of stakeholder involvement in the process, for example the funding of ETPs.

The Community Method is a dynamic process that is subject to external pressures; for example, the Method was clearly inhibited during the period of the Luxembourg Compromise (1966) in which member states could veto policy initiatives that were perceived to be a threat to national interest. However, the Method remained integral to Community activity during this period if somewhat inhibited and was, therefore, capable of being revived by Delors during his period as President of the Commission in the re-launch of the Community as discussed above. The Community Method provides the key to the emergence of an EU policy dimension in research and technology policy and, as noted above, the establishment of ETPs.

There is a connection between the Community Method and the approach that was adopted by Davignon that led to the development of the early European programmes in the area of research and technology. Both approaches are grounded in key stakeholder engagement involving an evidence-based analysis and consensus aimed at shaping member state preference. However, the Davignon approach serves to indicate one of the potential weaknesses of the Community Method in that a small group of stakeholders can come to dominate the process producing closed and exclusive policy communities. This has certainly been the case in research and

technology policy where policymaking has become dominated by a core group of industrialists, universities and research bodies working with the Commission. The Commission's response has been to develop a deliberative forum approach involving equality of stakeholder access and ETPs are a good example of the move in this direction.

One of the significant features the emergence of research and technology policy at the European level has been the organic way in which it has evolved. This can be contrasted with the Treaty defined way EU policy emerged in relation to coal and steel, atomic energy, agriculture, the single market and economic and monetary union. In all of these areas the Commission's capacity to act was defined by the member states in the various relevant Treaties: Paris (1951), Rome and Euratom (1957) and the Merger Treaty (1965). The ECSC and Euratom Treaties made reference to research and technology policy but, in both cases, this involved relatively small budgets for the coordination of national research initiatives and, in the case of Euratom, the development of a European dimension in the highly advanced area of fusion research. There was no reference to research and technology in the Treaty of Rome.

In contrast to the policy initiatives outlined above, research and technology was given retrospective Treaty definition to take account of the initiatives developed by Davignon and Delors and in recognition of its growing importance as an area of policy competence in the EU: the Single European Act (1985), further defined in the Maastricht Treaty (1992), the Amsterdam Treaty (1997) and Lisbon Treaty (2009). Research and technology policy, therefore, represents an interesting case study in how the Commission, acting entrepreneurially, can shape the policy agenda through the effective use of the Community Method requiring the member states to retrospectively acknowledge these developments. This analysis serves to confirm academic and theoretical approaches that place emphasis on the important role of institutions in influencing the policy process in the EU.

The supranational architecture of the EU and, in particular, the role of the Commission is central to the policy process. It establishes the policy agenda, creates the framework for consultation and discussion and provides the focal point for actor-based group activity. It is the point of reference for new policy ideas and has the

capacity to establish a policy framework that is greater than the sum of its parts (member state interests). The role of the Commission in the development of research and technology policy, therefore, serves to undermine any analysis based on a state-centric approach that portrays the role of the Commission as an agent of the member states implementing policies on the basis of a convergence of national interest. It also serves to undermine actor-based models that view stakeholders solely as the main agents of change. The evolution of research and technology policy serves to indicate the important interaction of both institutions and actors in advancing change. The entrepreneurial role of the Commission in this process is clearly significant in the way it manages stakeholder involvement and exploits their knowledge and expertise to enhance policy competence.

Knowledge and Expertise

In modern, knowledge-based societies, knowledge and expertise have become the terrain of politics. This is particularly the case in highly complex and technical areas of policymaking, such as European research and technology policy, where decision-makers are heavily reliant upon experts and the knowledge they provide to assist in the formulation of policy. ETPs have been established by the Commission for the vital source of knowledge legitimacy they provide to policy proposals.

Knowledge and expertise have always been important ingredients of the Community Method. We have emphasised above that a knowledge-driven, evidence-based approach involving wide-ranging consultation assists the Commission to compensate for the lack of an electoral mandate in support of policy initiatives. The process of evidence-based policy analysis, by its very nature, involves a wide- ranging consultation with political, societal and sectoral interests. Central to this approach is equality of access and ensuring all stakeholder interests are heard. An integral part of the Method is an open process of deliberation in which participants are required to defend their views through questioning and challenge with the aim of exposing self interest and flawed argument. It is a dynamic deliberative process involving what Majone (1989: 2) has eloquently described as 'reciprocal persuasion'. The objective of this dialogue is to evolve a sound evidence-based analysis arrived at through compromise and consensus amongst competing stakeholders, which highlights the

most efficient and effective way forward in a given policy domain. This manifests itself in a carefully argued evidence-based proposal prepared by the Commission, legitimised by a process of consultation and dialogue, capable of withstanding robust analysis by the member states and the European Parliament. It is a knowledge-driven process that has been particularly influential in shaping member state preference in relation to the single market, the single currency, the Lisbon Agenda and the development of the research and technology policy dimension. It is a process that has increasing value in very complex areas of policy such as research and technology.

There is a growing awareness in both political and academic circles that the escalating speed and complexity of scientific and technological change is transforming society and is putting increasing pressure on all levels of governance. The newly emerging research and scientifically-driven knowledge economy is generating a growing unevenness in the distribution of knowledge between the expert and the generalist politician and administrator, who do not have the technical background and information to make decisions in technically sophisticated areas of policy. The actor-based models, discussed in Chapter 2, highlight a new class of professional expert at the core of the policy process whose capacity to influence change is determined by their specialist knowledge. This rapidly expanding knowledge gap is an increasing cause for concern and has the potential to evolve into a process of governance dominated by the expert (technocracy). The identification of mechanisms for managing and overcoming this knowledge gap is now a central feature of the debate about modern democracy.

The Community Method with its emphasis on wide-ranging consultation, policy deliberation and knowledge-driven, evidence-based analysis means that the Commission is particularly well placed in adapting to the complexities of a modern knowledge-driven society and economy. The wide-ranging process of consultation, the number of stakeholders involved and the fragmented and sectoral nature of the process means that the potential for one group to dominate the policymaking process is constrained. It also means that each participating group must be prepared to defend their interests while being open to reflection on any new ideas entering the policy environment and, if necessary, being prepared to amend their ideas accordingly. This

process of deliberation has a particular resonance for very complex areas of policymaking; indeed, as noted above, the Commission is evolving the Community Method to institutionalise the deliberation process at both formal and informal levels. The Lisbon Treaty has given Treaty definition to Comitology Committees as an integral part of the policy development and implementation process in areas of Commission regulatory competence. The development of ETPs reflect a new dimension to this approach in that it represents an informal mechanism for institutionalising deliberation in complex areas of leading- edge technology. It creates a forum in which key stakeholders representing governmental and non-governmental organisations, administrators, industry, the research community, regulators and venture capitalists come together to discuss and debate the future direction of the technology and to identify agreed areas for future investment by the Framework Programme.

The Commission and the Formulation of ETPs

The European Commission has played a central role in the formulation of ETPs; indeed, ETPs were a Commission initiative. They were funded by the Commission and were provided with clear guidance and rules by the Commission on openness and transparency. Only through an understanding of the key drivers of European research and technology policy is it possible to comprehend the Commission's rationale for developing ETPs. One of the central arguments of the epistemic community approach is that expert groups become more influential if they gain an internal role in the policymaking process and become formally inserted into key institutions. ETPs are not legally constituted EU bodies, but are informal groups brought together to inform the Commission's external consultation process in research and technology. There are 7 main reasons why the Commission has supported the development of ETPs:

1. They provide an efficient mechanism for collecting stakeholder knowledge and opinion as vital sources of legitimacy for policy proposals.
2. They increase stakeholder involvement in policymaking as a vital source of legitimacy in a policy area that had become closed and exclusive.

3. They institutionalise a deliberative form of policymaking as a means for managing knowledge and expertise in complex areas as a safeguard against expert domination and technocracy.

4. They develop a European mentality amongst stakeholders through ETP membership, sharing knowledge and networking.

5. They facilitate collaboration between stakeholders along the innovation continuum to ensure research makes it to the market.

6. They increase industry investment in European research and technology programmes.

7. They stimulate coordination between national, regional and European programmes.

Through ETPs the Commission is attempting to institutionalise the role of knowledge and expertise in the policymaking process as key sources of legitimacy on which to base policy proposals. Stakeholder knowledge and expertise are particularly vital to the Commission in the area of research and technology policy, a rapidly developing policy area where Commission officials and politicians may lack the necessary background knowledge required to make policy. ETP SRAs offer the Commission highly technical and complex knowledge, information and ideas on which to develop European policy. They are a particularly vital source of information in leading-edge technologies where limited knowledge exists even amongst the experts themselves. Having ETPs identify key policy priorities within an SRA also provides a more efficient method for the Commission to survey stakeholder views and opinions. The development of an SRA is more efficient system to foster knowledge and gauge stakeholder opinion than the slow, cumbersome and inefficient expressions of interest method used during FP6. In bringing stakeholders together to produce an SRA, the Commission is reducing duplication and developing a body of knowledge that reflects the consensus of stakeholders within a policy sector and not just the narrow self-interest of stakeholders.

Increasing openness and transparency in policymaking was the key aim of the Commission's 2000 White Paper on Governance. Increasing stakeholder involvement was particularly important in the area of research and technology policy as this was, as

Chapter 4 points out, a policy area that had become dominated by a small number of stakeholders and the closed policy communities described by Richardson and Jordan (1979) and Marsh and Rhodes (1992). Widespread stakeholder support and involvement in policymaking is an important source of policy legitimacy for the Commission and this explains why it has gone to such great lengths to ensure widespread participation in ETPs and why ETP documentation is made widely available to the public and other stakeholders to scrutinise. If the Commission chooses to base aspects of the Framework Programme on policy ideas and knowledge from ETP SRAs, it can claim that these policies represent the views and opinions of a wide range of stakeholders within a policy sector. This makes it very difficult for member states and the European Parliament to reject policy proposals.

Through the development of ETPs the Commission is attempting to institutionalise a deliberative method of policymaking in which stakeholders with competing interests come together and reach a consensus around a strategic research agenda. It is the deliberative mechanism within ETPs that provides the Commission with a means for managing knowledge and expertise in highly complex areas and limits the potential for one group to dominate the process. The deliberative process that is required for the formulation of the SRAs makes it difficult for one group to dominate policymaking. A further safeguard is the Commission's requirement for openness and transparency in relation to all discussion and the publication and dissemination of all relevant documents for further scrutiny.

It can be argued that the Commission rationale behind the formulation of ETPs is based on a similar idea espoused by Jean Monnet; that through institutionalising particular modes of practice stakeholders will become accustomed to certain ways of doing things. In the case of ETPs, through establishing a deliberative forum in which stakeholders can network, share information and openly debate and discuss policy, the Commission is trying to develop a stronger European mentality amongst stakeholders when it comes to research and technology policy. The process of deliberation and discussion is designed to ensure that what emerges reflects a European-level consensus of key stakeholders, rather than narrow self-interest. This, in turn, will foster a European mentality amongst stakeholders as they come to recognise that

promoting self-interests will be easily diagnosed when benchmarked with the SRA, thereby undermining their potential influence.

By bringing such a wide range of governmental and non-governmental stakeholders within a policy sector together, the Commission is attempting to reduce fragmentation in European research and technology policy through increasing stakeholder collaboration. This serves two main functions: firstly, it brings stakeholders along the innovation continuum together to develop research proposals that will make it to the market place and in doing so enhance European competiveness and reduce the innovation gap; secondly, by involving governmental stakeholders they are trying to reduce fragmentation and duplication between European and national research programmes. Finally, ETPs have also been designed as a means for increasing industry involvement as they are a vital source of investment for research and technology programmes at the European level. Through ETPs, the Commission has not only found a mechanism for making policy in highly complex areas, but also a framework for solving some of the practical problems that Europe faces in the sphere, including a lack of competitiveness and under investment.

The central role of the Commission in the formulation of ETPs serves to highlight the significant contribution that new institutional approaches make to the theoretical debate. The capacity of institutions to shape stakeholder involvement and policy-procedures enhances their role in the policymaking process. Ultimately, however, the Commission is equally reliant on stakeholders to assist in the formulation of policy. Deliberative forum approaches recognise the interaction between the Commission and stakeholders. This thesis takes this recognition further by outlining the main reasons and rationale behind the Commission's role in the formulation of these groups, as a mechanism for managing knowledge and stakeholder involvement in policymaking.

European Technology Platform – Theoretical Findings

The important role of the Commission in the formulation of ETPs serves to support some of the key tenets of new institutional approaches, in particular, the

capacity of institutions to mould and shape stakeholder involvement in the policymaking process. In doing so, this serves to highlight one of the central weaknesses of actor-based models; their failure to acknowledge the significant role institutions can play in the process. Indeed, ETPs did not form originally through stakeholder interaction in the way actor-based groups would come into being, but were the brain-child of the Commission in their attempts to institutionalise knowledge and stakeholder involvement in the process. This highlights the important role of institutions, but does not provide affirmation of new institutional approaches, as conversely, ETPs also serve to reflect the importance of a wide range of stakeholders in policymaking and the reliance of EU institutions, in particular the Commission, on the knowledge and expertise they provide to formulate policy.

ETPs prove the importance of both institutions and actors in the process and, therefore, neither institutional nor actor-based models can be dismissed and are still useful in capturing some of the aspects of the make-up and role of ETPs in the process. In Chapter 5 of this thesis, the empirical make-up of ETPs was assessed and analysed against the central propositions of the key theoretical approaches discussed in Chapter 2. While elements of these approaches can be found within ETPs none of them accurately capture or explain what ETPs represent. This section will assess some of the key findings that have emerged from the empirical analysis in relation to the approaches discussed in Chapter 2.

An analysis of the role of ETPs in the formulation of FP7 serves to vindicate one of the central themes of actor-based models, namely that the capacity of expert groups to influence the policymaking process is most pronounced at the agenda-setting level. As the empirical analysis in Chapter 6 shows, ETP SRAs have had a significant impact on the priorities of individual work programmes of the thematic areas in the Cooperation pillar of FP7. The high level of satisfaction amongst ETP members on the overall impact of SRAs in relation to the priorities of these thematic areas supports this view. ETPs are, however, only one group of stakeholders in a broader consultation process conducted by the Commission in the formulation of a Framework Programme. The Commission consults a wide a range of expert groups and stakeholders in policy formulation. ETPs are not a formal institutional source of

information, but an informal external source. The Commission is not bound by the knowledge and expertise provided by ETPs, but what gives ETPs a greater potential to influence the process, over other external stakeholders, is their claim to represent the whole of a research and technology sector and not a narrow self-interest. Indeed, it is the widespread stakeholder involvement and the European-wide strategic claims of the SRA that makes ETPs a vital source of legitimacy to the Commission.

The impact of ETPs at the work programme level is sharply contrasted with their minimal impact in relation to the overall structure of FP7. Chapter 6 shows that there has been a high level of continuity from one Framework Programme to another in the shape and structure of the key pillars. These high levels of continuity lend some weight to one of the key themes at the heart of new institutional approaches, the idea of path dependency; once a certain path has been taken it becomes very difficult to change direction or take a new route. One of the complaints of ETP members that arose during interviews was that the content and budget of the FP7 Cooperation pillar is unevenly divided between thematic areas; the result being, that in certain themes a large number of ETPs are grouped together, whereas in other themes, only a small number of ETPs reside. The criticism is that in thematic areas where a large number of ETPs are grouped together the potential to influence the content of the work programme is more restricted and the amount of funds available is, therefore, reduced. It must be noted, however, that the potential for ETPs to influence the Commission's consultation process on the thematic areas of FP7, conducted at the end of 2004 and beginning of 2005, was severely inhibited by the fact that the majority of ETPs were still in the early stages of development.

Major ETP lobbying for a change and restructuring of the thematic areas of the Framework Programme will be something to look out for in the consultation process for the development of FP8 that will begin next year. Stakeholder support for the reconstruction of the thematic element of the Cooperation pillar could well be enough to challenge the strong element of continuity that has been a key aspect of previous Framework Programmes. However, this will depend on the support of the Commission and will be inextricably linked to the size of the budget that will be made available for FP8; the larger the budget, the greater the potential for more substantial change.

Where actor-based models are useful are as analytical tools in their recognition of the important role that stakeholder knowledge plays in the formulation of policy, particularly at the agenda-setting level. There is a clear link between these approaches and ETPs, as it is knowledge that provides them with a significant role in the process and the potential to influence policy change. Like epistemic communities, the knowledge ETPs contribute is highly technical and scientific; however, there is a technocratic element to knowledge produced by epistemic communities that is not reflected in ETPs. In this regard, ETPs are more clearly linked with the conception of knowledge developed in the advocacy coalition approach. Advocacy coalition approaches recognise that technical and specialist knowledge is inextricably linked with interests; actors within an advocacy coalition have clear political aims and an agenda to push. ETP members bring knowledge, expertise and interests to the debate and they are not impartial and neutral technocrats.

Where ETPs differ from these actor-based models is that it is not just their claims to policy-relevant knowledge that enables them to contribute to the policymaking process, but also their claims to legitimacy through widespread stakeholder involvement. The membership of ETPs is broad and it is their claim to represent all key stakeholders within a policy sector that provides them with further influence over the process. Policy community and epistemic community approaches have a very narrow and closed membership when compared with ETPs.

Advocacy coalition and issue network approaches have a more heterogeneous interpretation of membership that is similar to that of ETPs; however, where these groups differ from ETPs is that their participants are all linked by a shared belief in a particular cause or issue. Indeed, central to all these actor-based approaches is the view that participants are interlinked by shared values and understandings. The diversity of ETP membership makes it very difficult to argue that they are bound by shared values and understandings, or even linked by support for a particular cause or issue. The membership of ETPs is broad, representing governmental actors and a range of stakeholders along the innovation continuum, including industry, universities, research centres, civil society and user groups. These groups are too diverse to be linked by shared values, understandings and interests; for example, the interests and

aims of industry are going to be considerably different to those of the research community (universities, research centres). These groups come together out of practical needs to share information and network, but also a shared recognition that their potential to influence the policymaking process is greater if they are willing to openly debate their competing interests and reach a consensus around a SRA.

A central idea within the advocacy coalition approach is that change is the product of debate and discussion between different groups. This is reflected in the ETP model, however, where ETPs differ from advocacy coalitions is that they provide a framework in which this debate can take place that embraces all groups and competing stakeholder interests; including advocacy coalitions, issue networks and epistemic and policy communities. Where debate and discussion occurs between different actor-based groups in an open environment a consensus is a desirable outcome, but not a necessary requirement. As ETPs have to form a policy document, in the form of an SRA, outlining policy priorities that reflect the interests of a whole sector, consensus is an absolute requirement. In this regard, deliberative forum approaches become a very useful analytical tool in explaining the ETP model.

Indeed, the emergence of ETPs does appear to fit well within a body of literature that has emerged on the active role of the Commission in the development of deliberative forums. ETPs are more reflective of deliberative policy forums in that they have been designed by the Commission specifically to provide a framework in which a wide-range of stakeholders can debate and discuss competing interests. This is the method adopted by ETPs in the formulation of SRAs in which a wide range of stakeholders contribute to the debate. It is the deliberative process that is intended to restrain vested interest and prevent any domination of one group within the forum, providing a safeguard against expert domination.

While certain aspects of all these approaches are reflected within ETPs, none of them accurately capture and explain the ETP model as a whole. However, this research has found that there does appear to be a stronger link between ETPs and deliberative forum approaches than the other models discussed and analysed in Chapter 2. Where the deliberative forum approach is particularly useful is that it recognises the role of the Commission in the formulation of groups and, therefore, provides an important

recognition of the interaction between institutions and stakeholders. This thesis builds on this increasing recognition by outlining the reasons and aims behind the Commission's motivation for designing a mechanism for managing knowledge and stakeholder involvement. The deliberative forum approach is also malleable in that it does not deny the existence or importance of other actor-based approaches, but embraces these approaches as integral parts of the forum.

European Technology Platforms – Wider Empirical Findings

There are a number of other interesting findings that have emerged from the empirical analysis of ETPs and their role in policymaking. The findings presented in Chapter 6, show that ETP SRAs had a significant impact in relation to the contents of the work programmes in the thematic areas of the Cooperation pillar in FP7. The main reason for this impact is that they were set up to shadow the 10 thematic areas and the purpose of the SRA was to provide strategic direction in identifying priorities for research funding. Figure 6.5 in Chapter 6, shows that of the 31 ETPs established in 2006, 29 fully or broadly covered the research areas of the 10 thematic programmes. The degree to which the ETPs pattern matched these thematic areas and the fact that the SRAs represented a strategic assessment from the European perspective meant that they were particularly well-positioned to influence the process.

In addition, the research shows that ETPs working in areas of new and advanced technologies where major breakthroughs could radically change economic competitiveness and immediate societal challenges were particularly influential in influencing the content of work programmes. For example, the potential of nanotechnology both in relation to industrial processes and the quality of life; innovative medicines, such as genetic engineering and stem cell technology, that could revolutionise medicine leading to a wholly new model of personalised regenerative medicine; and renewable energies in providing new sources of supply. These are areas where the investment is in the future of the technology and the implications are so significant that the risks associated with the investment are far outweighed by the potential future benefits. Life sciences and biotechnology are other interesting examples of this development with governments throughout the world making significant investments in these new technologies because of the potential benefits

they might bring. ETPs that have been formulated in policy areas with a well-established history at the European level have been less influential, as the Commission utilises their own internal advisory groups. Other areas that are more sectorally focused such as textiles and forestry have had a smaller impact on the content of work programmes.

The importance of the role of ETPs in relation to the contents of work programmes has been recognised by the Commission and further funding from FP7 has been made available to support their continuation and encourage the coordination of activities with other ETPs. This suggests increasing Commission confidence in the knowledge and expertise ETPs bring to the table and the contribution they make to the identification of policy priorities in relation to FP7. The overriding reason for the growing impact of ETPs is that their SRAs present a consensus of stakeholder opinion representing a European perspective, rather than narrow sectoral or technology driven interests.

The research also identifies that there is a very real danger that ETPs have the potential to become closed policy communities, dominated by large industry. ETPs derive their legitimacy from the knowledge and expertise they can contribute to the formulation of policy. However, equally important is that this knowledge and expertise is based on wide-ranging stakeholder consultation and support. The central role of major European industries in ETPs is an absolute necessity if they are going to continue to play a role in the policy process. Apart from financial support from the Commission, only large industry has the resources to maintain their running-costs. On the political level, their involvement is also desirable for the Commission in support of their policy proposals and in encouraging their involvement in European research programmes.

The Commission recognises the need to balance the need for a large industrial involvement with preventing ETPs becoming closed shops and a tool for industry domination of European research and technology policy. The Commission realises that their continued presence and active role in ETPs is vitally important in avoiding this scenario. To this extent the Commission has maintained a neutral role when it comes to the formulation of ETP SRAs, but an active role in ensuring maximum stakeholder participation in their creation. Only through widespread consultation can the SRA

legitimately claim to represent the policy priorities of a sector and all stakeholders that reside within it. If stakeholder participation drops, then the danger is that ETPs become a mouthpiece for industry and research and represent the closed and exclusive communities that dominated policymaking in research and technology policy during the 1980s and 1990s.

The Commission has already gone to great lengths to ensure that ETPs are both open and transparent in terms of membership and provide equality of access in the way in which the SRAs are prepared and made available for public discussion. However, the continued vigilance and commitment of the Commission to openness and transparency is vital if ETPs are not to revert to becoming closed communities dominated by industry or the research community. While all major sectors and group are represented within an ETP, some sectors are overrepresented, in particular industry and the research community, at the expense of other groups, such as SMEs, NGOs, society and user groups. Many of the latter do not have the time nor financial and personnel resources to participate in ETP events. The Commission is looking to find mechanisms to increase the representation of these groups, particularly NGOs and society/user groups, as they provide an essential link between ETPs and society and, in doing so, will ensure that research and technological innovation are focusing on societal requirements. For the Commission, ETPs represent a means of mediating between technical expertise and societal interests. The involvement of these groups is an absolute minimal requirement in areas of policy where knowledge and expertise are essential for participation, as they provide the only link between society and the process.

Indeed, one of the main criticisms that can be levelled against ETPs is that, as the SRAs are based on detailed, complex, technical knowledge and expertise, that they act as a barrier to participating in the discussion. In other words, the average citizen cannot become actively involved in policymaking in this area due to its complexity. Peterson and Sharp (1998: 219) point out the difficulties in involving citizens in the debate in this policy area:

'RTD policies at the national level, in Europe and elsewhere, have always tended to be dominated by elite networks of officials, firms and

scientists. Subjecting them to normal political controls is inherently difficult, because it requires lay people to judge technical issues whose outcomes are in any case very uncertain, especially in fast changing fields of technology. If European technology policy seems a clear manifestation of the EU's "democratic deficit", it must be recalled that national research policies in Europe have never been subjects of very open or inclusive democratic debates.'

If looked at from this perspective then the formulation of ETPs can be viewed as an important attempt by the Commission to extend stakeholder involvement in the process, to include that of the informed citizen. ETPs do not provide a solution to the democratisation of the area of research and technology policy. The complexity of the area effectively precludes the participation of citizens lacking the necessary knowledge and expertise. EU citizens are represented in ETPs through member state officials and wider society groups, NGOs and user groups. These groups are, however, significantly underrepresented within ETPs and the Commission should be going to greater lengths to increase their involvement and establishing mechanisms for making their involvement easier, given that they often lack the resources to participate in ETP events. This has been recognised in a recent Commission publication of a report by an Expert Group on ETPs (*Strengthening the Role of European Technology Platforms in Addressing Europe's Grand Societal Challenges*), which recommends the need to widen the understanding and encouraging the discussion of, science amongst citizens, thereby avoiding emotive responses in relation to important and sometimes contentious issues.

The deliberative nature of the ETP forum provides an open and inclusive framework in which all stakeholders with wide-ranging competing interests can debate and discuss policy issues. The need to reach a consensus through deliberation ensures that no one group or individual stakeholder, in particular large industry, can dominate the process. In this regard, it is the deliberative mechanism and the Commission's insistence upon openness and transparency in relation to all ETP activity that provides a safeguard against expert domination (technocracy) and the potential for ETPs becoming the closed community. Through the development of deliberative forums the

Commission has developed an effective formula for both cultivating and managing knowledge and expertise, but this formula is not without problems. The potential for ETPs to become closed communities dominated by small exclusive group of stakeholders remains a serious and potential pitfall of the ETP model. In order to avoid these problems, the European Commission has an integral role to play in maintaining the openness and transparency of ETPs and ensuring maximum participation of the widest possible number of stakeholders, particularly, those groups representing wider society. This should be a role the Commission take seriously given the importance of the knowledge and stakeholder legitimacy that ETPs can confer upon European research and technology policy.

The existence of ETPs is mutually beneficial to both the Commission and key stakeholders in the area of research and technology policy. For the Commission, they provide an effective and efficient framework for collecting the knowledge and expertise required to make policy in complex and technical areas. Since this knowledge is produced through wide-ranging stakeholder involvement, it adds further legitimacy to policy and a body of support and pressure that can be used to shape member state preferences. Furthermore, ETPs provide the Commission with a formula for developing an increased European consciousness amongst stakeholders through fostering greater collaboration and a deliberative policymaking mechanism that forces debate about the need to seek European-wide solutions.

For stakeholders, ETPs provide a framework for sharing knowledge and developing networks of contacts around which to build European projects. More significantly, ETPs have proved an effective way for stakeholders to influence the policymaking process and the content of FP Work Programmes as referenced in Chapter 6.

What significantly increases the credibility of ETPs is the involvement of a wide range of stakeholders representing, often competing, sectoral and societal interests. This point was emphasised in an interview with one ETP member who pointed out 'we are stronger and more influential working together than we are working alone' (Interview 2008viii). The evidence suggests that if ETPs want to retain this position of influence in relation to the consultation for FP8 they will be required to continually

update their SRAs identifying the future direction of the technology. If ETPs legitimately represent a policy sector then they should be the Commission's most important source of information. If, as the 2009 Commission publication points out, other sources are preferred to ETPs by the Commission then this indicates that they are not representing all relevant stakeholders effectively (COM 2009c); this is something the Commission itself would have to remedy by ensuring maximum participation.

The mutual benefits to both the Commission and stakeholders of continuing with the ETP initiative is manifest, and therefore, their continuation should be actively encouraged and sought by all involved. However, the continuation of ETPs is predicated on stakeholder commitment and enthusiasm. In this regard, there is an in-built source of tension. The Commission requires knowledge and stakeholder support, while ETP member want greater influence and better access to Framework Programmes. If the commitment of ETP members is to be maintained, stakeholders need to see the benefits of involvement. The Commission should recognise this and go to greater lengths to indicate where ETPs have been influential in informing policy; for example, more substantial and clearer referencing of sources in the work programmes would be one way of doing this.

The future of ETPs remains the subject of discussion, and the model on which they are based is continually developing. 2011 will prove to be a defining year for the ETP initiative as the Commission embarks upon its consultation process for FP8. The enthusiasm of stakeholders for the continuation of ETPs will manifest itself in their commitment to developing up-to-date SRAs to inform the content of FP8. The commitment of the Commission in supporting ETPs is clear in the funding they have made available to some, but not all, ETPs in FP7. It was made clear in interviews with Commission officials that they had no desire to increase the number of ETPs and that their main focus was on merging some ETPs to avoid duplication and overlap of activities. This is reflected in the fact that a number of calls for proposals in FP7 have been targeted at encouraging coordinating activities between ETPs as a first step towards potential mergers. The ETIP proposals outlined in Chapter 6 have not been embraced by ETPs and their future remains subject to further discussion between the

Commission and the present 36 ETPs. A further interesting development is that some ETPs have evolved into Joint Technology Initiatives (JTIs). There are now 6 JTIs in existence in areas of research critical to Europe's future competitiveness and the quality of life of EU citizens. The future of JTIs, however, is in doubt because of the complexity and time-consuming nature of setting them up.

European Technology Platforms and the Management of Knowledge and Expertise

Scientific research and the technology it generates are now pivotal to the future competitiveness of Europe and the quality of life of its citizens. They are the source of future economic growth and employment creation in the high value-added new technology sectors that are driving this economy. The rapid investment in research and technology at both the national and supranational level and the emergence of the EU as a key allocator of policy and resources in this area is a manifestation of the significance of these developments. It is further reflected in the complex policy process that has emerged at the European level and represented by the establishment of ETPs as a means of ensuring the best knowledge and expertise available is used to inform the policy process.

These developments provide increasing evidence of the growing influence of knowledge and expertise in the policymaking process; and while the potential economic and societal benefits are clear, these developments are not without their problems. The single most significant problem is the growing uneven distribution of knowledge required to make informed policy decisions in these increasingly complex policy areas. There is an emerging knowledge gap between the technical expert and the generalist politician, administrator and citizen and it is a potential source of tension. The latter increasingly find themselves lacking the background technical knowledge to meaningfully participate in the policy process and, therefore, are increasingly dependent upon specialist expertise. The obvious danger arising from these developments is that unelected experts increasingly dominate the policymaking process and thereby undermine conventional democratic ideas of legitimacy and accountability. The expert derives his authority from technical expertise and knowledge, and not the electorate. This raises the spectre of technocracy, as defined in Chapter 3 of this thesis; a system of governance ruled and dominated by experts.

The emergence of ETPs, involving stakeholders whose credentials for entry into the process is knowledge and expertise, has served to fuel an already existing public and academic debate about the EU being technocratic in both design and purpose. It further serves to highlight the critique that the Monnet legacy manifested in the institutional structure of the EU, and the Community Method of policymaking, is the source of the democratic deficit in which modes of legitimacy and accountability are increasingly overtaken by the rule of experts. The focus for much of this debate is the European Commission and the elaborate and complex system of expert support that has evolved at the European level. One of the key themes of this thesis is that the Commission, lacking an electoral mandate, is reliant upon knowledge and expertise in the preparation of policy proposals that provide effective and efficient solutions to societal problems capable of gaining acceptance by the member states and their citizens. The central issue, therefore, facing the Commission is how this expertise is managed in an open and transparent way.

This debate raises important questions; unfortunately it has been inflamed by pejorative rhetoric that merely serves to cloud rather than clarify these important issues. Even the academic debate has to some extent been distorted by an emerging false dichotomy in which technocracy is perceived as the antithesis of democracy and, therefore, undermines the democratic process. The problem with this dichotomy is that the critique of undemocratic technocratic practices fails to address both the complexity and impact of technological transformation that is taking place on institutional and democratic structures and practices. It fails to analyse how democratic processes might be re-designed to take account of the increased level of expert involvement at all levels of governance.

While the emergence of ETPs may have served to fuel the technocratic debate, they also provide a potential means of managing the growing importance of knowledge and expertise in the policy process. We noted in Chapter 2 that academics have become alert to the adoption by the Commission of the forum model as a means of managing expertise in the policy process. One of the themes of this thesis is that the development of the deliberative forum approach is a natural extension of the Community Method of policymaking that embraces an extensive process of

consultation. ETPs represent a further extension of this process in that they encourage a dynamic interaction between representatives of government, societal and economic interests and technical expertise.

The emergence of the forum approach represents an important mechanism for mediating between technical expertise and societal interests. They provide a means by which competing ideas and interests come together to debate critical issues with the aim of creating a problem-solving consensus. It provides a means by which a wide-range of stakeholders can outline their views and these views can be challenged by competing interests. As Joerges points out: 'the dynamic of the deliberative process is that expertise and counter expertise is institutionalised not only experts and counter experts observe each other, they in turn are observed by those affected in European society and they become attentive to each other. It becomes part of a process of European communication.' (Joerges 2001: 8) A central feature of this process is that the participants are prepared to adapt and amend their views in the light of the counter evidence presented. The deliberative process has been most eloquently described by Majone:

> 'Public discussion mobilises the knowledge, experience and interests
> of many people, while focusing their attention on a limited range of
> issues. Each participant is encouraged to adapt his view of reality, and
> even to change his values, as a result of the process of reciprocal
> persuasion. In this way, discussion can produce results that are beyond
> the capabilities of authoritarian or technocratic methods of
> policymaking.' (Majone, 1989:2)

The criticism of the Community Method as essentially technocratic underestimates the wide-ranging nature of the consultation involved; in particular, the requirement that all societal and sectoral interests are engaged in the process. The pressure on the Commission to ensure wide-ranging involvement in the process is that the exclusion of any interest, or the failure to cover potentially important areas of the policy process, would be exposed during the scrutiny of the proposal in the Council of Ministers, the European Parliament and the media. It is precisely the fact the Commission's policy proposals are subject to the full glare of publicity that constrains

any policy solution that is either partial or reflects a particular societal or sectoral interest.

The technocratic argument also underestimates the power of a process involving a wide-range of stakeholders representing competing ideas and the effective constraint this puts on the potential of one group to dominate the process. The deliberation process, as Majone (1989) points out, is an effective antidote to technocratic methods of policymaking and rule by the expert. As a method of managing knowledge and expertise in complex policy areas, it is not without potential problems; for it to work effectively it will require careful monitoring and eternal vigilance. For example, it is essential that the type of deliberative forum represented by ETPs conducts its activities in an open and transparent way with equality of access to ensure that every voice is heard. Furthermore, if implemented and managed in this way, it provides a means of addressing the growing knowledge gap in complex areas of policy, and the tension this can cause between expert opinion and the generalist politician, administrator and citizen.

The increasingly important role of knowledge and expertise in highly complex post-industrial society is an issue that presents a challenge for governance at both the national and supranational level. The challenge is to reconcile the need for both expertise and democracy in the policymaking process. This dilemma is clearly expressed by Sartori:

> 'We find ourselves uneasily, and often hazily, placed between these
> two extremes: a government of non-experts over experts, or a
> government planned out by experts without democracy. If democracy
> is to survive, it will have to steer clear of either.' (Sartori 1987: 431)

For Habermas, the relationship between technology and democracy is one of the main problems facing the modern polity:

> 'We shall understand "democracy" to mean the institutionally secured
> forms of general and public communication that deal with the practical
> question of how men can and want to live under the objective
> conditions of their ever-expanding power of control. Our problem can

then be stated as one of the relation of technology and democracy:
how can the power of technical control be brought within the range of
the consensus of acting and transacting citizens?' (Habermas 1970: 57)

ETPs represent a move towards a deliberative forum model in the highly complex and sophisticated area of research and technology policy. While this model may not provide a complete solution to the challenges outlined by Sartori (1987) and Habermas (1970), they do represent a way of managing knowledge and expertise. They are not an attempt to depoliticise the policy process or to identify some unambiguous truth that will drive the policy process, their ambition is more limited. The aim is to mobilise state and societal actors for the purpose of focusing on the specific problem of the present and future direction of leading-edge technology relevant to Europe's competitive and societal challenges. The purpose of the ETP is to identify and prioritise policy choices through a process of deliberation involving competing ideas and interests that are consistent with the available knowledge and expertise. This includes an analysis of the potential consequences of a particular policy choice and the value this choice represents for Europe, both in terms of the utility and the cost of following the course of action outlined in the SRA.

The deliberative forum approach in relation to ETPs will only work effectively if it involves the mobilisation of all societal and sectoral interests. There must be equality of access and transparency in relation to all ETP activities, including a proactive dissemination strategy. Raising awareness of the importance of science among the general public and finding a role for the informed citizen will be one of the major future challenges of this model. Because there is no unambiguous truth in the policymaking process, it is important that these forums embrace an ethos of intellectual scepticism advocated by Karl Popper (1945). His advocacy of the Socratic notion of the limits of knowledge is an important starting point for the deliberative forum model. A further link with Popper is that ETPs represent an incremental and piecemeal approach to managing the knowledge and policy process and their overall impact is relatively limited; if they do not work effectively this can easily be rectified. As Popper has noted:

'Blueprints for piecemeal engineering are comparatively simple. They are blueprints for single institutions....If they go wrong, the damage is not very great, and a re-adjustment not very difficult. They are less risky, and for this very reason less controversial.' (Popper 1945: 159)

While it would be premature to make any grandiose claims about the role of deliberative forums in resolving the major dilemmas and challenges that modern democracy faces in the post-industrial age, they do provide one potential solution to managing knowledge and expertise and the narrowing of the knowledge-gap in sophisticated and highly complex areas of policy. It is important to recognise that while expert knowledge, in these technical areas, cannot be substituted by the perceptions and interests of the generalist politician, administrator and citizen, the deliberative forum offers a way of exposing the expert to critical observation and counter expertise. The aim is to expose not what the expert knows, but what they do not know and, therefore, the limitations of their knowledge. It must be a system that not only challenges the expert but also ensures efficient and effective policy is made in a way that engages the non-specialist.

Nowhere is the management of knowledge and expertise more critical than when dealing with the growing significance of leading-edge research and the speed with which the technology it generates is emerging as the key driver of the modern economy. ETPs represent an interesting experiment in managing knowledge in relation to sophisticated areas of policy. The plurality of interests they represent and the equality of access and ensuring every voice is heard is vital to this process and will require constant vigilance if they are to provide a way of managing knowledge and expertise and avoiding technocracy and the implications this has for democracy.

The implications of the thesis in relation to the future research agenda at the theoretical level is the need to analyse and connect new institutional approaches with actor-based models for the purpose of developing explanatory tools aimed at providing further insight into the emergence of deliberative policy forums. The analysis should be linked to the evolution of the community method and the way in which the Commission uses knowledge and expertise to manage complex policy areas.

At the micro-level, the consultation process surrounding FP8 will be of major interest in assessing the continued impact of ETPs on the structure of the new Framework Programme which comes on stream in 2014. This will involve analysing the interaction between ETPs, JTIs and the Commission and the other methods that the Commission adopts as part of the consultation process. In addition, the future development of ETPs and JTIs should be monitored within the context of the deliberative policy forum model.

Future research might look at the transferability and relevance of the deliberative forum models in other EU policy areas. For example, the ETP model should be compared and contrasted with comitology committee's and the regional partnership model that has been developed for the implementation of European regional policy. Throughout Europe partnership committees have been established at the regional level, involving a wide range of stakeholders representing sectoral and societal interests, for the purpose of preparing Operational Programmes outlining a strategic agenda for the implementation of the Structural Funds (the European Regional Development Fund and the European Social Fund). These developments suggest that the Commission is evolving the community method through the expansion of a deliberative policy forum model across a range of policy areas.

At the macro-level, as society becomes increasingly more complex there is a widening knowledge gap between the expert and the generalist politician, administrator and citizen. This gap has profound implications for the nature of governance in a modern democratic society and raises important questions about how the generalist politician, administrator and citizen can play a meaningful role in complex policy areas. Future research should focus on whether the deliberative policy forum model offers a potential solution in addressing the knowledge gap and to what extent the model forms an essential part of the growing academic debate around the idea of democracy through discussion.

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Interview (2005v) UK Government Official – 8th July

Interview (2005vi) UK Government Official – 8th July

Interview (2005vii) Framework Programme Consultant – 13th July

Interview (2005viii) Framework Programme Consultant – 18th July

Interview (2005ix) Framework Programme Consultant – 18th July

2008 Interviews – Brussels

Interview (2008i) Commission Official – 6th March.

Interview (2008ii) Commission Official – 10th March.

Interview (2008iii) Commission Official – 11th March.

Interview (2008iv) Commission Official – 11th March.

Interview (2008v) Commission Official – 12th March.

Interview (2008vi) Commission Official – 12th March.

Interview (2008vii) Commission Official – 12th March.

Interview (2008viii) Commission Official – 13th March.

Interview (2008ix) Commission Official – 13th March.

Interview (2008x) Commission Official – 13th March.

Interview (2008xi) Commission Official – 14th March.

Interview (2008xii) Commission Official – 14th March.

Interview (2008xiii) Commission Official – 14th March.

Interview (2008xiv) Commission Official – 14th March.

Interview (2008xv) Commission Official – 14th March.

Interview (2008xvi) Commission Official – 17th March.

Interview (2008xvii) Commission Official – 18th March.

Interview (2008xviii) Commission Official – 18th March.

Interview (2008xiv) Commission Official – 19th March.

Interview (2008xx) Commission Official – 26th March.

Interview (2008xxi) Commission Official – 27th March.

Interview (2008xxii) Commission Official – 27th March.

Interview (2008xxiii) Commission Official – 2nd April.

Interview (2008xxiv) Commission Official – 3rd April.

Interview (2008xxv) Commission Official – 8th April.

Interview (2008xxvi) ETP Member – 9th April.

Interview (2008xxvii) ETP Member – 9th April.

Interview (2008xxviii) ETP Member – 10th April.

Interview (2008xxix) ETP Member – 16 April.

Interview (2008xxx) ETP Member – 17th April.

Interview (2008xxxi) ETP Member – 17th April.

Interview (2008xxxii) Commission Official – 23rd April.

Interview (2008xxxiii) ETP Member – 23 April.

Interview (2008xxxiv) ETP Member – 25th April.

Interview (2008xxxv) ETP Member – 29th April.

Interview (2008xxxvi) ETP Member – 7th May.

Interview (2008xxxvii) ETP Member – 9th May.

Interview (2008xxxviii) ETP Member – 13th May.

Interview (2008xxxix) ETP Member – 13th May.

Interview (2008xl) Commission Official – 14th May.

Interview (2008xli) ETP Member – 15th May.

Interview (2008xlii) ETP Member – 20th May.

Interview (2008xliii) UKRO Official – 22nd May.

Interview (2008xliv) ETP Member – 26th May.

Interview (2008xlv) Commission Official – 2nd June.

Interview (2008xlvi) ETP Member – 2nd June

Interview (2008xlvii) ETP Member – 10th June

Interview (2008xlviii) ETP Member – 16th June

Interview (2008xlix) ETP Member – 17th June

2010 Interviews – Brussels/UK

Interview (2010i) Framework Programme Consultant – March 10th

Interview (2010ii) Framework Programme Consultant – April 7th

Interview (2010iii) Industry Representative – 30th August

Interview (2010iv) Industry Representative – 30th August

Interview (2010v) Industry Representative – 30th August