EU technology programmes and the British Policy Process: the development of the British actor strategies to influence the EU's Framework Programme.

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A thesis submitted in partial fulfilment of the requirement of
The University of Sheffield for the degree of Doctor of Philosophy.

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May 2002

For John, Roz and Sara Hill.

My sincere thanks go to Professor Stephen George for providing a level of patience and support beyond the call of duty.

Abstract

This thesis examines the impact of the European Union (EU) Research and Technological Development Framework Programmes (FPs) on the British policy process.

The thesis commences by outlining the theoretical options available to guide empirical research in the field, engaging in a discussion on the utility of International Relations versus public policy approaches. The history and development of both EU and UK technology policies are then examined, utilising mainly secondary sources. The nature of the institutional units affected by the development of an EU competence in the area are also assessed.

The remainder of the thesis is dedicated to examining the factors surrounding the formation and execution of British actor strategies to influence the creation of the EU's Fifth Framework Programme. This section utilises a modified version of the policy networks approach for mapping actor relationships. The adaptations include a strong institutional emphasis and a focus on actor perceptions of relative values rather than a rationalist fact-based analysis. The majority of the research for this section was conducted through interviews with the key policy actors at both the UK and EU-levels.

The key findings of the research indicate that whilst there was a degree of Europeanisation of the UK policy network, the UK core-executive – as represented by the Office of Science and Technology (OST) – established a dominant position at its centre. In fact the OST was at the head of a powerful UK policy community also consisting of the UK government departments and Research Councils. This stands in direct contrast to the OST's relatively weak position within domestic RTD programmes. A range of factors that serve to restrict the movement of UK actors to lobby at the European level were also uncovered. These include a powerful treasury financing system unique to the UK and UK actors' perceptions of the low utility of EU institutions in relation to influencing the policy process during the main stages of the overall FP negotiations.

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List of Abbreviations

ACARD	-	Advisory Council for Applied Research and Development
ACOST	-	Advisory Council on Science and Technology
ACTS	-	Advanced Communications Technologies and Services
ASEAN	-	Association of South-East Asian Nations
BBSRC	-	Biotechnology and Biological Sciences Research Council
BRITE	-	Basic Research in Industrial Technology for Europe
CB	-	Chemicals and Biotechnology Division (DTI)
CEC	-	Commission of European Communities
COR	-	Committee of the Regions
CORDIS	-	Community's Research and Development Information Service
COREPER	-	Committee of Permanent Representatives
COST	-	European Cooperation in the Field of Scientific and Technical Research
CREST	-	Comité de la Recherche Scientifique at Technique
DEE	-	Department for Education and Employment
DoE	-	Department of the Environment
DTI	-	Department of Trade and Industry
EC	-	European Community
ECJ	-	European Court of Justice
ECU	-	European Currency Unit
EFTA	-	European Free Trade Area
EMU	-	Economic and Monetary Union
EP	-	European Parliament
EPC	-	European Political Co-operation
EPSRC	-	Engineering and Physical Sciences Research Council
ESC	-	Economic and Social Committee
ESPRIT	-	European Strategic Programme for Research and Development in Information Technology
ESRC	-	Economic and Social Research Council
ESTA	-	European Science and Technology Assembly
EU	-	European Union
EURAM	-	European Research in Advanced Materials
EUREKA	-	European Research Coordinating Agency

FAST	-	Forecasting and Assessment of Science and Technology
FDI	-	Foreign Direct Investment
FoF	-	Foreign-owned Firm
FP	-	Framework Programme
FP#	-	Framework Programme (Number)
GRE	-	Government Research Establishment
HDTV	-	High-definition Television
HEIs	-	Higher Education Institutions
ICIA	-	Interdepartmental Committee on International Affairs
ICL	-	International Computers Limited
IGC	-	Intergovernmental Conference
INDU	-	Committee on Industry, External Trade, Research and Energy
IPR	-	Intellectual Property Rights
IRDAC	-	Industrial R&D Advisory Committee
IT	-	Information Technology
ITCs	-	Innovation Technology Councillors
JESSI	-	Joint European Silicon Structures Initiative
JET	-	Joint European Torus (European Fusion Programme)
JRC	-	Joint Research Centre
MAFF	-	Ministry of Agriculture Fisheries and Food
MEP	-	Member of the European Parliament
MITI	-	Ministry of International Trade and Industry (Japanese)
MRC	-	Medical Research Council
NERC	-	Natural Environment Research Council Research Council
OPEC	-	Organisation of Petroleum Exporting Countries
OST	-	Office of Science and Technology
PMM	-	Programme Management Managers Committee
POST	-	Parliamentary Office of Science and Technology
PPARC	-	Particle Physics and Astronomy Research Council
QMV	-	Qualified Majority Voting
R&D	-	Research & Development
RACE	-	Research and Development in Advanced Communications Technologies for Europe.
RC	-	Research Council
REI	-	Roundtable of European Industrialists

RTD	-	Research and Technological Development
SDI	-	Strategic Defence Initiative
SEA	-	Single European Act
SERC	-	Science and Engineering Research Council
SEM	-	Single European Market
SMART	-	Small Firms Merit Award for Science and Technology
SME	-	Small and Medium-sized Enterprise
SPUR	-	Support for Products Under Research
STOA	-	Scientific and Technological Options Assessment
TEU	-	Treaty on European Union
TFP	-	Technology Foresight Programme
TMR	-	Training and Mobility of Researchers
TSER	-	Targeted socio-economic research
UNICE	-	Union of Industrial and Employers' Confederations of Europe

1) Introduction

In the last decade there has been both a big expansion in the number of academic studies on aspects of the EU and a refocusing of academic attention. The expansion in academic attention reflects the expansion of the competencies of the EU itself. There are few sectors of public policy that do not now have an EU dimension. One of the policy sectors that used to be almost exclusively national but now has a significant EU dimension is research and technological development (RTD).

For much of the 1970s and 1980s the focus of academic attention was on the major turning points in the process of European integration, the 'historic decisions', but the success of the single market programme after 1985, and the momentum that it created for further policy agreements, led academics to perceive a need to analyse policy-making at more mundane levels, and also to analyse the implementation of these policies once they have been agreed.

The background of these two general issues – the rise of a relatively new policy competence for the EU and the embryonic theoretical debate over the Europeanisation of national policy systems – combined with a lack of academic study into the impact of the EU's RTD policies on the UK policy process formed the basis of the justification for conducting this research.

Empirical Context

Throughout the post-war period, public policies supporting national research and technological development (RTD) have been central to the economic development strategies of modern states. During the 1980s the Member States of the European Union signalled a change in these RTD strategies, from a nearly exclusively national approach to a regional approach, by establishing a number of regional schemes. These regional schemes aimed to help European governments and firms to pool their resources to compete with their North American and Southeast Asian competitors. The dominant programme to emerge from this development was the EU's Framework Programme (FP) for

RTD. In its present guise the Fifth Framework Programme (FP5) constitutes a broadly-based €14,960 million (£9,300 million) programme for the period of 1999-2002. The introduction of a level of resources of this magnitude, in total equivalent to well over double the UK government's total civil RTD expenditure, with an attributable total of over 10 per cent of UK government civil RTD expenditure, clearly holds the potential to alter the formation of UK policy-actors' relationships both in terms of traditional domestic RTD and in terms of how they relate to the new European-level policy.

The legislative structure for FP5, determined by the Treaty on European Union, has three distinct policy-process levels described in brief here and in full in Chapter Three, Section: Legislative Specifics, page 80. The first level of the process, lasting two to three years, involves the setting of thematic RTD priority areas for the whole Framework Programme, alongside the setting of a five-year budget. In terms of the basic legislative blueprint, this part of the process is dominated by the Member States, the European Commission and, to a lesser extent, the European Parliament. A modified form of the EU's co-decision procedure, set in place at Maastricht, requiring unanimity in the Council of Ministers instead of the usual co-decision practice of Qualified Majority Voting (QMV), provided the Member States with the potentially strong bargaining tool of the national veto on proceedings.

The second level of the FP policy process involves the formulation of programme parameters for individual RTD sectors within the boundaries set for the more global thematic objectives defined at level one. This level is institutionally dominated by the Commission and the Member States' official representatives for the specific RTD areas, with the Work Programmes being agreed under QMV. The European Parliament's role at this stage is limited to one of consultation.

The third level of the process involves implementation of level two and is dominated by the European Commission, which has the authority to design the specifics of the tenders or *Calls for Proposals* made to the EU's RTD-base to meet the demands of the Work Programmes. The role of both the Member

States and the European Parliament is reduced to that of mainly oversight at this level.

This research is primarily concerned with the formation and execution of British actor strategies to influence the creation of the EU's Fifth Framework Programme at the first level of the policy process – the setting of the overall FP priorities and budget.

Theoretical Context

On a theoretical level, the predominant concern of academics in the 1970s and 1980s was with the historic bargains between states on the broad parameters of European integration. Once the Single European Act (SEA) had broken the deadlock on progress, though, there was a reorientation of academic concern. Much of the groundbreaking work on European integration in the 1990s focussed on policy formation and implementation issues below those of the traditional focus on historic treaty-level decisions.

As a result of this re-focussing, increased attention has been paid to the question of the *Europeanisation* of national policy processes, politics and political institutions that has occurred on the back of the pressures and dynamics of the European integration process. The 'Europeanisation' process under examination here is taken to be the impact of a European policy competency on the domestic structure of governance in that policy sector. Ladrech provides a theme to investigate when he comments that Europeanisation should be seen as:

> 'an incremental process reorienting the direction and shape of politics to the degree that EC political and economic dynamics become part of the organizational logic of national politics and policy-making' (Ladrech, 1994: 69)

The research also draws heavily on the developing concept of *policy networks,* with questions of actor resources and legitimacy being central issues. This concept is explained fully in Chapter Two, Section: Policy Networks, page 36. In terms of framing the initial research questions, the policy networks concept suggested that the FPs, by introducing powerful and well-resourced EU-level

actors into the UK RTD scene would lead to a Europeanisation of the policy process as national actors begin to gravitate towards the new power centres. Also, the concept of policy networks would seem to suggest that the EU institutions would actively encourage sub-core-executive national actors to make representations on the FPs directly to the EU level, and to increase their own power-bases through establishing a wide-range of RTD contacts.

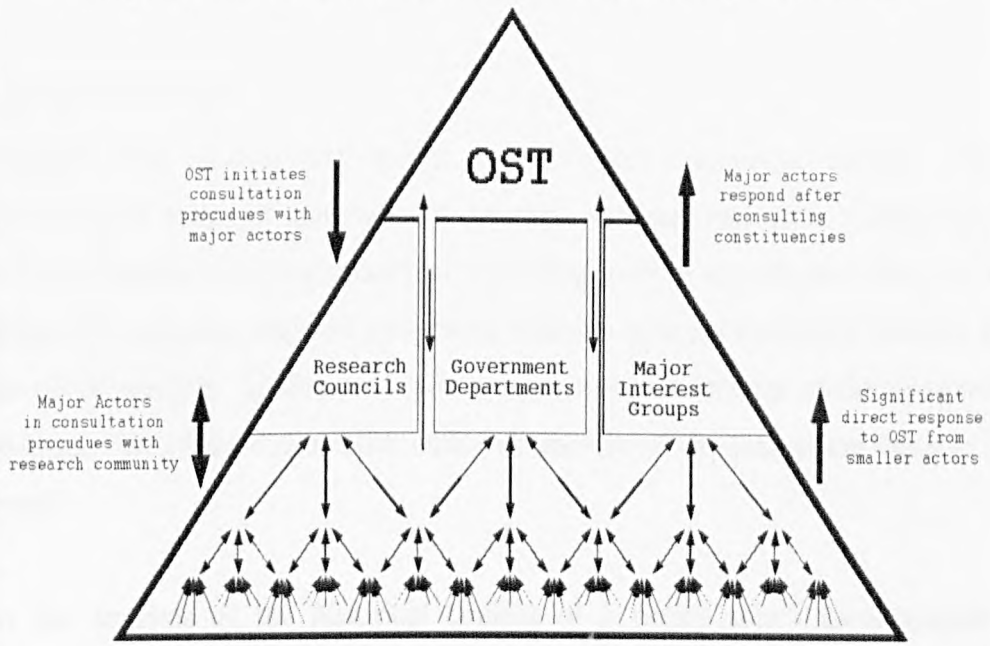
Preliminary Research

Preliminary research on UK and EU RTD policy uncovered two contradictory perspectives that form the basis of the substantive investigations of the thesis. Firstly, initial investigations on the formation of the FPs and development of UK RTD indicated that the policy area *was* particularly susceptible to the pressures of Europeanisation. This tentative conclusion was derived from a range of factors, including: the high-profile role played by the Commission in the creation of the FPs' forerunners, such as Commissioner Davignon's pushing for the creation of the high-technology RTD programme *Esprit*; the high-profile role played by key European companies in the creation of the same policies; the appearance and growth of 'new money' for RTD at the EU-level at a time when national RTD spending was being restrained; and the traditionally decentralised nature of UK public-sector support for RTD potentially weakening any gatekeeper role the core-executive could apply. (See Chapters Three and Four for further details)

Secondly, whilst initial findings on EU and UK domestic RTD policies in isolation from each other suggested the UK policy actors would be highly susceptible to the Europeanisation process, initial research into the formation of the UK's input to the FPs contradicted these findings. Indeed, initial research in this area led to the tentative conclusion that the UK core-executive, as represented by the Office of Science and Technology (OST), sat at the head of closely knit UK FP RTD policy community, playing a strong gatekeeper role. The other main members of the policy community: i) government departments, ii) Research Councils iii) major interests, such as universities and large-scale individual companies appeared to be positioned in a close symbiotic relationship directly under the OST. Beneath this policy community existed a looser issue

network consisting of peripheral actors, mainly involved in or interested in applying for future FP research funding. This pyramid-shaped set of relationships is graphically outlined below in Figure 1: Initial Perceptions of the UK FP5 Policy Community.

Figure 1: Initial Perceptions of the UK FP5 Policy Community



The uncovering of the apparent conflict of policy styles between the decentralised structure of UK domestic RTD programmes and the UK core-executive's institutionally centralised input of UK representations into the Framework Programmes raised clear questions as to the potential impact of such a two-pronged approach to RTD.

These initial empirical findings were far from clear on whether UK policy actors still tried to influence the FPs through the UK core-executive, or whether they had reoriented their activity in part towards the institutions of the EU. To focus the investigation, the primary aim of this thesis is to determine the nature and extent of British policy-actors' involvement in the *formation* of the European Union's Fifth Framework Programme. This involves uncovering the degree of Europeanisation present in the policy area and establishing the extent of any gatekeeper role held by the UK core-executive.

The analysis is therefore concerned with establishing the requirements and resources of the UK actors and establishing the incentives and disincentives in their utilisation of the UK core-executive as their channel of input to the policy formulation process and / or taking their representations directly to the European Union's institutions.

Thesis Structure

Chapter Two situates the thesis in the wider theoretical context briefly examining a range of international relations theories and then examining the utility of public policy approaches. The final part to the chapter analyses the utility of combining regional integration theories with public policy theories in a 'levels of analysis' approach to gain a more complete picture of the integration process. The chapter concludes with a discussion of the theoretical basis of the thesis.

As the analysis of the historical context of a policy area's development is essential to gain a full understanding of its present nature, Chapters Three and Four evaluate the growth and development of both EU and UK RTD policies. Particularly emphasis is made in both chapters on the range and nature of the actors involved and of the policy structures that have developed.

Chapter Five is in many ways central to the whole thesis in providing an analysis of two key factors that have dominated the development of the UK actors' policy networks. These two factors are the role of the OST and the impact of the Treasury financing system that is applied in this policy sector. Their influence is further developed in relation to the individual actors in the later chapters. Chapter Five also provides an overview of the present state of UK publicly-funded civil-sector RTD.

Chapters Six, Seven and Eight provide the detailed analysis of the status, perspectives and actions of the main UK policy actors under the UK core-executive. These actors, the government departments, research councils, industrial and academic form the main focus of the thesis in respect of their

positions in relation to the UK core-executive and the European Union institutions.

Chapter Nine, the final empirical chapter, analyses the role played by the institutions of the European Union, concentrating on the roles of the European Commission and the European Parliament. Particular emphasis is placed on their attempts to gain representations directly from UK actors and their receptiveness and responsiveness to such representations once made.

The thesis concludes with an analysis of the major theoretical and empirical findings of the research in terms of the immediate field of study. The findings are then extrapolated to the broader field of study.

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2) A Multi-theoretical Perspective?

Introduction: Why Theorise?

> 'It is not simply desirable, it is essential, that theory guide empirical research if we are to avoid the 'poverty of empiricism.'' (Holland, 1991b: 5)

Studies of the European Union from a theoretical perspective are complicated by its constantly changing and *sui generis* nature, including the wide range of interactions and relationships between the many actors involved and compounded by significant variations between policy levels (both territory and hierarchy) and policy areas. Given these complications one of the few areas of theoretical consensus that exists within the field is that there is no common theoretical framework applicable to all aspects of the European Union integration and policy processes; rather the processes involved are analysed by a wealth of theoretical perspectives.

Whilst a range of theoretical perspectives may be a sign of a healthy and vibrant field of study, the lack of consensus as to which approach is the most productive can be highly disconcerting for empirical researchers. However, skipping the theoretical stage of an investigation for a direct empirical approach is not a credible option. (Peterson, 1995: 71) As George comments:

> 'Without a model of the international system it is impossible to define what constitutes the field of study. An empiricist approach amounts to no more than the adoption of somebody else's theoretical model without the researcher being aware of it.' (George, 1991: 20)

Such 'blind' empirical research is particularly dangerous given the fact that theories are not value neutral and are, by definition, selective of the facts they cover. Thus, if the empirical process of data collection and analysis is to follow a coherent and purposeful path it must be preceded by a preliminary review of the basic assumptions and inferences of the possible theoretical bases.

This chapter is therefore dedicated to examining a range of theoretical perspectives, with an aim to establishing the most suitable for guiding the

empirically based research on the impact of the EU Framework Programmes (FPs) on UK technology policy networks. Though as '[t]heory without application is impotent', (Holland, 1991b: 5) empirical examples are used throughout to support the theoretical assertions.

A broad approach to the theoretical analysis has been adopted in recognition of the fact that the impact of the EU FPs on UK technology policy networks represents a multi-level process that cannot adequately be analysed with a traditional single-level approach.

The chapter is split into three main parts. As the Union ultimately relies on inter-state cooperation, Part One begins with an examination of the main international relations (IR) theories applicable to addressing the impact of an integration process. The usefulness of neofunctionalism, intergovernmental institutionalism, neo-liberal institutionalism and multi-level governance are assessed.

In recognition of the growing relevance of public policy theory to analysing the EU policy process, Part Two examines three main theoretical approaches to decision-making and implementation: Rationalism, Implementation theory and Policy Networks.

Part Three evaluates a range of more eclectic approaches that have attempted to move beyond the IR versus Public Policy debate and create multi-theoretical frameworks offering multi-level and multi-dimensional approaches.

The Chapter concludes with a statement of the theoretical base adopted for the research and opens a range of questions to be answered through the empirical research.

Part I: International Relations Approaches

The following sections concentrate on the possible application of international relations theories directly suitable to a regional integration process. Global IR theories such as Neorealism, Interdependence and Liberal pluralism were ruled out of contention as a foundation for the empirical research. Whilst the theories still have a great deal to offer the wider debate on international political interaction, the developing policy process in the EU has clearly moved a stage beyond that which they are capable of examining. (Bulmer, 1991; Hix, 1994: 9; Hurrell, 1995; Pfetsch, 1994: 135; Pijpers, 1991: 8; Puchala, 1972: 275; Risse-Kappen, 1994: 50-1) This is not to state that the theories offer no insight into the present state of the integration and policy processes in the EU. Rather, the successful proliferation of their more productive core ideas has been such that they have utilised by a range of dedicated regional integration theories as noted in the following sections.

Neofunctionalism

> 'Neofunctionalist theory argues that a new European 'polity' is emerging because, 'actors in several distinct national settings are persuaded to shift their loyalties, expectations and political activities towards a new centre, whose institutions possess or demand jurisdiction of the pre-existing national states'. (Haas, 1961: 366-7, in Hix, 1994: 4)

Though retaining functionalism's teleological nature and its notion of the ability of supranational institutions to reduce conflict between nations, neofunctionalism is clearly distinguishable from its predecessor in several key respects. (Lewis, 1995: 9) Specifically, neofunctionalism's final destination is a regional state – as opposed to functionalism's concept of universal apolitical technocratic regimes – whilst methodologically it incorporates an 'expansive logic of sector integration' and is more conscious of the political aspects of integration concerning actor interest, power, geography and culture. (Ifestos, 1987: 73; van Staden, 1994: 144)

As noted, neofunctionalism drops the functionalist dream of superseding all nation states with a technocratic system of government - embracing federalist

notions of creating nation states 'writ large' at the regional level. (Lewis, 1995: 10) The logic behind this regionalism lies in the greater political and economic integration present at the regional level and a perception that such regional integration is likely to be more acceptable to the masses. As Hurrell comments:

> '[The greater] commonality of culture, history, homogeneity of social systems and values, convergence of political and security interests [at the regional level] all make it far easier to accept the necessary levels of intrusive management'. (Hurrell, 1995: 346)

Whilst the internationalisation of production and finance is not seen to have eradicated the 'national economy' or the ability of governments to individually influence such an economy by neofunctionalists, it is seen to have made the task of governing much more problematic. Like Interdependence theory, neofunctionalism takes an assumption of the interaction between the state and market economics to a logical conclusion that the development of the market may force changes on the development of the state. (Cerny 1995: 598) Neofunctionalists take this concept forward with the concept of an 'expansive logic of sector integration' or spillover. Spillover as a concept implies that:

> 'cooperative attitudes successfully developed in one functional sector will stimulate demands for further cooperation in other functional sectors ... expand[ing] in ever-widening circles.' (Ifestos, 1987: 72)

The spillover effects of an initial bout of integration are seen to create pressures on states both to *take advantage* of the new situation and to *regain control* of areas that have been adversely affected.

It is frequently argued that neofunctionalism has a naive view of integration in different policy sectors, specifically between traditional definitions of 'low' politics areas (such as general economic and welfare issues) and 'high' politics areas (such as foreign, security and defence policies). Hix, for example, states that neofunctionalism:

> 'does not distinguish between 'low' politics ... and 'high' politics'. (Hix, 1994: 5; See also Ifestos 1987: 74)

For scholars coming from a neorealist or intergovernmentalist background the difference between the two is crucial, with integration only being viewed as feasible in 'low' politics areas. However, neofunctionalism's inclusion of low

politics integration alongside high politics integration does *not* equate with a rejection of the proposition that high politics areas hold a greater resilience to the concept of spillover. Rather, it is the case that the high-low relationship is defined in a less strict manner. Haas, neofunctionalism's founding father, allows for spillover from low to high issues whilst stressing an 'autonomy of functional contexts' as limiting the prospects for such. (Haas, 1961: 367, in Kaiser, 1966: 390-1; van Staden, 1994: 145) The lack of direct sector links between the high and low areas is seen to restrict, though not preclude, any significant spillover between the two. From this one would expect to see that networks across national boundaries would be more difficult to create and sustain in high politics areas, which, as indicated in Chapter Three can be deemed to include technology policy.

The functionalist prospect of a *rationalistic international technocratic elite* running supranational welfare institutions is replaced under neofunctionalism with an image of *pluralist interest pressure politics*, operating at all levels of society within the separate nation-states and across national boundaries, both transnationally and intergovernmentally. (George, 1991: 21) Where 'technocratic elites' hold positions of influence their goals are not seen in a purely functional altruistic light, rather they are viewed in terms of bureaucratic power politics. For example bureaucrats, such as those in the Commission, are seen as more likely to cultivate spillover for their own bureaucratic gain rather than for the benefit of the whole system, this should also hold true in terms of elected officials such as MEPs. Hence, neofunctionalism utilises the terms political and cultivated spillover in order to describe the process beyond the direct functional / technical implications of sector integration.

According to neofunctionalist predictions the EU should increasingly become the focal point of interest groups' activities. Clearly, it should also be noted that the extent of a shift in interest group activity is highly variable depending on the policy area. (Andersen and Eliassen, 1994; Greenwood and Aspinwall, 1998) One area overlooked by neofunctionalist analysis is that the basic concept of political spillover may hold true even if nation states remain the focal point of interest groups' activity, if the groups activities are be ultimately directed at the EU. For example, companies may find higher returns in pressing national governments to fight their case in

Brussels as opposed to dealing directly with the EU institutions. This issue forms a key area of the empirical investigation of the interest representation activities of UK policy actors.

Despite offering a range of clear insights into the integration process, neofunctionalism is limited in several key areas, centring on its inability to account adequately for potential counter-integration forces. These weaknesses include its inability to account for: 'the unpredictable [and often irrational] actions of national leaders', (Hix, 1994: 5) the variable nature of economic growth, the impact of external factors, the resilience of strong national affiliations, the extent of inter-state rivalry, variations across member states, and factors external the to integrating states. The latter two of these examples and their implications for the empirical research are examined below.

In viewing states as homogeneous entities neofunctionalism is unable to explain the varying approaches of member states to the policies of the EU and the varying impacts of those policies once adopted and implemented. Given this, an analysis of the impact of a specific policy area on the policy networks within a particular state cannot draw too much from the general impact of that policy in other member states except for comparative purposes.

Neofunctionalism's blindness to external factors, which can both promote and retard the integration process, is a serious flaw which needs redressing. Whilst internal dynamics may create conditions favourable to integration they do not always necessitate it. As George comments, concentrating on internal dynamics at the expense of external factors can only paint a distorted picture when 'integration [has undeniably taken] place in a specific global historical context.' (George, 1991: 35; See also: Kaiser, 1966; Peterson, 1995: 83; Pijpers, 1991: 9) The 'relaunch' of the Union in the mid-1980s, for example, was at least in part directed at dealing with the relative economic decline / 'Eurobackwardness' of the member states against Japan and the US, a factor beyond the 'internal dynamics' tunnel-vision of neofunctionalism. (Moravcsik, 1991) In this respect external factors, such as the influence of the Japanese and US markets may impact on the extent to which national governments are willing to cede control over a policy area to the Union.

Equally, policy networks may exist between member states actors and those from non-EU states that compete with the 'pull' of the European arena.

In conclusion, whilst neofunctionalism holds many key insights, particularly in highlighting the importance of spillover and political allegiance, the limited scope of the theory in matters economic, domestic political and global, and its teleological nature weaken it as a base for an empirical study. Concentration on the macro level of analysis is also unlikely to provide many insights into the effects of policy implementation, leaving neofunctionalism extremely weak once the debate moves beyond the 'to integrate, or not to integrate' level. As Kaiser states, overall the fundamental neofunctionalist error is the: 'overly simplistic notion of causation which ignores the multiple causes of policy formation and transformation.' (Kaiser, 1971: 227)

Liberal Intergovernmentalism

> 'Intergovernmentalist assumptions appear valid when we try to make sense of the high politics of European research.' (Peterson and Sharp, 1998: 59)

Intergovernmentalism, originally championed by Hoffmann (1966) and in more recent times by Moravcsik in the form of Liberal Intergovernmentalism, is a dominant tool of analysis of the Union with a significant proportion of analysts believing 'you must begin with intergovernmental bargains.' (Multimer, 1994: 37; See also: Keohane, 1991: 75; Moravcsik, 1991; 1993; Tranholm-Mikkelsen, 1991: 8) Developed largely as a response to neofunctionalism, in its base form Intergovernmentalism is best viewed as an adaptation of neorealist theories of co-operation emphasising the minimal influence of non-state actors and international institutions, with the addition of the 'domestic content of international desires' and the high / low policy split. (Andrews, 1984; Moravcsik, 1991: 27; Tranholm-Mikkelsen, 1991: 8) Basically, the EU policy process is seen:

> 'as the outcome of negotiations between independent but interdependent and rational governments, each of which is motivated by self-interest and whose primary objective is to remain in office.' (Bulmer, 1994: 11; See also, Moravcsik, 1991)

Collaboration is seen to emerge only where governments feel unable to meet this objective through unilateral action. In respect of this, intergovernmentalism clearly rejects the neofunctionalist proposition that institutional co-operation and integration are able to fundamentally alter the substance of politics amongst and within nations.

In no way is the integration process seen an early learning / socialisation step in a teleological progression towards a single European state. The building of networks between key players in the states and the institutions they have created to oversee their operations are seen to exist as purely functional and ultimately transient partnerships, whilst networks not composed of core government actors are seen as inconsequential. The national governments, in their dominant role, are perceived to act as 'gatekeepers' restricting the development of policies that may impinge on their domestic agendas and power bases. In this respect, national governments would not allow, or at least would not facilitate, the development of strong policy networks between national actors and the EU level unless it was perceived to be in their direct interest, preferring to remain the international voice of their national policy community. The extent to which this is the case in the FPs forms a key part of the empirical research.

Liberal Intergovernmentalism operates on two levels, the domestic and the international. At the *domestic-level* the state and central government are viewed as separate entities; the government acting as a mediator between the state's interests and those of the dominant domestic social groups. At the *international-level* intergovernmentalism 'asserts that integration and disintegration is determined by the perceived interests [(set at the domestic-level)] of the governments of the main member states.' (Hix, 1994: 6) The two-level model is deemed to operate in a unidirectional 'demand and supply' game, as set out in Figure 2.

Figure 2: Liberal Intergovernmentalism: A Two-level Game

Level One: Domestic / Demand	Domestic pressure +national interest +governmental interests =Bargaining Positions
Level Two: International / Supply	Intergovernmental bargaining within the boundaries determined at Level One, qualified with a degree of power bargaining.

As noted, the 'Demands' are derived from the domestic pressures faced by governments in their quest to retain power and the 'supply' set by the level of manoeuvring provided by their counterparts in the other member states. (Moravcsik, 1994; Smith, 1994a: 34)

In theory states will define their national interest 'at home' (level one) and then go to Brussels with a minimum requirement that is beyond compromise. The resulting bargaining is thus ultimately tied to lowest common denominators (tinged by power bargaining) and bound by strict limits on future transfers of sovereignty, particularly in high politics areas where the logic of diversity is seen to be too strong to overpower the government's defence of state sovereignty. (Hix, 1994: 6)

Intergovernmentalism's recognition of the potential impact of differing internal state political systems and cultural perspectives on the policy process highlights the relevance of a country-by-country approach to analysing the Union. Ignorance of national diversity (even when considering the relatively similar polities of the EU's member states) is a clear weakness of IR theories, such as neofunctionalism, that treat nation-states as homogeneous political entities – varying for example only in terms of the extent of their interdependence.

International institutions, such as the various supranational bodies of the Union, are recognised as playing a valuable role in interstate interactions, though this role is portrayed in purely subservient terms. Rather than holding independent influence (e.g. akin to that held by domestic interest groups) the institutions are seen as relevant only in their ability to help facilitate the policy-process, enabling inter-state interactions to function more effectively by 'providing a common framework that reduces uncertainty and transaction costs'. (Moravcsik, 1991: 27; See also: Garrett, 1992: 535; van Ham, 1993: 460; Tranholm-Mikkelsen, 1991: 8) In this respect, critiques of intergovernmentalism that portray it as too realist-based to account for the varying powers possessed by the EU's institutions can be misleading. The powers of the European Commission and European Court of Justice (ECJ), for example, are accounted for with the tale of the prisoners' dilemma: that states will be tempted to renege on common policies for national advantage unless they

have confidence that their colleagues are following the rules. The existence of independent overseers, such as the ECJ, can clearly reduce this 'dilemma'. As long as the governments are not moved from pursuing their long-run interests the intergovernmental case would remain intact.

However, even if the above is the case, the denial of the potential for the European institutions to alter bargaining positions remains a key weakness of intergovernmentalism. The increasing number of areas subject to co-decision within the EU, including the research programmes, brings the issue of national governments as the dominant legislators increasingly under scrutiny. Indeed, the growing dominance of co-decision procedures wherein the European Commission and European Parliament are given increased roles questions the basic concept of the two-level game.

Whilst governments may believe they are playing a two-level game scenario, it may be the case that national positions are distorted both prior to and within the various stages of the EU policy-process. If this is the case, the two-level game – reliant on the inclusion of the domestic political scene – is ill-equipped to deal with all policy initiatives as many of the issues may be set to a large degree at the lower meso-level, thus would not be set by direct reference to specific national or governmental interests. (Peterson, 1995: 78; See also: Part III, Section One: A Framework for Analysis, page 45) Here a key question to test is the hypothesis of the 'purely functional role of institutions' against the possible role played by the Commission in fostering political support for policy development amongst national interest groups therein effectively bypassing the two-level game before it has even had chance to begin. In this respect Moravcsik is misleading in stating:

> 'Only where the actions of supranational leaders systematically bias outcomes away from the long-term self-interest of Member States can we speak of a serious challenge to an intergovernmental view.' (Moravcsik, 1994: 70)

Intergovernmentalism is also seriously challenged if supranational leaders are able to systematically bias the long-term self-interests of Member States by altering domestic political balances. Although said in criticism of neorealism's failings Hurrell's following comments apply equally to intergovernmentalism:

> "The workings of such institutions may lead to a new definition of self-interest, and perhaps to new conceptions of 'self'." (Hurrell, 1995: 344)

A major failing of intergovernmentalism is its adherence to the realist derived view that governments act as single coherent entities. To blindly consider governments in this manner severely limits the degree to which many policy issues can be successfully analysed and understood. Also the unitary state perspective is particularly inappropriate considering that intergovernmentalism claims to deal with the complexities of the EU's low politics areas that involve a wide-range of differing areas of government on both the horizontal and vertical level.[1] This particular criticism is developed further in the multi-level governance section (See page 24). Related to this point is the fact that the coalitions between policy actors that do exist across national borders and do hold the potential to influence the policy process. Thus, as Hooghe and Marks comment:

> 'Territorial identity (and, in particular, nationality) is important, but it is not all-important, as a source of individual preferences with respect to EU institutions and policy. ... Political coalitions are also formed among groups ... with some particular economic function or socio-economic characteristic (e.g. financial capitalists, organized workers). To the extent that political coalitions in the EU cross-cut territory, i.e. pit groups in the same territory against one another, so one may speak of the "making" of a European polity that is something more than an aggregation of constituent national polities.' (Hooghe and Marks, 1997: 5)

The influence of such groups in respect of UK Research and Technological Development (RTD) policy in relation to the EU clearly poses an important area of empirical research.

Critically, the intergovernmental model is unable to account for the more intricate aspects of day-to-day implementation within the Union that can hold an overall bearing on both the effectiveness and direction of a policy once it has been set. This oversight, partly due to the theory's undeveloped rationalist assumption that decisions are taken with full knowledge of their implications, is increasingly recognised as only producing a partial picture of the overall policy process (See the Public Policy section, page 28 onwards, for a more detailed

[1] At least neorealism only claims to deal with issues of a traditional 'foreign policy' nature where direct sub-executive input is more limited.

analysis). A good test of the theory in this respect would be to examine the original expectations of the British government when it agreed to the FPs and the extent to which its expectations have been met.

Overall, whilst intergovernmentalism provides some key insights, its validity has to be questioned due to the large areas of the policy process to which it remains blind, particularly preference formation and policy implementation. Whilst no theory can be expected to incorporate the full panoramic scene it should at least encompass the major features of the landscape. A wider perspective is therefore required to adequately examine the overall impact of the FPs.

Neo-liberal institutionalism

> 'Neoliberal institutionalism has been the most influential theoretical approach to the recent study of international cooperation and represents a highly plausible and generalizable theory for understanding the [integration process].' (Hurrell, 1995: 350)

Neo-liberal institutionalism is an extension of rationalist liberal pluralist theory distinguished primarily by the view that 'cooperation is expected to result not from a harmony of interests', (van Ham, 1993: 460) but from the ability of international institutions to increase the effectiveness of state co-operation in attaining desired outcomes. Pollack believes that the approach:

> 'allows us to transcend the intergovernmentalist-neofunctionalist debate by acknowledging the initial primacy of the member states and, proceeding from this point, to generate a series of hypotheses about supranational autonomy and influence more precise than those generated by either neofunctionalist or intergovernmentalist theory.' (Pollack, 1997: 101)

Sovereign states remain the primary - though by no means the only - players in world politics, co-operating on a largely pragmatic / rational basis within institutional arrangements to reach mutually beneficial agreements that are not possible on a purely *ad hoc* basis. (Keohane, 1988: 386) As Cutler states:

> 'Regimes are traced to their origins in expediency, reciprocity, utility and, sometimes sheer power. They emerge as responses to problems of coordination and situations in which self-interests and individualistic behaviour lead to undesirable or sub-optimal outcomes, like prisoners' dilemma situations, collective

> goods problems and the tragedy of the commons. They may arise by negotiation, by imposition of dominant states or by the spontaneous coordination of state activities.' (Cutler, 1991: 61)

Importantly, states *are* seen to be influenced by the international institutions and regimes they create. (Barkin and Cronin, 1994: 109 & 130; Keohane, 1982: 329; Peterson, 1995: 81; Risse-Kappen, 1994: 52; van Ham, 1993: 459; Wessels, 1991: 144) This influence arises in two main areas, *firstly* international institutions have the ability to promote a stable policy arena, increasing mutual understanding and trust relationships via reducing reaction times, cutting transaction and interaction costs, facilitating bargaining processes and increasing information flows. (Bulmer, 1991: 73; Keohane, 1982: 354; 1984: 51; 1988: 380; Krasner, 1982: 186; Soetendorp, 1994: 111; van Ham, 1993: 460) The above steps, which can be visualised as supply-side measures to boost the efficiency of interaction and bargaining, help to consolidate tentative relationships through the gradual creation of a psychology within the institution where a breakage of the accepted norms and rules is seen as a serious political *faux pas*. As Keohane states: 'Deception is less profitable in a continuing "game"'. (1982: 346) *Secondly*, the operational format of the institution can shape future preferences, as Hix comments:

> 'Furthermore, in the development from the Single European Act to the Maastricht Treaty, the EC *did* have a certain internal institutional dynamic. The institutional structures of the EC, such as the qualified majority decision rule in the Council of Ministers, not only 'shape' the national actors' *behaviour* but also their *preferences*.' (Hix, 1994: 8)

Therefore, as noted in the critique of intergovernmentalism, in order to assess the preferences of actors, it is essential to assess the institutional frame of the policy area that is being studied: examining actors in isolation from the institutional environment may produce a 'pure' account of their preferences, but it will not produce a practical account. (Tversky and Kahneman, 1981: 453-8) For example, EU institutions create a policy arena with greater scope for reciprocity between issue areas as the actors remain within a common setting where voting 'favours' can be clearly indicated and repaid. Hence, whilst it may occasionally appear that national civil servants are pursuing 'European interests', rather than national ones, they may in fact be sacrificing one issue to gain in other areas, i.e. fighting to win the whole war, not just the battle. In empirical research such issues must

be accounted for: if preferences are not formed and decisions are not taken in isolation of one another, to a degree they should not be analysed as such.

Institutions are also seen to be self-reinforcing; although they are 'the product of the political conditions under which they are constructed', (Tsakaloyannis, 1987: 144) the co-operation is seen as able to survive and prosper even where external structural change has removed its original justification for being. (Keohane, 1982: 328, van Ham, 1993: 459-60) Herein lies a valid rejection of the realist perception of integration as discardable at a moment's notice following a change in external conditions. (Deutsch, 1957: 44-6 & 123-61, in Kaiser, 1966: 397; van Ham, 1993: 461)

> 'institutions usually change more slowly than the preferences of policy-makers, and thus often impose a 'path dependency' on policy making. Once a common EU policy has been agreed and 'institutionalized', significant policy change will usually require unanimous agreement.' The effect is to encourage 'the *continuation* of existing common policies, rather than a reversion to the "zero base" of individual action by Member States' (Scharpf 1988: 257)' (Peterson, 1995: 81)

In this respect, unanimity in treaty-based decision-making both bolsters *and* undermines national government control of the process. The bolstering process is clear and commonly understood; a single national government can block treaty-based changes to the Union's constitutional base. However, unanimity can also undermine national control of the policy process as it weakens the member states' abilities to combat the unforeseen implications of such decisions. For example, the gradual expansion of the ECJ's powers in the 1960s, whilst not requiring a treaty-based process to be confirmed (their basis arguably set in the original treaties), would require a unanimity-based decision to be reversed. Even if fourteen states had the political will to vote for such a reversal, they would be virtually powerless without the fifteenth vote to alter the treaty accordingly, because of the requirement of unanimity. This institutional 'ratchet effect' (van Ham, 1993: 459-60) is seen to be bolstered by a virtuous circle of institutionalisation: increasing trust relationships, mutual understandings, and growing bureaucratic and vested interests building support for the institution within the states as actors respond to the shifts in resources. Thus whilst a European super-state is not seen as an inevitable conclusion in any neofunctionalist sense, an increasingly sophisticated integrated system, *ceteris paribus*, is viewed as a natural

progression. (Hurrell, 1995: 350) Unfortunately, neo-liberal institutionalism lacks the theoretical tools to apply this aspect of the theory. However, the concept of policy networks (See Policy Networks section, pages 36 to 41) is increasingly being adopted as a meso-level tool of analysis to examine the process. (Schneider and Cederman, 1994: 634; Soetendorp, 1994: 118)

Overall neo-liberal institutionalism holds many useful insights, particularly in relation to the role that institutions and shifts in resources can play in the shaping of actor preferences and actions. The theory points directly to the overall hypothesis informing this research: that the UK technology policy network's preferences may have been 'Europeanised' by the FPs, particularly as the concepts highlighted are likely to prove at their strongest when an institution / policy is well established and holds its own resources.

Constructivism

Constructivism is based on 'the construction of identities and interests'. (Wendt, 1994: 385) Whilst constructivists are based in a wide range of academic disciplines, all are united in their rejection of traditional perspectives on interest-formation. (Hix, 1994: 9) For constructivists interest-formation is not an inevitable process based on a detached rational summing-up of objective resources and constraints, rather it is a subjective social process that can vary to wide degrees over time.

Two central notions are seen to indicate to constructivists the level of, or potential for, regional cohesion: these are the *character* of interaction and the *process* in which it emerges. (Hurrell, 1995: 350) Character relates to the level of common belonging to the particular grouping or region, whilst process refers to 'the compatibility of major societal values (especially capitalism and liberal democracy)'. (Hurrell, 1995: 350) For constructivists then, 'Europeanisation' would not necessarily involve a shift of resource dependencies to the European level, rather it would be constituted by the actors in the policy arena (the EU) believing they had a common cause and supported common values. For example, the Single European Act (SEA) was pushed at least on one level as a common united response to the US and Japanese economic 'threat' (character), whilst being

made possible by the collective acceptance of free trade economics (process). The constructivist approach thus aims not just to establish how the actors perceive their place in the system but also how these perceptions were / are formed.

Constructivism also proclaims that once formed actor interests are not static / dependent on material changes, that they are continually being formed and re-formed. In this respect, constructivists conceive a system in which "micro-psychology' replaces [or at least supplements] neorealists' micro-economics" (Woo-Koo, 1995) Hix comments:

> 'With respect to the EC, the constructivist analysis thus concentrates on the transformation of national identities and expectations, and the evolution of a new 'collective' European identity.' (Hix, 1994: 10)

In respect of the above, the constructivists are highlighting what can be considered a key aspect of the 'Europeanisation' phenomenon.

In conclusion, constructivism offers a 'promising way of conceptualizing the interaction between material incentives, inter-subjective structures and the identity and interests of the actors.' (Hurrell, 1995: 357) However as 'there remains a considerable gap between [constructivism's] conceptual sophistication and empirical application' (Hurrell, 1995: 357) the main constructivist emphasis will be on providing a positive addition to the more resource-based analyses of policy networks' theory as a method to establish *perceived* resource dependencies between actors. This stands in contrast to policy network's generally rational data-based analysis. (See Policy Networks section, page 36)

Multi-level Governance

> 'Students of EU technology policy find it useful to conceptualise the Union as a system of 'multi-level governance'(Marks *et al.* [1995, 1996a, 1996b]). Understanding the EU requires 'dissecting' the Union as a political system and distinguishing between different levels of governance, where different kinds of decision are taken (see Peterson 1995a).' (Peterson and Sharp, 1998: 55)

In line with the trend towards comparative approaches, Marks *et al.* (1995) suggest that the EU's policy process is best understood as one of 'multi-level governance'. This increasingly influential, though underdeveloped concept is based on the notion that the integration process has encouraged a steady growth in resource dependencies between and across the various levels of governance within the member states and the EU. The implication is that whilst state executives remain the most important EU actors, they do not hold a monopoly over the decision-making processes; decision-making competencies are shared to varying degrees at different levels and by different actors.

The extent to which multi-level governance applies to the policy process in the EU is perceived as widely variant between policy sectors and between nation states. Whilst it could be argued that this makes the concept weak in analysing the EU as a whole, it is better to see this as a strength as it is only through such an 'open' model that the reality of the EU's variable policy arena can be accurately interpreted. In this respect the concept's comparative qualities offer a far more advanced framework than that of neofunctionalism's uniform perspective.

The limited, but significant movement of resource dependencies from the national to the supranational level is perceived to weaken the influence of the national executives in the long-run. For example, multi-level governance would argue that research institutes are unlikely to hold political concerns as to which level of authority provides their funding - the funds, rather than the donor, being the primary concern - though once a link has been established it is likely that they would support its retention. In this respect, the multi-level governance concept owes a great deal of its dynamics to the neofunctionalism concepts of spillover, whilst it is clearly open to the use of policy networks theory in establishing relationships between the various levels of government.

In multi-level governance's favour the disaggregation of the modern state has arguably led to a situation in which national core-executives hold even less control over their policy process. This is particularly so given that policy actors are seen to set their preferences in varying contexts and therefore highly likely to

hold goals that are not compatible with those of their state core-executive. The inclusion of a new level of governance in Western Europe at the supranational level is seen to have exacerbated this situation. Two factors are central to this concept: (a) supranational agencies are *likely* to hold goals that are not directly compatible with the member states; (b) the effect of these divergent goals is likely to be particularly pronounced where the supranational institutions have 'independent' resources at their disposal. Moravcsik's intergovernmentalism may be correct within certain parameters, however, once a policy moves beyond the super systemic / 'history-setting' stage, central governments generally lose some control of the process and the supranational and sub-executive actors' aims increase in value. In this respect, Marks *et al.* make a potentially valuable point when they state that whilst intergovernmental bargains may exist at the historic decision-making level:

> 'one cannot conclude that individual states have gained or even sustained their former authoritative control over individuals in their respective territories.' (Marks *et al.*, 1995: 1)

The creation of the FPs arguably straddles all three of Peterson's 'levels of analysis' (See Figure 4, Page 45) leaving the question of the government's gatekeeper role open, even if one fully adhered to the multi-level governance perspective. Even in terms of the creation of the overall objectives for the Fifth Framework Programme (FP5), question marks exist over the relative power of the various institutions. Clearly multi-level governance would indicate that beyond the setting of the five year programmes, actors from the supranational level and those below the core-executive would hold increasingly influential roles, though little guidance is offered as to at what level this process starts and how steep and uniform it becomes. Hence a clear issue for empirical research would be to test the extent to which the theory is correct in portraying the national core-executives as able to play a gatekeeper role in the formation of a new FP.

Where the multi-level governance concept fails is in offering little guidance as to how it can be empirically applied. However, it appears that this theoretical / empirical gap can be plugged through the application of the policy networks concept. Used as a tool for highlighting the resource dependencies / relationships between the relevant actors and their respective levels in the

system, against the multi-level governance background, policy networks should prove useful in deciphering the effect changes in institutional environments and power distribution - such as those created by the EU FPs – can hold on an established policy system. (See Policy Networks section page 36)

In conclusion, multi-level governance offers many of the advantages of neofunctionalism in explaining policy change within the EU, whilst introducing a vastly more sophisticated image of its system of governance. In particular, multi-level governance offers a promising framework for conceptualizing both the interactions between the actors in the EU, and the process by which national policy systems can become 'Europeanised'. The FPs appear to provide fertile ground for a multi-level governance system. The key factors are the inclusion of sub-executive actors, the existence of supranational funding and the adequate time the policy has had to allow a new system to become established. In this respect, a test of the concept within the proposed sector should help to support or undermine its relevance.

Weaknesses of International Relations Approaches

The main failing of the IR theories outlined has been a lack of ability to comprehend and analyse the complexities of the policy processes. As Pollack states in relation to both neofunctionalism and intergovernmentalism:

> 'By and large, however, neither ...has generated testable hypotheses regarding the conditions under which, and the ways in which, supranational institutions exert an independent causal influence on either EC governance or the process of European integration.' (Pollack, 1997: 99)

In particular there is no clear framework for examining the creation and implementation of specific policies. Whilst this criticism could be considered unfair as IR has traditionally been concerned with historic-level decision-making and clear-cut 'win or lose' diplomatic situations, such an excuse is no longer valid in a system where international relations consist of public policy making on a scale previously only seen within developed states. It is for this reason that the second part of this chapter examines various public policy theories in relation to the EU's policy processes.

Part II: Public Policy Approaches

The SEA and the Treaty on European Union (TEU) both signalled and compounded the gradual creation of an increasingly complex 'internal political arena' within the European Union. As Falkner comments:

> 'The very feature of the EU political system is *fragmentation*; there are enormous cross-sectoral differences in policy style'. (Falkner, 1997: 6)

Hooghe and Marks go so far as to state:

> 'A consequence of the deepening of the Euro-polity is that ... the EU has been "domesticated". ... In short, politics in the EU is more like that found *within* national states than *between* them.' (Hooghe and Marks, 1997: 3)

These developments have led to the policy process evolving to cover issues of a more 'domestic' nature rather than those traditionally present in 'international' politics; questions have shifted from the notion of the member states' relations to relations between all the actors within the EU political arena. (Hix, 1994: 11)

The development of an internal political arena has left the traditional IR and integration theories largely invalid for the analysis of the Union's policy processes in the increasingly important area of day-to-day governance. (Andersen and Eliassen, 1994) As Hix comments; 'theories of the EC, which are fundamentally 'integration theories', do not possess the tools or the discourse for a 'political' ... dimension to be incorporated into their models.' (Hix, 1994: 6; See also, Peterson, 1995: 70)

IR theories of the Union cannot be expected to be all-encompassing; however it is increasingly recognised that they should be able to offer greater insights into the impact of policies. To use an analogy, at present the dominant theories are rather akin to showing a film of a nuclear missile launch without bothering to investigate its trajectory or its site of impact. Of course, if you are only interested in launching mechanisms, this may prove satisfactory, but for those interested in the overall system, it is not. Whilst the initial creation of EU policies at the super-systemic (see Peterson, 1995) level is of key importance, one has to ask whether the impact of these policies is not of equal, if not greater, importance.

Logically, if one accepts that the EU comprises a system of governance, it follows that the tools and discourse for its analysis may lie in the field of comparative public policy. (Hix, 1994: 14) As Sbragia argues:

> 'thinking about the Community comparatively will prove to be more fruitful analytically than simply describing the Community as "unique" and consequently analysing it exclusively on its own terms.' (in Hix, 1994: 24)

In this respect, many comparative politics scholars are as guilty as those from the IR backgrounds in not recognising and tackling the challenges created by the burgeoning EU polity, frequently demonstrating a blinkered 'tendency to look at national political systems as relatively closed.' (Anderson and Eliassen, 1994a: 10) Whilst the EU is not sufficiently developed as a political system to replace the national system as the unit of analysis, the development of 'a complex, multi-level, multi-channel policy-making context' (Anderson and Eliassen, 1994a: 10) has rendered such a course of action appropriate within specific policy sectors. (Andersen and Eliassen, 1994a: 12) The following sections are therefore dedicated to evaluating some of the main comparative and Public Policy approaches applicable to the EU. Although some of the terms covered are widely used within the IR discipline, they have been included here, as their attributes and applicability have gained a greater level of scrutiny in the Public Policy literature.

Rational Choice

The concept of rationality emerged in the Public Policy sphere in the late 1950s, being hailed as a major break-through for the field. In various forms rational choice has comprised the foundations of most IR and many Public Policy theories. For example, neorealism, interdependence theory and neofunctionalism have rationalist underpinnings. Given this widespread incorporation of rationalist concepts, this section has been included mainly to highlight the many criticisms of rational choice concepts that are commonly overlooked when incorporated into other theories. These criticisms are important as they offer indications of common pitfalls to avoid during empirical research.

In basic terms, 'Rational choice [assumes] a logical connection between rationally-ordered preferences (ends) and rationally-evaluated behaviour (means).' (Hix, 1994: 14) This logical connection can be seen to be composed of six basic stages, as described in an idealistic form below:

1) VALUES: The actor must define and list all its values and ideologies in order of priority. For example, according to Moravcsik, a government may list its priorities as: retention of power, protection of national interest, economic prosperity, etc. (Moravcsik, 1991)

2) OBJECTIVES: The actor must specify and list all its objectives in relation to the values specified in section one. For example, increase the growth rates, increase the competitiveness of national firms, etc.

3) ALTERNATIVES: All the alternative means for achieving the set objectives must be found. This search will include gaining information on all the factors influencing the objectives and all related topics. For example, a policy to increase technological competitiveness would need to consider a multitude of questions, the following of which comprise just a fraction: Do subsidies work? Where are subsidies most likely to work? Should FoFs be encouraged? etc.

4) IMPACT ESTIMATION: All the consequences, both positive and negative for each of the alternatives must be examined.

5) COMPARE AND CONTRAST: The net impact of each alternative must be assessed with the one most fitting the objectives chosen for implementation.

6) IMPLEMENTATION: The model does not deal with this stage of the process, assuming the ground work in stages 3 - 5 has been sufficiently thorough to ensure implementation will proceed precisely as set.

(adapted from Gilliatt, 1991)

It is important to note that the rational model is as much prescriptive as it is descriptive, with no support for the view that the above policy-making stages are commonly followed to the letter. As Hix comments:

> 'The rational choice modeller does not claim that when making a decision an actor actually goes through the same methodological [process], but simply that the actor behaves 'as if' she is following the same procedures.' (Hix, 1994: 14)

Rational choice models developed to date are much more complex than the stages described above, however, criticisms of these 'perfect world' stages are relevant in terms of addressing some of the basic assumptions inherent within the rational choice perspective. Also, it has to be recognised that the IR theories

(with the exception of social constructivism) rarely challenge their rationalist underpinnings and thus largely adopt a basic approach without comprehending the potential pitfalls.

The model does hold some key insights in studying the EU's policy process, for example, in highlighting the diversity of values and objectives held by actors it could prove crucial in attempting to ascertain actor support for policies. However, the model's implication that the values of each actor are present in such a coherent form, and indication that they could be empirically mapped and analysed as such, is weak. This is particularly the case with large actors, such as national governments or pan-European pressure groups, which are composed of complex arrays of sub-actors (each with their own values and objectives). In this respect, empirical research should ensure that it does not attempt to impose a homogeneous set of values and choices, where conflict is evident with a particular grouping. As unitary actors rarely exist in practice, it is only logical that empirical research should not attempt to impose such a view in its analysis. Indeed, the emphasis of analysis should be as much on determining the varying goals within the state and competition for policy formation as much as attempting to uncover, for example, an 'overall' government perspective.

It is also unlikely that, even for relatively small-scale homogeneous actors, the values and objectives held at the start of the policy process would remain static during the formulation and execution stages. Even in rationalistic terms, the increased information gained from an ongoing policy process and existence of varying externalities would naturally hold the potential to impact the values and objectives of an organisation. Thus, whilst an analysis of the values and objectives of the policy-makers may be valuable, it has to be recognised that these attributes can change over time and as such need analysing over time. In respect of this both changes in resource dependencies and changes in resource and value *perceptions* should form an important aspect of empirical research.

Clearly the ability to identify all of the possible 'alternatives', including their potential direct and indirect consequences (points 3-5) is rarely a feasible option, due to both the resource and time restraints that all projects face. In fact, if all of

its stages were completed to the full, the costs could be infinite. (Lindblom, 1979: 518) As Hill comments:

> 'the optimum solution is seldom plausible and the cost of the search may well exceed the savings achieved by the solution eventually discovered.' (Hill, 1993: 200)

Also, ''natural' uncertainty, arising from environmental factors, or 'strategic' uncertainty, when facing other actors' (Hix, 1994: 14) frequently ensure that a full evaluation of all the costs is not plausible. In this area 'game theory' is widely used to supplement pure rational choice approaches in accounting for imperfect information in decision-making. By accounting for degrees of uncertainty the model can be of use in analysing actor preferences, such as the extent to which they are willing to share risks with other actors and enter into binding contracts where the full implications of a deal may not be known.

Decision-making will frequently diverge from the rational choice model due to a tendency for policy-makers to settle for options that are less than optimal. (Ham and Hill, 1993: 92). Work on 'bounded rationality' noted that, in reality, decision-makers tend to look for policies that are simply satisfactory to their needs, or those of their masters, rather than pursuing a full maximisation strategy. (Lindblom, 1979: 518) In this respect IR and Public Policy theories that blindly accept rationalism's principles are incorrect in presuming that actors consistently pursue their interests to the full.

The existence of uncertainty raises the spectre of the implementation gap, a central failing of IR theories. As noted in section six, the basic rational model does not deal with implementation, taking it for granted that decisions taken will be accepted, interpreted and implemented precisely as given with no lower level re-evaluation. However, as the growth of implementation literature indicates, such scenarios are rarities in the real world with policies often being 'left on the shelf' or 're-interpreted' at a later stage. (Hix, 1994: 15) Such limits are not static, but vary from organisation to organisation and issue to issue, being dependent upon such factors as the command structure and the stability of the external environment. Hence, in a complex system such as the EU the implementation gap is liable to be relatively large and therefore less suited to such a rational

analysis. (See the 'Implementation Theory' section, page 34) Whilst the charge that rational decision-making models do not incorporate an implementation aspect is correct, it is in essence unfair as the model is not aimed in such a direction. Indeed Simon himself stated the need for a theory of administration to complement rationality theory. (in Ham and Hill, 1993: 82) However, as noted previously, it is not adequate for IR and Public Policy theories to address actors as taking rationally based decisions without reference to the possible implementation gap, when it is frequently clear that they do not have full knowledge of the implications of those decisions.

As a guide in modelling structural constraints and incentives rational choice is perhaps at its weakest. (Dowding, 1994: 112) In particular the basic models lack recognition of the influence institutions and prior decisions can hold in restraining and directing decision-making processes. To an extent this failure is already being addressed:

> 'Indeed, the rational choice variant of the New Institutionalism has already begun to look at the impact of institutions on behaviour and the problem of institutional choice and continuity.' (Hix, 1994: 28, fn. 45; See also: Dowding, 1994: 107 & 112)

These insights, though, have yet to filter down on any significant scale to the majority of the theories covered in this paper. Rational Choice also tends to deal in absolute measures of value, such as 'hard' resources, when in decision-making it is perceptions of value and resources that are frequently central. For example, the amount of useful intellectual resources held by an actor will not gain them influence in a policy process unless they can convince the other actors of their value. This appears to be a fundamental failing and an area that will need addressing in the empirical investigations.

In conclusion, pure rational choice approaches are often as inappropriate as 'first principles' public choice approaches. As Dunleavy states; 'first principles' public choice uses 'abstract conjunctures which are models so stripped down, so uncomplicated and so unambiguously specified, that in many uses it is hard to think of analogous political situations'. (Dunleavy, 1991: 1, in Dowding, 1994: 107) However, recognition of the model's limitations, particularly in the area of actor

perceptions of self-interest, values and resources, enables empirical researchers to utilise the basic rational choice guide for analysis whilst avoiding the many pitfalls it either creates or fails to highlight.

Implementation Theory

> '[The final policy] may really only emerge through an elaborate process that is likely to include those stages which are conventionally described as implementation.' (Ham and Hill, 1993: 103)

One of the most consistent criticisms of the theories evaluated so far, particularly those with rationalist underpinnings, has been their lack of insight into the area of policy implementation, as Ham and Hill comment:

> 'There has been a tendency to treat policies as clear-cut, uncontroversial entities, whose implementation can be quite separately studied.' (1993: 97; See also: Gunn, 1978: 1)

Such omissions are particularly surprising given that it has become commonly accepted that implemented policies rarely turn out exactly as the decision-makers intended. (Hogwood and Gunn, 1984) A comprehensive empirical investigation of the policy process - besides holding a theory of decision-making - will therefore generally require at the very least an acknowledgement of the implementation process. (Gunn, 1978; Hogwood and Gunn, 1984) The very impossibility of creating a perfect transfer of policy to practice in a complex system such as the EU pushes strongly for a recognition of the need for implementation research, both as an end in itself and in order to assess the actual on-the-ground impact of policy decisions. Without such investigation we cannot know for certain the real effect of the EU on governance within the member states. Implementation theory's main contribution to the public policy debate is in highlighting that 'implementation' often *is* policy-making. (See Bache 1998, 1999)

Whilst this thesis does not investigate the direct implementation of the FPs (being more concerned with the process at work in the UK behind the creation of FP5), a range of implementation factors are significant. For example, the transferring of a single UK national view on the FPs to the European level is a clear area of national implementation that cannot be taken for granted. Also, as

will become apparent in the proceeding chapters, a single FP holds a range of policy-decision and implementation levels within it before the first *Call for Proposal* is even issued. Indeed, the following fits the FP policy process perfectly:

> 'there [is frequently] difficulty about determining where policy-making stops and implementation begins.'(Ham and Hill, 1993: 107)

There are two main approaches to implementation studies, the largely prescriptive top-down approach and the more descriptive bottom-up approach. Top-down approaches to implementation are traditionally prescriptive, with many being 'explicitly practice related' offering 'perfect model' scenarios to help close the implementation gap. (Ham and Hill, 1993: 100) Bottom-up approaches are more descriptive, taking closer account of both the negative and *positive* inputs to the policy process of the lower level actors. Whilst some top-down models acknowledge the influence of the lower level actors on policy outcomes, they only do so in a negative way – emphasising their ability to create an implementation gap.

It is the bottom-up approach that is of most interest to this research in its emphasis on policy communication between actors at various level of the policy process. In particular, the bottom-up model acknowledges the existence of feedback from the lower levels of the policy actors to the higher level decision-makers, noting the scope for mutual learning, adaptation and compromise. (Lane, 1989, in Ham and Hill, 1993: 108) The effect is seen to not only re-shape policy 'on-the-move,' but also impact on any new round of decision-making with the experience of the implementers reflected in the formation of the policy's successors. As Weatherley comments:

> 'The pyramid-shaped organisation chart depicting at the bottom the front-line worker as passively receiving and carrying out policies and procedures dispensed from above is a gross oversimplification.' (Weatherley, 1980: 9; See also Ham and Hill, 1993: 141)

There is a clear rejection therefore of hierarchical chains of command and uniformly rigid relationships making the model inherently particularly suitable

for policy scenarios where resource dependencies are evenly spread. (Ham and Hill, 1993: 109)

In respect of the above, the key insight the bottom-up approach offers is in highlighting the potential roles played by sub-executive actors on the policy process; in particular the need to examine a wide-range of actors in relation to the implementation stages of the Fourth Framework Programme (FP4), which preceded FP5. That is to say, account also needs to be taken of actors' contributions beyond the auspices of the official round of negotiations, such as the impact of the direct contact between sub-core-executive actors at the national level and the Commission and European Parliament at the European level during the application of FP4. Implementation theory also highlights the need to constantly monitor the role played by such sub-core-executive actors in the implementation of the UK government's position on the FPs at the EU level, for example in analysing to what extent they strengthened or detracted from the government's line.

Policy Networks

Policy networks is an increasingly influential tool in British and American political science as an approach to the analysis of the public policy process. (Marsh and Smith, 1995: 1) The approach grew out of a general dissatisfaction with the rigidity of pluralist, corporatist and elitist accounts in determining and analysing the process of interest mediation within policy sectors. Hence, policy networks is a flexible tool able to examine a wide range of group formations at all policy-levels from agenda-setting down to implementation; though, as Marsh and Smith comment:

> '... whilst many agree on the utility of the concept, there is less agreement on what a policy network is or does.' (Marsh and Smith, 1995: 1)

Given the variety of interpretations of the concept, the following section sets out the basis on which it is to be applied in this research.

It is commonly agreed that networks emerge when policy actors perceive that their goals cannot be reached at an acceptable cost without the inclusion of other

actors – if the costs were acceptable it naturally follows that the actions would be carried out unilaterally, thus there would be no need for a network. Hence, in order to enter a network an actor must 'command some kind of resource that acts as their 'membership card'.' (Peterson, 1995: 76) The 'value' of the resources determines the level of influence held by each actor, balanced by the extent of their own 'resource dependencies.' Thus, an actor that held a key resource in a network would not necessarily dominate it if it was mutually dependent on the other actors. Though, logically the actors that hold the greatest degree of desirable resources and the least degree of dependence will hold the greatest degree of influence within the network.

Whilst '[t]he formal distribution of power between institutions in any political system is a key determinant of how policy networks are structured', (Peterson, 1995: 78-9) it is only one of many. Rather than being based solely on legal institutions and institutional links, resources can take various forms, ranging from simple monetary reserves, to credibility and reputation, to 'claims to superior technical expertise and/or to increased effectiveness of service provision'. (Marsh and Rhodes 1992: 265) For example, as Kohler-Koch comments:

> 'Those who command superior information on what is considered to be appropriate and efficient in common problem solving have persuasive power. The Community organs, in particular the European Commission being responsible to initiate policy proposals, disposes of only limited resources and is therefore particularly open to external expert advice. It not only attracts but also organizes a dense network of consultation. In order not to become too dependent on expert knowledge provided by the member states it includes all kinds of private interests in the process of policy formulation.' (Kohler-Koch, 1997: 2)

Thus, simply mapping the formal and informal institutional links as the 'new institutionalism' approach would emphasise, is unlikely to be adequate in assessing the influence actors hold over the policy process: access does not equal influence.

Peterson, utilising Rhodes's work, outlines two main types of policy networks: close-knit 'policy communities' and loose 'issue networks.' Three variables – stability of membership, permeability to new members and extent of resource

dependencies – determine which of the two types of policy network a grouping most closely represents. (Peterson, 1995: 77) The variables are judged on a sliding scale between the highly stable, close-knit and interdependent actors comprising vertically integrated 'policy communities,' and the more fluid, permeable membership, low mutual dependency 'issue networks.' (Rhodes and Marsh, 1992, p. 12 - 15)

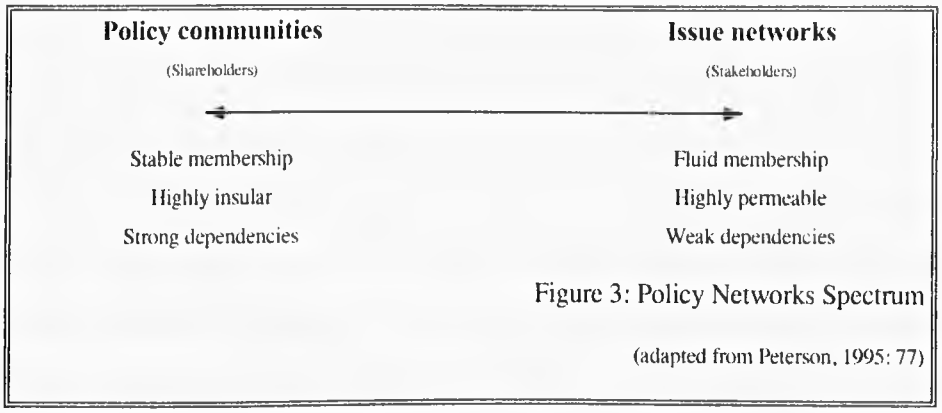

Figure 3: Policy Networks Spectrum

(adapted from Peterson, 1995: 77)

The existence of a policy community is seen to indicate a powerful policy group, resistant to 'external' pressures and influences, with strong mutual dependencies pushing towards only incremental 'partisan mutual adjustment' changes. The strength of the community is partly derived from the dynamics of regular actor interaction through the potential creation a 'virtuous spiral' of co-operation, wherein recognised benefits encourage a deepening of contacts which further help to facilitate more sophisticated and efficient information mechanisms and co-operation procedures. (Ifestos, 1987: 76; Keohane, 1982: 343) In this respect, the stronger 'policy communities' are predictably, *ceteris paribus*, seen to settle around established policy areas.

Issue networks are considered to be weaker in influence and more open to 'external' pressures and influences. The existence of only weak mutual dependencies will often result in powerful actors being able to push for unpopular radical policy changes - there being relatively little incentive for co-operation. Also, the generally shorter establishment periods and greater fluidity of membership provide little time for the 'virtuous spiral of co-operation', described above, to become established.

For rationalists, such close linkages between actors are only likely to be influential in speeding-up decisions, not influencing outcomes. (Pijpers, 1991: 21) However, for network theorists they will also influence the perceptions of interest held by the actors, therein altering the nature of decisions they take. As the economist Williamson comments, 'the general proposition that intragroup communication promotes shared goals appears to be a well-established empirical finding.' (Williamson, 1965: 584, Keohane, 1988: 389; van Ham, 1993: 460) For example, the 'former Belgian Foreign Minister, Willy Claes, insists that an EU composed of 'an elaborate set of networks' helps Europe 'to reconcile its undeniable diversity with its equally undeniable common interests and aspirations' (Claes 1994: 27)' (Peterson, 1995: 88) In other words, the formation of actor preferences based on their perceptions of interests may be coloured, not just enhanced, by the networks to which they subscribe – adding further weight to the earlier dismissal of the 'two-level game' concept of policy-making. (Soetendorp, 1994: 111-2; van Ham, 1993: 460) This aspect of policy networks clearly draws some links to Constructivist theory as covered earlier. (See Constructivism, page 23)

Policy networks is weak relating to its concept of resource dependencies; its rather 'fact' based analysis (relying on formalised values) leaving little room for actor misperceptions of their own and other actors' relative resources. However, this fundamental omission can easily be overcome through interview techniques which specifically address actor perceptions alongside more formal analysis of resource dependencies.

Though policy networks was not developed for the EU, it provides a fertile ground for its application for three main reasons. (Peterson, 1995: 87; Rhodes et al. 1996) Firstly, 'the EU lacks formal institutions which can facilitate bargaining between interested actors.' (Peterson, 1995: 87) This increases the scope and potential effectiveness of 'unofficial' links between actors, calling for a methodology such as that provided by policy networks to map such links. Secondly, the formulation stage of EU policy, i.e. prior to a proposal entering into the official policy-making process, is of greater importance within the Union than within national political systems. (Peterson, 1995: 71) As Hix states:

> 'The understaffing of most Commission Directorates and the multiple channels of access to EC decision-making ... gives organised interests at the European level more opportunity to be heard than in the ... national system[s]'. (Hix, 1994: 13)

Equally the multiple points of access available at both the national and EU levels to the decision-making process provide great scope for the creation of networks. Finally, analysis of the Union requires an approach that is able to cope with a highly diverse and complex system, whilst providing a framework for comparative analysis. Policy networks appears suited to this, given that it was designed partly to explain relational differences between policy sectors.

The differences between issue networks and policy communities are likely to be generally less divergent in nature within the EU than in national polities; the young and expanding nature of the system providing members of issue networks with a high degree of access, whilst not providing adequate time for potential policy communities to become fully established. (Hay, 1996; Peterson, 1995: 88) However, the policy community concept still provides a testable concept given that the technology programmes have been established in a relatively stable environment for a relatively long period of time; thus they can be hypothesised to hold some resemblance to a policy community. (Hay, 1996) However, even if the hypothesis does not prove correct, the variables remain useful guides in establishing actor links.

There is a need to distinguish between routine Union business and historic decision-making, as the networking concept fits with analysis of the day-to-day running of the Union. (Keohane and Hoffmann, 1991: 14; Peterson, 1995: 83) With historic decisions the decision-making process will often move above a level where networks are able to develop beyond a very rudimentary stage. This is due to the relative infrequency of contacts between actors, the generally large number of affected actors and constantly changing sectors that are addressed. Also, the often more substantial and direct nature of the national interest in such areas is likely to bring in a public debate that limits the influence vested interests can hold. For example, even if the government and powerful City of London and CBI interests were to desire a single European currency, the matter is one likely to be decided by the general public, actors that would not be included in the

scope of a policy network (though, of course, the ability of the network actors to manipulate public opinion could be considered a resource).

Though not a policy networks analyst, Benson (1983) offers some insights that may improve the concept. His model is a 'levels of analysis' approach consisting of three main levels: (a) an 'administrative structure,' based on similar principles to policy networks analysis; (b) an 'interest structure,' comprised of all the actors concerned with the policy; (c) the positive[2] and negative[3] 'rules of structure formation,' set by state and market regulation and based on the encouragement of capital accumulation. (Ham and Hill, 1993: 177)

The 'administrative structure', as noted, is very similar to networks analysis and as such offers little insight beyond that already discussed. However, the 'interest structure' may prove useful in going one-step beyond networks analysis and encompassing all the actors deliberately excluded from the policy networks. By examining such excluded groups it should be possible to determine to a greater extent the membership criteria amongst the insiders and the basis of the power structures on which their relationships operate. As Ham and Hill comment:

> 'The interest structure is important in that it provides the context for the administrative structure which cannot be adequately understood except in terms of the underlying power relations manifested within the interest structure.' (Ham and Hill, 1993: 177)

The third aspect provides a dominant structuralist / institutional angle to Benson's model. Benson basically sees this third level as dominant, noting that such 'rules limit and enable action at other levels.' (Benson, 1983:31) In other words, this would be the macro-environment under which the meso-level concept of policy networks would operate. Thus one must consider the structure of this third level before one goes on to examine the 'interest' and 'administrative'

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[2] Positive rules are comprised of active measures to aid capital accumulation, such as subsidies. (Ham and Hill, 1993: 177)

[3] 'The overall impact of negative selection rules and indoctrination is to place limits or boundaries on what is possible.' (Ham and Hill, 1993: 177) For example, keeping items off governmental agendas or restricting monopoly practices.

structures. Change at the third level is largely seen to be dictated by changes in the wider external environment. For example, Marxists would see:

> 'the integration of Europe as a response to a new phase in the development of capitalism. ... To cope with these challenges [globalization etc.] the capitalist state seeks to introduce 'capitalist regulation' - hence the Single Market programme.' (Hix, 1994: 9)

As Ham and Hill state, Benson 'is careful not to suggest that the relationship between levels is simply deterministic[, noting] the possibility that the administrative structure might become independent of the structural underpinnings and that bureaucracies might develop a life and logic of their own.' (in Ham and Hill, 1993: 178) This basically represents the dialectical approach to the structure / agency debate that is developing in the policy networks literature. (Marsh and Smith, 1995: Table 1) However, unfortunately, Benson does not indicate 'how far and in what circumstances bureaucratic action is determined by deep structures or is independent of these structures.' (Ham and Hill, 1993: 178)

The issue as to how policy networks will be applied in terms of the agency / structure debate, i.e. which level is dominant, is likely to be largely issue dependent. As such it is unlikely to be answered until the preliminary gathering of empirical data has been completed. However, the dialectical approach touched upon by Benson (1983) and developed by Marsh and Smith (1995) appears the most logical choice for application.

Overall the policy networks model offers a useful theory for examining levels of power and influence within the Union beyond the rather superficial level of 'hard' institutional analysis, the overly deterministic new institutionalist perspective and the perceptions-dominated constructivist analysis. In this respect, policy networks is much more than what Falkner described as a dominant 'fashionable label' of the times. (Falkner, 1997: 3) The ability of the approach to cross the largely false decision-making and implementation boundaries is also a key benefit. The approach also offers 'the interesting and testable hypothesis that the internal characteristics of policy networks ... are a primary determinant of EU policy outcomes.' (Peterson, 1995: 80)

In conclusion, policy networks provides a solid analytical base and descriptive tool from which to analyse the degree to which the UK policy process has been Europeanised and the extent to which the UK government has ceased to control or dominate technology policy networks within its borders.

The Utility of Public Policy Approaches

The preoccupation of scholars of the EU with the integration process and of domestic politics scholars with the national policy process has left a rapidly developing political system relatively unexamined. Hence analysing the Union in comparative Public Policy terms is clearly a logical course of action. However, whilst analysis 'requires moving beyond the approaches prevalent in the international relations literature on cooperation', (Garrett, 1992:) it does not merit abandoning them. Comparative approaches alone are not enough to analyse the extent to which integration is taking place thus are not adequate in explaining the EU as a system of governance; an approach combined with the more positive aspects of IR theory is therefore required.

Part III: Towards A Multi-theoretical Perspective

Criticism of à la carte approaches to theoretical evaluation are valid, (Burrows and Edwards, 1982: 146; Pijpers, 1991: 14-5; Puchala, 1972: 277) but only to an extent. Theoretical purity is only beneficial where it is able to adequately explain the phenomenon in question. This does not appear to be the case with regard to the overall policy process within the EU, its 'chain of causation' holding too many dimensions. (Kaiser, 1971: 225) As Kaiser comments:

> '[Where no individual theory appears to fit, it is foolish to press-on regardless] concentrat[ing] on one or another aspect of what [is blatantly] an interactive multidimensional process.' (Kaiser, 1971: 225; See also Lindberg, 1970: 650)

The lack of a single theory able to encapsulate the EU's policy process indicates that it represents a 'multiperspectival polity' unsuited to examination from a single level of analysis and thus meriting a combination of theoretical perspectives if the influence and intricacies of its external, internal and institutional pressures are to be fully accounted for. (Lewis, 1995; Peterson, 1995; Pfetsch, 1994: 135; Sandholtz, 1993: 5; van Staden, 1994: 154) Given this, a 'levels of analysis' approach appears promising.

Levels of Analysis

Hurrell, (1995) offers three paths to overcoming the present theoretical limitations. Firstly, a researcher can simply concentrate on a specific aspect of the process. However this approach, whilst offering the potential for detailed analysis, is unlikely to provide an adequate image if one intends to make inferences in relation to the overall sector / system.

Secondly, one could attempt to merge all the possible levels and stages of analysis and their respective theoretical tools into a single all-encompassing theory. Unfortunately, whilst attractive such an approach is liable to result in an incoherent and potentially contradictory analysis. The resultant hybrid is also likely to be too issue specific and therefore unlikely to offer many insights into areas beyond that of immediate study.

Thirdly, Hurrell suggests:

> 'a phased or 'stage-theory' approach to understanding regionalism. [For example] neorealists may be right to stress the importance of the geopolitical context in the early stages of European unity, and yet wrong in ignoring the degree to which both informal integration and successful institutionalization altered the dynamics of European international relations over the ensuing forty years.' (Hurrell, 1995: 358)

This approach appears a realistic way of analysing the gradual development of specific policies. However, again it offers little hard advice on the best theoretical tools for analysing any specific policy area. Also, it does not overcome the problem of analysing the complete policy process from the decision-making stages to the (semi-) implementation stages. Peterson offers a fourth alternative, analysed below.

Peterson's Framework for Analysis

Peterson (1995) offers a route to alleviate the problem concerning the inapplicability of one theory to all levels of analysis. By first defining each policy stage, then addressing each in turn, Peterson's intent 'was to develop a framework to guide research which seeks to answer fundamental questions about the nature of the EU as a system of government.' (Peterson, 1995: 89) The framework is similar to Hurrell's second concept, however, it does not go so far as to merge the actual theories. Rather, the theories are assigned to specific levels in a framework, each covering a specific area of the policy process and operating in a symbiotic relationship with the levels directly above and below.

The framework consists of three main levels of analysis, the super-systemic, systemic and meso-level as outlined in Figure 4 below.

Level	Type of decision	Dominant actors	Rationality	'Best' Model(s)
super-systemic	history-making	European Council, National governments in IGCs, ECJ	political, legalistic	macro theories
systemic	policy-setting	Council of Ministers COREPER	political, technocratic, administrative	new institutionalism
sub-systemic / meso-level	policy-shaping	Commission, committees, Council groups	Technocratic, consensual, administrative.	policy networks

Figure 4: Levels of Analysis

(Peterson, 1995: 71-84)

The super-systemic level relates to 'historic decision-making,' i.e. matters concerning the overall constitution of the EU, covering issues such as its range of competencies and its relationship with the member states. Such decisions are seen to be commonly taken in the European Council and IGCs, and by the ECJ. In this respect the decisions are seen to reflect either the 'political rationality' of the national governments (based on their desire to remain in power) or the 'legalistic rationality' of the ECJ. (Peterson, 1995: 72) Peterson sees the best theoretical approaches here as macro-based, such as neofunctionalism and neorealism with super-systemic decisions mainly influenced by broad trends in the global and regional political and economic environment. (Peterson, 1995: 83-4) Technology policy decision-making, because of its varied and multi-level nature, tends to straddle all of these levels. As Peterson and Sharp state:

> 'Our central argument here is that the high politics of research policy – played out at what might be called a 'super-systemic' level of analysis – are often surprisingly dramatic and hard-fought. (Peterson and Sharp, 1998: 163)

> 'The budgetary politics of the Framework Programme clearly invoke the highest political levels. At a stretch, budgetary choices on the Framework programme might even be considered history-making decisions, because they go far towards determining the EU's research activities for as many as five years at a time. It is plausible to view bargaining on the Framework programme's budget as essentially intergovernmental between self-interested EU member states.' (Peterson and Sharp, 1998: 172)

Given it is the setting of the overall FP that is of concern to this paper, this statement clearly opens the empirical question of the extent to which the national governments of the member states are in direct charge of the process and the extent to which sub-core-executive and supranational actors are able to influence the programmes via direct contact with the European Commission. Questions are also raised over the differences between setting the overall budget and outlining the allocation of that budget between policy sectors.

The systemic-level relates to policy-setting decisions, at this level policy objectives emerge and decisions are taken as to which method of EU decision-making should be adopted. (Peterson, 1995: 73) The Council of Ministers and the Committee of Permanent Representatives (COREPER) are seen to be dominant

at this level, though the Commission also plays a key role. Whilst technocratic and administrative objectives - concerning the prospects for successful implementation - are central, once again 'political rationality is usually the primary determinant of choices.' (Peterson, 1995: 73) 'New institutionalism', concerning the effect that a system's institutional architecture has on the actions of the actors within it, is seen to be the most relevant theory at this level. As Garrett states:

> 'The ... EU institutions matter because 'history-making' decisions may 'only sketch the broad "rules of the game" and then delegate the authority to apply and adapt these rules' to institutions (Garrett 1992: 557).' (Peterson, 1995: 81)

The meso-level is taken to denote 'policy-shaping' decisions concerned primarily with how policy goals, defined at the systemic-level, should be reached. The level is dominated by technocratic consensual 'epistemic communities' including the 'formally 'non-political'': the Commission's Directorates-General (DGs), national civil servants and private actors who bargain with each other in various types of committee or Council working groups.' (Peterson, 1995: 74) The Commission is seen to be the dominant body, primarily concerned with:

> 'the perceived need to forge consensus between meso-level actors in order to legitimize the choices offered to political decision-makers.' (Peterson, 1995: 74)

In this respect the model would predict the Commission actively encouraging contact with national actors both at and *below* the core-executive level. Peterson's model ties in with the bottom-up perspective of implementation here in highlighting the importance of this level in determining the outcome of decisions made at the higher, super-systemic, level. The policy networks approach is taken to be the most relevant to be applied to this level.

The main content of EU policy is seen to be formed at the meso-level, 'where administrative and private elites seek to shape proposals before policies are 'set'', (Peterson, 1995: 78) at the systemic-level. This is particularly the case given the meso-level is seen as relatively open and given the fact that 'it is very difficult to lobby effectively once a proposal has passed to the Council (Eberlie 1993)'. (Peterson,

1995: 76) It can thus be concluded that policy is seen to move in an upwards direction from the technocratic meso 'policy-shaping' level to the political systemic 'policy-setting' level. As the super-systemic level only deals with 'history-setting', it will only enter into the process if there is the prospect of a policy significantly altering the institutional balance within the Union. This meso-level to systemic-level relationship points to a testable hypothesis in relation to the development of the FPs: that the Commission plays a driving role in the development of the policy through its encouragement of national interest groups to help to legitimise wide-ranging technological collaboration within the EU, national governments playing a largely re-active role.

Has Peterson 'develop[ed] a framework to guide research which ... answers fundamental questions about the nature of the EU as a system of government'? (Peterson, 1995: 89) At present it appears not, though some very valuable insights are drawn. The main problem with the framework is that the policy process rarely follows such a strict split-level model, rather, there is likely to be a great deal of interaction and feedback between the various levels. In this respect it is ironic that Peterson endorses the networks approach and then underplays the extent of such links between the levels, this being precisely an area where one would expect a networks analysis to provide a great many insights.

A weakness of the framework is the perceived dominance of technocratic rationality aimed at how best to implement a policy that will achieve the results as set at the systemic-level. If rationality, rather than altruism, is seen to be a key determinant of action, are not the private actors, which are acknowledged as being relied upon for information, more likely to pursue policies suited to their needs rather than those set by the Council? Whilst this may not apply to all policy areas, it is often the case that the private actors consulted are those that are likely to be the benefactors of the policy in question. Thus it is questionable to state that the rationality of the system is aimed at producing the most effective policy as intended at the preceding level. Highlighting the potential conflict within and between the two levels would appear more appropriate.

Another issue is Peterson's dismissal of the implementation / micro-level of analysis from consideration. This dismissal is particularly strange given the consideration made that present theoretical approaches:

> 'shed only limited light on how the EU works on a day-to-day basis as a system of government' (Peterson, 1995: 70)

and that

> 'the EU [holds] patchy record of policy co-ordination and implementation.' (Peterson, 1995: 80)

As noted in the Public Policy section, it is precisely at the implementation stage that many policies lose their direction and fail to fulfil the expectations of the policy-makers. Without empirical analysis of individual policy areas it is not possible to state conclusively if this level holds a great impact on policymaking in the EU, however, it should not be dismissed.

In conclusion, whilst the specific levels of analysis and Peterson's stated relationships between them can be contested, the overall approach is to be commended. If the right balance were found an adaptation of the model could potentially alleviate the recurring levels-of-analysis problem. By clearly utilising theories for the level at which they are best suited, such an approach would be infinitely preferable to dogmatically attempting to utilise one theory to explain all levels, or equally to abandoning a theory because it cannot explain one level whilst suiting the remainder to a high degree. Finally, there is a remaining question in terms of the emphasis on policy networks at the meso-level, when the tool can, depending on the particular policy, be suited to analysis at all three levels.

Conclusion

The aim of this review was to examine the general questions raised by the theoretical perspectives applicable to studying the impact of the EU's RTD FPs on the British policy process, note their key strengths and weaknesses, and set the context of this research in relation to past works. The following section offers a guide to the lessons learnt from the review and on how the theory is applied in the following chapters.

As highlighted, particularly by the public policy theories, the EU's policy process is highly divergent from policy-to-policy and country-to-country, therefore opting for one theoretical framework at the exclusion of others during the early stages of empirical investigation can cause more problems than it solves. Equally it is clear that neither pure IR theories nor pure Public Policy theories are able to describe the changes taking place in the EU. Therefore the research openly utilises concepts from both the IR and Public Policy spheres; there is no longer justification for solely adopting either one approach or the other, as has traditionally been the case in relation to analysis of the EU.

Chapters Three and Four of the thesis are dedicated to establishing why the FPs are of value to the UK actors in both historic and present-day terms. In order to explain different aspects of the creation and development of distributive EU RTD policies Chapter Three draws its analysis from a range of theories from the intergovernmental competition state to constructivist approaches. Whilst this appears potentially conflictual, the logic lies in the assumption that the form of co-operation will have changed and developed over the period of the FPs' existence. For example, the chapter starts out from a largely intergovernmental perspective in terms of looking at the reasons why the separate nation states decided to co-operate in RTD, and develops into a more integrated system that cannot be explained by intergovernmentalism alone. Chapter Four, concentrating on the development of British RTD policies, utilises a domestic-level approach to outline the main themes present in UK RTD and contrasts them with the findings of Chapter Three.

Chapter Five signals the start of the substantive investigation into resource dependencies between the actors drawing heavily on a policy networks approach and specifically focussing on two main areas; finance and core-executive control. The following chapters, leading to Chapter Nine, all adopt a modified policy networks strategy. This modified version of the largely 'neutral' policy networks tool pays special emphasis to actor *perceptions* of relative value rather than a more quantitative assessment actor relationships. The policy networks approach is further tempered by an emphasis on institutional relationships that

have consistently played a strong role in both national-level and EU-level policy-making.

In conclusion, the policy networks approach has been utilised as the primary tool for investigation precisely because it is adaptable and does not force a macro structure onto the research at an early stage. It also holds valuable analytical and descriptive capabilities in outlining the extent to which the British core-executive dominates and controls the policy input from the United Kingdom actors to those of the European Union.

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3) The Framework Programmes: Historical Development

Introduction

The Commission's long-standing greater goal in pursuing Research and Technological Development (RTD) policies, as expressed in the CEC's 1995 *Green Paper on Innovation*, is to help European industry move beyond the existing real and psychological barriers that presently restrict RTD co-operation between the member states, therein taking full advantage of the Single European Market. (Ager, 1996: 43) One of the main policies the EU has adopted in addressing this task is a series of Framework Programmes (FPs) for RTD. In order to set the context for the more in-depth examination of the UK FP5 policy networks in the remainder of the thesis this chapter analyses the forces and actor interactions behind creation of the FPs and the legislative framework in place for the creation of FP5.

The EU's impact on high-technology RTD has emerged from a three-pronged industrial policy approach. The first two prongs consist of a regulatory approach to industrial policy, including the gradual reduction of barriers to trade between states within the Union, and the creation of common European standards of practice and regulation in high technology areas. (Economist, 1993: 22; Matterson, 1996: 44; Sharp, 1991a: 73; Tyson, 1992: 237) In particular, the variable regulatory environment in the Union is commonly criticised as undermining pan-European RTD. (Matterson, 1996: 44) The third approach, expressed in the FPs, is largely distributive, concerning the creation of extensive programmes of public support of co-operative RTD across the member states. (Tyson, 1992: 237) Whilst the first two of these three prongs (regulatory approaches) are clearly dominant in EC industrial policy, it is the distributive approach in the form of the FPs that is the primary concern of this thesis.

National support of RTD has proved a consistent mercantilist tool across both time and states for the encouragement of economic competitiveness in the developed world. (Cerny 1995: 602; Hayward, 1995b: 346, Menon and Hayward, 1996: 270) Where

government sponsored international RTD collaboration does exist outside the FPs it is predominately directed towards area-specific basic research on a overwhelmingly intergovernmental basis. In this respect, the development of the FPs – wide-ranging, pre-competitive programmes for RTD collaboration holding strong supranational elements within the European Union – marked a clear new chapter in the history of government sponsored RTD.

Early Failures

Post-war visions of European integration, including those of Jean Monnet and the Action Committee for a United States of Europe, have consistently included concepts of a supranational-based 'Technology Community' actively promoting European RTD above the level of the nation state. (Sharp, 1991a: 60) Yet such plans were not included in the original Treaty of Rome, being rejected by the prospective member states as not only unnecessary (the member states perceiving their given individual sizes adequate for addressing their respective RTD bases), but also for running counter to the then dominant 'national champion' strategy and for moving too far into areas of high national policy (then as now national RTD capabilities were considered fundamental to a nations economic and thus political future).

A separate treaty was signed alongside the Treaty of Rome establishing the European Atomic Energy Community (commonly known as Euratom) – a European-level RTD programme with the mandate of aiding the establishment of the nuclear power industries. Euratom was designed to run alongside the EC holding a virtually identical organisational structure and utilising some common institutions (notably the Assembly, the ECJ and the Economic and Social Committee), though holding its own Commission and Council of Ministers. (Bainbridge with Teasdale, 1996: 152) However, despite being assimilated with the ECSC and EEC into the European Communities by July 1967 Merger Treaty, Euratom should not be overplayed as a starting point for an active EC RTD strategy given its largely political origins and its strictly defined scope resulting in little room for spillover into other research sectors.

Despite the commonly perceived 'economic miracle' experienced in Western Europe during the early post-war period, by the mid- to late-1960s serious doubts were beginning to be raised over Europe's future technological competitiveness. (Peterson, 1992a: 226; Sharp, 1991a: 60) These concerns were most visibly expressed during the period by the Frenchman Servan-Schreiber's 1968 book entitled *Le Dêfi Americain (The American Challenge)* which brought to the attention of Western Europe's political elites and public the actual and potential decline of Western Europe as an industrial and technological power. Servan-Schreiber's main concern was the inroads made by US companies into the European marketplace in key industrial technologically advanced sectors and the resulting economic and political subservience that this might entail. (Servan-Schreiber, 1969: 22-3; Sharp, 1990: 53)

Like mercantilists before him, Servan-Schreiber proposed that governments aid firms in key strategic industries, though in opposition to the common mercantilist approach he advocated a 'Eurochampion' as opposed to a purely national response. Essentially this European-level strategy was not based on idealist visions of a European state, rather it was based on a functional assessment of the practical inadequacies of European-sized states in creating a viable industrial policy capable of competing with the US. (Servan-Schreiber, 1969: 22-3.) As noted the EC was already active in limited basic research areas (e.g. those concerning Euratom's nuclear research programme), Servan-Schreiber, however, was proposing a clear move away from such limited areas of basic research towards a more market orientated 'active' European industrial policy. (Servan-Schreiber, 1969)

During the remainder of the 1960s and the 1970s, spurred on by the 'technology gap' debate, the Commission remained active in pushing for a greater technology role for the EC following the assimilation of Euratom, though little came of the numerous proposals for the development of a wider active Community RTD policy . (Peterson, 1992a: 230) For example, studies commissioned by the Council of Science Ministers during the period on potential benefits of Community RTD policies in six broad RTD areas, included telecommunications and data processing did result in the 1971 creation of COST (European Co-operation in

the field of Scientific and Technical Research). However the institution is clearly intergovernmental and covers the whole of Western Europe's OECD membership. (Sharp, 1991a: 61) The EC made further tentative steps into the area of pre-competitive research with a 1974 Council Resolution, championed by the Commission, supporting the creation of a medium-term programme on data processing systems. However, the Resolution proved to be a failure with the collapse of a Euro-collaboration project by Siemens, Olivetti and CII-Bull leaving the Community without a major project or backers. Overall, steps made during this period did not amount to enough to be considered as significant breakthroughs by the Commission into RTD areas. (Sharp, 1991a: 61)

Overall, Servan-Schreiber's calls for European-level action went largely unheeded and declined in importance in political circles along with the failing of the Commission's proposals for an extended role. Indeed, national champion strategies were largely reinforced in the following decade, particularly in the two main states of France and Germany. (Hare, Lauchlan & Thompson, 1989: 22) However, the Servan-Schreiber's text is important as it is just such reasoning that has formed the basis of the European-level action in the 1980s and 1990s.

The Commission's early failures could be put down to its inclusion of the technology plans within broader moves towards a political union - which were unacceptable to the member states at the time – generating a '[m]istrust of its motives' (Peterson, 1992a: 230-1) and therein weakening the overall case for such a policy. However, it is essential not to become bedazzled by the Euro-politics present at the expense of the particulars of the policy in question. The lack of major inroads made by the EC into the RTD policy sphere cannot be blamed solely or even primarily on the poor tactics employed by the Commission. Whilst such factors unquestionably need to be taken into account, it is clear that factors specific to the technology policy sector and individual states at the time also worked against an EC-level solution prevailing. In particular, there is little to suggest that a change in the Commission's tactics and perceived motives would have had much impact on the predominant 'national champion' strategy of the time.

What Sharp calls 'a watershed in Community policies' (Sharp, 1991a: 63) and the Commission terms 'the big breakthrough' (www2.cordis.lu/cordis/01.htm) in Community involvement in RTD arrived with the creation of the European Strategic Programme for Research and Development in Information Technology (Esprit) approved by the Council of Ministers 28th February 1984, and the subsequent creation of the wider-based multi-annual Framework Programme (FP) for RTD in high-technology areas in 1985.[4] (www2.cordis.lu/cordis/01.htm) Around the same time the second overarching intergovernmental pan-European RTD programme EUREKA was initiated outside the EC. The EC programmes gained a legal basis under Article 130F, Title VI, Part III of the Single European Act (1987) marking the first large-scale active distributive policies to emanate from the Community aimed at dealing with the global competitiveness of European firms. (Colombo, 1986: 241) The logic behind their creation at this particular juncture in the Community's history is examined in the following sections.

Successful in the 1980s

The question of why the Commission was so successful in lobbying for the creation of a RTD FP in the mid-1980s, when previous attempts had met with little success, needs to be addressed if the present development of the FPs and its impact on the British state is to be fully understood. The Commission's success cannot be put down to any one specific factor, rather it emanated from a combination of political and economic developments. These developments, are examined below:-

International Competition

Whilst during the late 1970s Western Europe was still perceived to be strong in areas of basic research, concern had begun to re-emerge that this was not being capitalised on in the pre-competitive and near-market stages of RTD. (Colombo, 1986: 241; Georghiou, 1986: 117; Macioti, 1986: 98) Evidence for the re-emergence of such assertions was derived from many areas; for example, the inability of the EC to

[4] For the remained of the paper the term FP encompass the beginnings of the Esprit programme, except where stated.

meet its domestic demand for high technology products since the mid-1970s was increasingly seen as a structural not just a temporary blip, resulting in a growing perception that 'the international position of even the leading EEC countries in key high technology sectors [was] deteriorating'. (Marcum, 1985: 319; See also: Hare, Lauchlan & Thompson, 1989: 25; House of Lords, 1985; Peterson, 1996, p.41) In particular a main area of concern centred on the common perception that Western Europe was falling behind its international competitors - especially the US and Japan - in the new technologies of the 'third industrial revolution'. (*Economist, 1993*: 21, See also: Freeman and Oldham, 1991: 9; Marcum, 1985: 317; Peterson, 1992a: 226 & 231, 1996, p.41; Sharp, 1990: 53, 1991a: 60 & 63)

The re-emergence of the perception of relative international technological decline – entrenched by the popular terms 'Europessimism' and 'Eurosclerosis' – became a key justifying factor in the creation of Esprit. As one DTI sponsored report stated:

> 'the real, long term aim of Esprit is to help the IT industry in the EC to strengthen its position in world markets, notably in relation to Japan and the US...' (Hare, Lauchlan & Thompson, 1989: 77)

The perceived acceleration of this decline clearly fuelling the justification for the growth of the subsequent FPs during the 1980s and 1990s. (Gaster, 1991: 243; Sharp, 1991a: 63) The fear was that the European companies would be decimated by their US and Japanese counterparts, or at the very least become dependent upon them. As *The Economist* state:

> 'Strategic-trade theorists in Brussels fear that if American or Japanese companies corner these technologies, they will withhold know-how from European rivals.' (*Economist, 1993*: 21)

The Commission directly utilised such fears to gain support for the FPs, for example, Etienne Davignon, Commissioner for Industry 1977-85, specifically drew attention to what he saw as the:

> 'very distinctive difference in [industrial] performance' between the USA, Japan and the EC to justify the creation of Esprit, when giving evidence the House of Lords' Select Committee on the European Communities in 1985.' (House of Lords, 1985; quoted in Sharp, 1991a: 64; See also, *Economist, 1993*: 21)

Tied to this was the fear that both the US and Japan were making solid moves to consolidate their positions with large scale national collaborative programmes

that the European states could not match individually. As one DTI sponsored report states:

> 'At the very least, the individual countries could not hope to amass resources on the scale needed to compete with the US and Japan.' (Hare, Lauchlan & Thompson, 1989: 25)

National strategies were also criticised as not just failing to alleviate the growing problem, but also being increasingly part of the problem due to the increased prospect of duplication of research efforts. (Hare, Lauchlan & Thompson, 1989: 25)

It should be acknowledged that the overall economic picture in the early 1980s is generally not as bleak as often portrayed. For example, the overall export share of the EC within the OECD states declined only marginally in an expanding market between 1975 and 1983 - from 49% to 44%. (Marcum, 1985: 318) It is also important to acknowledge that there is no such thing as a 'European capability' that can be judged in such a monochromatic fashion, rather geographic and technical areas need to be looked at on more of a case-by-case basis. (Georghiou, 1986: 117; Patel and Pavitt, 1991: 39) For example, the chemicals, pharmaceuticals, and telecommunications industries, were and have remained particularly strong within the EC. (Cook and Sharp, 1991: 198; Peterson, 1996, p.41) As Sharp comments, in reality Europe was not fairing too badly, it was just that in the high-profile 'electronics sectors, [Europe was] showing a poor performance in both capital and consumer goods.' (Sharp, 1991a: 63, See also 1990: 55) In this respect one has to acknowledge that the predictions of potential economic oblivion from many of the campaigners for the FPs were frequently of a self-serving nature: i.e. the worse a picture they can create in the policy-makers' minds of the European technological position, the greater their prospects of forwarding their aims for the adoption a comprehensive EC-based technology policy.

Therefore even if one disputes the proposition that the member states were in technological decline, it remains the case that the fear of such decline was a major contributory factor to the creation and development of the FPs. Clearly, 'perceptions of decline' are not enough alone to explain why the national governments - which had previously remained so determined to stick to national schemes, particularly in areas of pre-competitive RTD - chose to give a policy

role to the EU instead of just increasing their own efforts; this can only be explained with reference to the other phenomena examined below.

National Budgetary Constraints and Research Costs

The creation of the FPs also, somewhat ironically, stemmed from the fiscal pressures on the individual national governments. These pressures were predominately based in two areas, the general pressures on national budgets and the increasing costs of RTD programmes.

Firstly, economic slowdown and resulting burgeoning public sector budget deficits – characteristic of many of the member states during the 1970s and early 1980s – led governments to reassess their spending priorities with the result that many RTD budgets came under increasing pressure, some actually declining. Of course these increasing pressures on national budgets do not in isolation push towards new spending at the EU-level, quite the opposite, logic would appear to dictate against embarking on new spending programmes. However with the gridlocks frequently present over the distribution existing RTD budgets - limiting the degree to which they could adapt to cope with the new funding requirements concerning the technologies of the 'third industrial revolution' - moving responsibility for these areas, at least partially, to the EC offered a degree of logic given the lack of 'baggage' in relation to existing programmes. Further, for national RTD groups and policy departments, as opposed to Treasury departments, the EU offered the prospect of by-passing national constraints and gaining extra funding given the FPs were not expected to be attributed domestic RTD spending.

Secondly, the growing costs of research exacerbated the afore-mentioned budgetary pressures and made the decision to pool resources more attractive. Sinclair (1993: 346) even goes so far as to state that the rising costs of research had made some form of increased co-operation almost inevitable. *The Economist*, in relation to one aspect of the FPs, noted:

> 'the EC pays for the Joint European Torus (JET), a nuclear fusion programme which no single government alone could afford.' (*Economist, 1993*: 21)

Whilst this is not strictly true in terms of individual programmes, individual governments could not afford a range of such projects. Hence, given the uncertain nature of RTD there lies a clear advantage in the governments seeking ways to avoid putting all their eggs in one basket. i.e. as the individual governments cannot afford to fund a range of such projects in all the areas judged to be of importance, co-operation is a logical progression.

As noted in the previous section, it was also recognised that the US and Japanese states held a comparative RTD advantage due to the range and scale of their public RTD programmes, that individual member states could not match. (Peterson, 1992a: 231) The short-fall is both in terms of finance and expertise. Given this, the logical course of action for the member states was to create a co-operative programme that would allow them to attain a mass of RTD capability on a par with their two major competitors. The efficiencies gained through reducing the duplication of research efforts would make it possible for the governments to fund a wider range of projects on a grander scale, whilst the individual research programmes would be able to draw from the whole expertise base within the member states with funds being directed towards the best EU research projects as opposed to the best individual national projects. (*Economist, 1993*: 21; OST, 1996: 2; Peterson, 1996a: 227) As one DTI report comments by the early 1980s:

> 'Attaining a position on the competitive edge of the IT industry was seen to require a concerted European solution to minimise these risks and pool technical and financial resources.' (Hare, Lauchlan & Thompson, 1989: 25)

In this respect, the logic of co-operation is clear, as Williams comments:

> 'International collaboration was a logical approach for European states to adopt when they were faced with requirements which were reasonably similar, where projects promised to be costly and possibly also risky, and where there was some sense of competition with the United States and / or Japan.' (Williams, 1991a: 8)

Impact of Single European Market

Although the Single European Act (SEA) had not been signed whilst Esprit and the first FP were being created, the likely prospect of tighter EC competition laws and a lowering of national restrictions to cross-border trade held an impact

in the creation of the FPs. This impact came in two forms: firstly the increase in regulation restricting state support of national firms; secondly the need to take full advantage of the economies of scale on offer in the prospective Single European Market (SEM) through the encouragement of mergers and co-operation. These two influences are examined below.

SEM regulation

The SEM's task is not simply to remove *unwanted* restrictions on direct competition between European firms. Rather, many of these restrictions were directly created for reasons stemming from the desire of governments to favour their national firms. For example, protective RTD-specific subsidies, general subsidies, purchasing policies and non-tariff barriers have all come under increasing scrutiny and restrictions. Given that the member states are competing with the outside world, as well as each other, for market share, the potential restrictions of the SEM were seen by some as posing problems for future competitiveness. As Cook and Sharp comment:

> 'the Single European Market, while promoting competition within the EC, also prevents[5] the pursuit by governments of national 'industrial policies', of a kind that may still be open to both the Japanese and American governments.' (Cook and Sharp, 1991: 209)

Gaster noting:

> '[European-level] programs may get even more important as other methods of supporting European industry are curtailed by the completion of the single market. (Gaster, 1991: 243)

In this respect, the prospect of the new regulatory environment under the SEA served to encourage the creation of a pan-EC RTD support system that would avoid the new restrictions placed on national RTD strategies – indeed this dynamic is still ongoing.

On a less negative level the SEM offered the prospect of a regulatory environment on which to build a coherent and successful policy and to a large extent was 'a prerequisite to the translation of RTD work into economic success.

[5] Restricts is a more appropriate terms here.

(Hare, Lauchlan & Thompson, 1989: 26) In other words, without the SEM the remaining restrictions on internal-EU trade would have negated much of the influence of an EU-based RTD policy, therein reducing its potential returns particularly in relation to a continuation of the national champion strategy.

Mergers & Co-operation

The FPs also served to provide European RTD actors with a required push in the right direction to utilise the full potential of the SEM. Prior to the first FP European Commissioner Etienne Davignon concluded in his evidence to a House of Lords' Select Committee on the European Communities that 'no real incentive existed for cross-border [RTD] collaboration'. (House of Lords, 1985, referenced in Sharp, 1991a: 64) Indeed, nationally-based incentives frequently discouraged cross-border collaboration, albeit frequently inadvertently, with political-geographic and language problems compounding the problem. (RCU, 1996) To combat this and encourage firms to take full advantage of the economies of scale on offer within the SEM, it was decided that one of the major aims of the FPs was to promote cross-border mergers and collaboration. (Economist, 1993: 22; Hare, Lauchlan & Thompson, 1989: 60; OST, 1996: 2; Peterson, 1996a: 227-8) This was not as inevitable as it sounds, the schemes could have been set-up *purely* to promote excellence in RTD. This was not the case, for example with requirements for partners to be based in at least two member states being largely politically-based. It was clearly hoped that as an indirect consequence the programmes there would be a resulting general increase in the number of intra-European joint ventures and mergers, therein encouraging firms to exploit and help complete the SEM. (Economist, 1993: 22; Hare, Lauchlan & Thompson, 1989: 60; OST, 1996: 2; Peterson, 1996a: 227-8) As the then Italian Minister for Co-ordination of Science Research and Technological Research Antonio Ruberti comments:

> 'there seems to be a wide-spread conviction that the gaps in ... European technology are due to Europe's incapacity in recent decades to build up its own unified scientific and technological system.' (Ruberti, 1988: 403)

It is in this area that the FPs appear to have achieved most in continually 'taking one more step toward the creation of a truly homogeneous European-wide technological space.' (Colombo, 1986: 241, See also: *Economist, 1993*: 22) As Gaster comments:

> 'Interviews with numerous participants also suggest that perhaps the programs' greatest success lies not in their technology but in the links that they have helped to build between European firms, and between firms and universities.' (Gaster, 1991: 256. See also: Ager, 1996: 43)

The programmes have proved particularly successful where collaboration has occurred between what were previously seen as fiercely independent national champions. (Sharp, 1991a: 64 & 73) For example,

> 'Sir Geoffrey Allen of Unilever comments that CEOs from firms that were "implacable enemies" ten years ago have learned that there are advantages to limited forms of cooperation, and that in general intra-European cooperation is booming.' (Gaster, 1991: 256-7)

Indeed, the success of this aspect has been such that, particularly for the larger firms, the extra resources have proved less important than the creation of cross-border alliances and the emergence of a 'concerted response to the challenge from Japan and the United States.' (Gaster, 1991: 253) In this respect the main impact of the programmes is frequently seen to have been psychological rather than directly scientific or derived from the increased availability of funds. (Colombo, 1986: 241; Gaster, 1991: 253; Sharp, 1991a: 73) This growth of links across the member states raises the question of the extent to which research networks have transformed into policy networks with a view to influencing the FPs on a concerted pan-European level.

As noted, the member states are generally perceived as holding a poor record of exploiting its research on a commercial basis, particularly in comparison with the US and Japan. (Economist, 1993) This problem is blamed, at least partially, on the relatively weak links between European research institutes and businesses, particularly when contrasted with the close relationships held by their US counterparts. (Gaster, 1991: 244) Given that this was a problem at the national level, it was clear that it would take more than just the SEM to reverse the trend. Hence, encouraging such collaboration has been a clear goal of the FPs since their inception. Even Commissioner Davignon's proposals of September 1980 stated, the need to:

> 'develop a European strategic programme based on the collaboration among the major European companies, their smaller counterparts and universities and research institutes.' (Sharp, 1991a: 64)

The increased level of co-operation has not only led to a pooling of financial and human resources, but has also helped improve information flows throughout the member states. (*Economist, 1993*: 21) These increased flows of information are clearly one of the central areas of impact of the FPs, providing a disproportionate benefit to the costs of the programmes in the creation of new networks of information exchange between major firms, institutions and. (Gaster, 1991: 255, RCU, 1996; Sharp, 1991a: 73) As commented in relation to the new research networks established across national borders, there is clearly scope for these strengthened research networks to spillover in the creation of new policy networks interested in co-operating to influence the development of the FPs.

Overall though, the new research networks need keeping in perspective. There is little argument that the FPs have helped to promote a general restructuring of the European RTD sectors, (*Economist, 1993*: 22) though it would be foolish to argue that the FPs are going to overwhelm the national character of RTD in the foreseeable future. (Freeman and Oldham, 1991: 17)

Globalisation

Whilst the concept of 'globalisation' may appear unsuitable for describing the creation of a regional distributive policy, it needs to be recognised that the dynamics of the process are, *ceteris paribus*, more intense at the regional-level than the global. Given this, the processes at work behind globalisation can be stated to have played a significant role in the formation of the FPs for a variety of reasons.

The specific area of the globalisation process under consideration in relation to the creation and development of the FPs is that of the increase in international research collaboration through various state and private initiatives. Hicks and Katz, for example, conclude that even discounting the impact of the FPs 'international collaboration ... is the largest and fastest growing component of

UK collaborative research.' (Hicks and Katz, 1996: 41) This expansion in international collaboration, whatever its origins, clearly poses problems for policy-makers in attempting to maintain an independent national strategy for RTD, creating conflict where boundaries, in terms of funds and intellectual property, are not clear or cannot be easily maintained. (Menon and Hayward, 1996: 282) As Cerny comments:

> 'Different economic activities ... increasingly need to be regulated [and promoted] through distinct sets of institutions at different levels organized at different optimal scales. Such institutions, of course, overlap and interact in complex ways, but they no longer sufficiently coincide on a single optimal scale [at, for example, the level of the nation state].' (Cerny 1995: 620-1)

Given this, one can see the increase in international research collaboration as having created a shift in the optimal level at which some RTD policies can best be delivered. The loss of control at the national level making the regional / global levels of policy-making more attractive on practical economic grounds. The political difficulties of establishing such a policy at the global-level leaving the regional / European level, with its pre-existing structures, the logical area for action. In this respect, the FPs derive at least some of their origins from the same globalising sources as the SEM project.

Development and Interest Mediation

Political Tactics & Policy Community Creation

As outlined in the previous sections: In the early, formative stages of [the FP] the interests of private and public actors dovetailed'. (Peterson, 1992a: 230) However, this meeting of interests was not enough alone to instigate such a major policy. What was needed was an actor or group of actors with the vision and expertise to fit the dovetails together; to take political advantage of the situation and push successfully for the creation of the FPs. The process through which this occurred is examined below.

The EC Commissioner for Industry 1977-85, Etienne Davignon, is commonly seen as having led the Commission's renewed drive into the creation of a

comprehensive RTD policy during the late-1970s and the early-1980s. (*Economist, 1993*: 21) Davignon's strategy during 1979 and 1980 was to create a new RTD policy network via instigating a powerful new pressure group - the 'Big 12 Round Table'[6] - consisting of Western Europe's largest IT and electronics firms[7] that would be able to lobby both in Brussels and their national capitals for the creation of EC-based RTD schemes. (Dinan, 1994: 116-7; Sharp, 1991a: 64) Davignon not only went directly to the largest companies, he also went directly to their Chief Executives, a tactic then uncommon with the Commission. As Sharp comments:

> 'Until then the Commission had tended to work with research directors or their equivalents and initiatives had come unstuck because they had been unable to carry them higher up the hierarchy.' (Sharp, 1991a: 64)

The goals of these groups were sufficiently similar for the gradual emergence of a policy community dedicated to pressuring national governments for the creation and expansion of EC-based RTD programmes. As Peterson comments:

> On a continuum which attempts to measure only relative degrees of integration—with loose issue networks at one end and tight policy communities at the other—the EC technology producer network was a tightly integrated policy community.' (Peterson, 1992a: 244, See also: Shearman 1986, 157; Hayward, 1995b: 367)

A series of meetings between Davignon and the 'Big-12' resulted in the Commission's paper '*Towards a European Strategic programme for Research and Development in Information Technology*'. This was put to Council in May 1982 and discussed at the Versailles Summit in June of that year, receiving a generally positive response. (Sharp, 1991a: 64) By December of 1982 the pilot phase of Esprit had been approved.

The interests of the Commission were clear, benefits to the European economy aside, the Commission would be given a mandate in a new policy area which held scope for rapid expansion. Not only would it receive this mandate it would

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[6] Note: this is a separate organisation from the 'Gyllenhammer Group' / Round Table of European Industrialists established after the 'Big 12' with similar aims, though more directed towards the SEM project and infrastructure investment. (Sharp & Shearman, 1987: 49-50, referenced in Sharp, 1990, fn. 1: 59)

[7] ICL, GEC, Plessey, AEG, Nixdorf, Siemens, Thomson, Bull, CGE, Olivetti, STET and Phillips. 'Together their output constituted 85% of the output of the European electronics industry.' (Sharp, 1990, fn. 1: 59)

most likely, given the nature of the subject, be given a relatively free hand in its operation. As Peterson comments:

> 'the united strategy of Big 12 firms in the mid-1980s convinced member-states that the EC's technological decline required expedient, technocratic decision-making structures.' (Peterson, 1992a: 242)

Such decision-making would be best achieved with a restriction on national government direct interference in the process and thus a large degree of Commission autonomy. In return for their support the 'Big 12' could safely predict that they were likely to receive the lion's share of the funding, at least during the initial stages of the policy, due to their '[heavy involvement] in discussion which produced the current administrative structure of Esprit, Framework's 'Flagship' programme.' (Peterson, 1992a: 232)

The 'Big-12' did not get the FP all their own way, their interests were compromised in two key areas. Firstly measures were included in the funding structure to encourage the participation of actors from the poorer Southern member states, and secondly, similar measures were also taken to encourage the participation of Small and Medium-sized Enterprises (SMEs).

Sinclair suggests that European science policies need be 'structured so that they can address:

> 'regional differences and centripetal tendencies inherent, and increasingly apparent, in the current evolution of Europe'. (Sinclair, 1993: 347)

However, as indicated, to a large extent such measures have been included in the FPs, indeed, Menon and Hayward even go so far as to state:

> 'Community policies are, of necessity, targeted as much with equity of distribution as effectiveness' (Menon and Hayward, 1996: 273)

Indeed, one aim of the FPs was to help reduce the regional disparities within the Union, for example via providing access to pan-European projects to scientists in the poorer states, such as Greece and Portugal. (*Economist, 1993*: 21; Menon and Hayward, 1996: 272) In this respect it is a commonly held perception that applications for funds that include partners from the poorer states receive a greater chance of success in

the evaluation process *ceteris paribus*. (*Economist, 1993*: 21; Menon and Hayward, 1996: 272; Various UK actors interviews, 1996-9)

However, equality of distribution of RTD funds did not form part of the initial impetus for the FPs, with the richer northern states seeing the FP as a way to partially readdress the imbalance of the flow of EU Structural funds from the North to the South (the Big-12 were also, of course, predominately based in the richer northern states). Indeed, the success of the redistribution policy has led to heavy criticism of the FPs from the richer member states who claim that the funds should be distributed to a greater extent on technological merit rather than political value. (Menon and Hayward, 1996: 272-3; Peterson, 1996a: 234) However the unanimity requirement for the creation of a FP ensured that the weaker RTD states gained and have retained concessionary access to the programme for their firms and institutes, indicating the degree to which states can influence the policy at this level – though it is still the case that the larger states receive a disproportionate amount of the overall funding. (Peterson, 1996a: 232)

As noted, an area of concern for the policy-makers was the lack of SME activity in the new areas of RTD, and the fact that where research was underway links to larger enterprises were generally limited in number and limited in scope. This, combined with political pressures for the fair representation of the southern regions - which have a higher proportion of SMEs to large-scale enterprises than the northern regions - and the fear of the 'danger that the commission will concentrate on the Giants and neglect innovative [SMEs]' (*Economist, 1993*: 23) led to a specific policy aim of the FPs being to increase the participation of SMEs in advanced research projects. (Gaster, 1991: 244)

Overall, the Commission was ultimately successful in its goal, indeed, the examples provided above work as much in its favour as against. However, the impact of the Commission's strategy is debatable, whilst it is unlikely that the Commission was able to significantly alter the interests of any of the major players (particularly the states), it is likely that the strategy did significantly alter their perceptions of some of their interests. In other words, the Commission was able to take advantage of the systemic economic changes noted previously by

creating a strong lobbying group of respected and important companies to press its case that the European level was the most appropriate to respond to the new situation.

In respect of the above, it is essential to recognise that despite the strength of the combined lobbying of the Commission and the Big-12 the political tactics of the FP supporters during the late 1970s and early 1980s, though key to its establishment, were not strong enough alone to force the creation of the project. For example, if France had not begun to liberalise its industrial policies and reformulate its national champion strategy during the same period – based on the economic changes, outlined in the first-half of this chapter, taking place at a more systemic level – it is highly unlikely that Davignon's tactics would have paid off. (Hayward, 1995b: 354) The FP supporters were still dependent on the political and economic tide being in their favour, it being highly unlikely that they would have been able to be successful if this was not the case – even given the more effective tactics employed. In conclusion here, whilst political tactics alone are not enough to push through a major change in policy direction at the EU-level, they can hold a profound influence given the right environment and in the case of the FPs they certainly helped to create a sense of need and urgency for the new RTD programmes amongst the member states.

National Interest or Policy Community Dominance?

The creation of the FP was not just a battle between the anti- and pro- European integration forces, but also between the free-marketeers and the interventionists on the extent to which a Community technology policy should be able to interfere with market forces. (Sharp, 1991a: 60-1)

There was never any prospect of the Commission being able to adopt a comprehensive industrial strategy, such as the French Colbertist model, due to a lack of key structural characteristics and the wide-range of power transfers to the EU that this would require, as Elie Cohen states, the EC has:

> 'The EC has 'neither integration of research policies, public procurement or the promotion of industrial champions, the discretionary intervention by government,

> offensive protectionism, nor a public service ideology and there is no elite ready to carry out big projects. ... these preconditions are nowhere near emerging on the European plane' (Cohen 1992, 383)

Under the FP the Commission's resources are strictly limited, as Gaster comments:

> 'Commission ... officials have only carrots (funding) to offer the private sector, and *dirigisme* always involves some use of the stick.' (Gaster, 1991: 253)

Even a limited 'picking winners' / Euro-champion strategy would not have been easily transferable to the EU-level because it would have meant a highly politicised funding system. For example, in order to determine the 'winners' the Commission would clearly have to favour specific 'national' firms – the Single Market not being sufficiently developed that large firms are seen as primarily European, as opposed to 'belonging' to one nation or another. However, though a limited picking-winners approach was adopted in some areas, for example, the HDTV project, the strategy was also largely rejected even where it could be applied to collaborative projects. This rejection was based on past experiences that indicated the potential fickleness of such alliances – which would have to survive long-term for such a strategy to be successful – and of collaborative project overspends where the public sector has set the objectives, the most notorious being the Concorde project. (Hayward, 1995b: 354; Sharp, 1991a: 62)

A combination of the above resulted in the creation of a 'defined themes' process for choosing projects, whereby the Commission under a framework agreed in the Council of Ministers sets rough areas of research and releases 'calls for proposals' to industry for projects to fund. The projects are then selected largely on their practical merits. Not only do these strategies correspond with the general movement at the national level away from 'picking winners' to letting winners pick themselves, but they also remove some of the political pressure on the Commission, putting much of the onus on the potential participants to succeed in the process. The inclusion of a limited budget with a general 1:1 funding requirement was seen as the most practical way to ensure that the projects would eventually prove to be of market value and not incur cost overruns, i.e. participants may be willing to 'waste' government money on RTD for its own sake, however they would be less likely to do this with their own.

The other main aims of the project included balancing the requirement for flexibility with the maintenance of a degree of equitable distribution of funds and functional direction. (Sharp, 1991a: 62) These requirements worked on two levels, firstly whilst individual projects would not require participation by actors from all member states, as noted earlier, attempts would be made to ensure that all states gained through the overall programme. Secondly, that the project areas would not become static, i.e. there would be scope for variation both within specific FPs – to allow for unforeseen changes in RTD requirements – and open to wide-ranging revisions between Programmes to allow for longer-term trends.

As noted it was deemed important that the programme criteria were not too functionally specific, the general belief being that the market was the best place to decide which specific projects were to be funded. However, on a practical level the FPs still required a decision-making body to set more specific objectives once the overall framework had been finalised at the Council of Ministers level. The advantage of setting the objectives away from the Council was both in terms of decision-making speed and the removal of a degree of politics: processing all the FP's objectives through an intergovernmental forum such as the Council of Ministers would inevitably slow the reaction times of the policy and move the criteria away from pragmatic technological justification towards more 'political' goals, therein defeating the object of the FP. As Peterson comments:

> 'The exigencies of global competition in advanced technologies means that policy choices must normally be made quickly, before technology moves on and leaves European firms further behind their Japanese and American competitors.' (Peterson, 1992a: 243)

Hence, once the multi-annual budget is unanimously approved by the Council in co-decision with the European Parliament, decision-making moves directly to QMV for the setting of priorities with the broad framework, following this stage the Commission is left with a relatively freehand. As Peterson comments:

> 'The Commission enjoys a level of autonomy in managing Esprit and other Framework initiatives which is unmatched in most other EC policy areas.' (Peterson, 1992a: 242)

> 'Member-state control over Framework on the Council of Ministers became largely confined to approving multi-annual budgets and making broad decisions about the distribution of EC funds between various sector-specific schemes.' (Peterson, 1992a: 233)

It is important therefore to recognise that although each government has a veto over the general composition of the Framework Programme they have little control once the programme has moved beyond this generalist stage.

> 'The EC's technology policy network is highly insulated from the political and bureaucratic influence of member-states in the day-to-day management of collaborative R&D schemes.' (Peterson, 1992a: 244)

In this respect the setting of a FP's overall priorities, the area of concern for this research, is particularly important to the member states given their diluted influence further down the policy process.

National representatives have generally not been able to establish a dominance within the FPs, beyond the setting of the overall FP budgets and priorities. As Peterson comments:

> 'Representatives of Europe's leading technology-intensive firms and public actors within both the EC and national administrations clearly share authority and functions in this setting to an extent unmatched in most other policy networks.' (Peterson, 1992a: 229)

Whilst national officials are closely involved in the policy networks surrounding the FPs, the ability of member states to set the policy agenda and impose a national policy interest, it has been argued, has been undermined by the growth of actors focused on the EU-level. (Menon and Hayward, 1996: 270) As Menon and Hayward comment:

> 'the Community has [frequently] been able to foster the development of pressure groups which, in concert with the Commission, can help to reduce national autonomy'. (Menon and Hayward, 1996: 279)

The direct contact with groups reducing the Commission's reliance on member states for the necessary information to establish an effective policy. In this respect one would expect to find the Commission extremely receptive to interest representations from UK actors, therein encouraging the Europeanisation process.

The technical nature of the decisions taken under the FPs serves to further weaken the power of generalist political pressure from the states. (Peterson, 1992a: 244) Though, of course the degree of technicalities dealt with in the FPs depends highly on the stage of the policy-process at which you are looking. In concentrating on the setting of FP5's overall budget and priorities this research covers arguably the least technocratic area of the FPs, leaving the question of the extent to which technological knowledge plays a role for the UK actors at this stage and the value of such knowledge as a policy networks resource in this area.

As one would expect the overall policy community surrounding the creation of the FPs largely retained its structure, membership and dominance, in the initial years of the policy, though as the FPs have expanded in their scope the dominance of the instigating policy community has clearly eroded. (Peterson, 1992a: 238) The overall community has undergone two significant changes, the proliferation of smaller policy communities around subject specific programmes and the inclusion of a greater range of national representatives.[8] (Shearman 1986, 157; cf. 158, 161; Hayward, 1995b: 367) It should be noted that access to the decision-making process is also highly dependent on specific national policy process traits. Rather than being replaced by state domination of the process, the erosion of the initial policy community has been replaced by a rise in the range of policy networks across all the sectors covered by the FPs. As Peterson comments:

> 'Industrial as well as bureaucratic interests have 'grown up' around specific EU programmes'. (Peterson, 1996, p.41)

It is also argued that the FPs have not just re-directed the attentions of pre-existing policy-active actors, but, particularly in the newer technological sectors – where nationally directed pressure groups were not well established – has also:

> 'led to the creation of wholly new domestic actors keen to impose their own preferences on the state.' (Menon and Hayward, 1996: 270)

[8] Though it should be noted that access to the decision-making process is also highly dependent on specific national policy process traits.

This is a potentially key insight as it indicates the impact that the FPs may have had on interest group formation and representation, raising the question of the extent to which this has occurred in the individual member states.

Whilst policy communities can be seen as beneficial to the policy process, the strength of those surrounding areas of the FPs may be problematic. An original aim of the FPs was to be directed on a free-flowing responsive technocratic basis, this no longer appears to be the case, if indeed it ever was. Even by the second FP, the results of a report conducted by independent consultants had found:

> 'a proprietary mentality among commission officials towards their pet projects, and a tendency for programmes to be self-perpetuating.' (*Economist, 1993*: 22)

Such interests clearly hold a negative effect on the FPs' ability to respond to new challenges given its strictly limited resources. Unsurprisingly this sclerosis has become one of the main criticisms used by member states resisting expansions in FP budgets and represents one area in which the member states can feel helpless in controlling the output of the FPs. Even the Commission admitted to the relative closed policy circle in its document *Research after Maastricht*, published February 1992, stating:

> 'that the Community's R&D policy continues to be made in a closed circle that is "very unreceptive to outside influences".' (*Economist, 1993*: 22)

In the nation states' favour is the fact that the Commission recognises that ultimately the long-term success of the FP depends on the support - or at least acceptance - of the policy by the national governments. However, it remains the case that much of the states' dissatisfaction with the FPs comes from their lack of influence once an FP has passed through the Council of Ministers. (Gaster, 1991: 246-7) For example criticisms of lax project objectives and weak oversight mechanisms have been consistently made by the national governments. For the purposes of this research, the extent of the factual truth behind these criticisms is less relevant than the fact that they are made at all, in that at the very least they indicate the extent to which the governments feel unable to directly influence this area of science policy. This clearly brings into question the extent to which

national officials feel themselves to be networked with Commission officials in this area, existing research indicating that such relationships are on a loose issue network basis lacking in strong bonds. Also, as Peterson highlights, the degree of stability over time held by such closed circles offers some evidence pointing to their being highly dependent on the general political climate (particularly between the Commission and the member states):

> 'recently, interests have diverged markedly, as wider political agendas have changed within the EC, altering power-dependence relationships and, ultimately, distributional patterns.' (Peterson, 1992a: 230)

Given the FP5 creation focus of this paper, it is important not to dismiss the impact the FPs may hold in setting a state's perception of its national interest and of limiting its courses of action in following this interest. Not only is it the case that national governments have little influence over an ongoing FP, it may also be the case that 'the *indirect* influence wielded by the Community' (Menon and Hayward, 1996: 268) through altering the perceptions and behaviour of national actors may hold a significant impact on national RTD policy-making.

Menon and Hayward argue (1996: 271 & 285) that it remains clear that the national governments remain the central area of interest group focus, well beyond the Commission. However, the extent to which this lobbying is ultimately directed toward the EU – i.e. actors using the national governments as a vehicle to get their message across – is unclear. It is at this point that there is a clear danger of committing the same fundamental mistake as Moravcsik, (1991, 1993a) in his intergovernmental approaches, in failing to see actors lobbying the EU via their national governments as being part of the Europeanisation process, when they clearly are! Even if the firms are lobbying their governments due to extra- or intra-EU pressures they are still frequently doing so in relation to action (or inaction) at the level of the EU – a central trait of Europeanisation. Related to this is the need to examine the motives and not just the direction of interest group pressure. In this respect one also needs to examine the extent to which the perceptions and behaviour of national actors may have been significantly altered by their involvement in the FPs.

The combination of these perspectives clearly raises questions for this research on the extent to which such closed circles actually existed in the creation of FP5, the extent to which UK actors were excluded from the process and the extent to which they have directed their input to the EU institutions, particularly the Commission, for a direct route to influencing the FP5 at the expense of lobbying the national government.

Budget: Too Small for Significant Impact?

> 'The Community programmes are good examples of what Europe is capable of doing, but, viewed from the standpoint of the mobilisation of resources, they are still far from having reached the desired critical mass.' (Ruberti, 1988: 404)

The FPs are commonly portrayed by the Commission as under-funded. (Peterson, 1996, p.42; Economist, 1993: 22) Whilst FP4 commanded an initial budget of 12300m ECU, this amount is spread over five years totalling only about four per cent of the Union's total yearly budget – placing FP4 well behind the Common Agricultural Policy and the Structural Funds which comprise roughly 50 and 33 per cent of the total Union budget respectively. (Colombo, 1986: 241; Gaster, 1991: 244; Peterson, 1996: 42; 1996a: 226 & 230; http://www2.cordis.lu/cordis/002.htm; http://europa.eu.int/en/eupol/budget.html)

Relative to national RTD programmes the picture is no better. Hayward may be overstating the withdrawal of national governments from active industrial policies when he states:

> 'An effective European industrial policy has not emerged ... to fill the gap left by the retreat of national governments'. (Hayward, 1995b: 351)

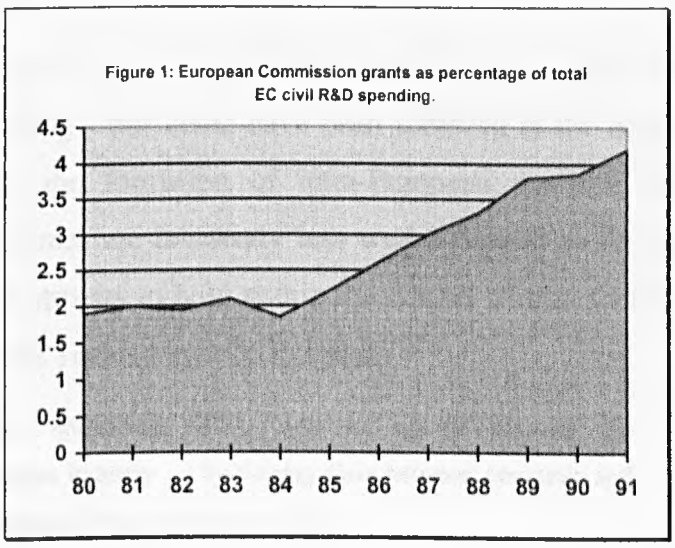
However Hayward is correct in highlighting the fact that the EU has not managed to expand its RTD role to the extent that many, particularly in the Commission, had hoped. Indeed, FP4 presently only represented about 4.5 per cent of the total *civil* RTD expenditure of the member states. (Economist, 1993: 22; Gaster, 1991: 244; Hayward, 1995b: 351) As Peterson comments:

> 'collaborative R&D is still dwarfed by spending on purely or largely national activities.' (Peterson, 1996a: 230,)

In defence of the funding arrangements it should perhaps be noted in assessing the FPs that in public policy terms they are still relatively new, thus unlikely to command a great proportion of resources – national funding schemes have been established over decades whilst the FPs span a period of only one and a half decades. If anything the FPs' budgetary growth has been particularly high (running at roughly 10% per annum since 1985), especially considering the downward pressure on most national RTD budgets during the period. (See Box 1 for details)

Figure 5: European Commission Grants as Percentage of Total EC Civil RTD

Year	Percentage
1980	1.9
1981	2
1982	1.95
1983	2.1
1984[9]	1.85
1985[10]	2.2
1986	2.6
1987	3
1988	3.3
1989	3.8
1990	3.85
1991	4.2



Source: Eurostat (in Economist, 1993: 22)

It is also worth noting that the FPs require the vast majority of funds to be matched on a 1:1 basis by the participating partners, thus the hard budgetary figures do not provide a fair representation of the extent of RTD undertaken as a result of the Calls for Proposals. This is particularly relevant given the large

[9] Esprit established.
[10] First Framework Programme established.

proportion of national schemes based on more generous funding criteria that do not require such high levels of investment from the participants.

Even given the above, the low levels of FP spending in contrast with national projects initially indicates that the FPs are unlikely to go far in addressing the RTD shortfalls in the EU compared with its main rivals. However, in assessing the impact of the FP it is necessary to acknowledge that the above figures though accurate do underestimate the absolute and relative monetary impact of the FPs. As Gaster comments:

> 'Money does not tell the whole story, however. The Europrograms have been designed to magnify the bang for the bucks that they offer. ... Qualitatively then, the Europrograms may be more important than their relatively [monetary] small size indicates.' (Gaster, 1991: 244 - 5)

The main *raison d'être* of the FPs was not simply to provide the European RTD with a greater level of funding - this could have been achieved at the national level – but to encourage the formation of intra-European research links, something national programmes are inherently less well equipped to do. (Sharp, 1991a: 73) This perspective appears to hold within the British administration as the UK Office of Science and Technology (OST) states:

> 'The fourth Framework Programme (FP4) was set up to promote the competitiveness of European industry ... by *forging links* between countries and between industry and academia.'[Ital. added] (OST, 1996: 1)

Note it is the *links* that the OST considered paramount, there being no mention here that the FPs were set up to promote the competitiveness of European industry by providing extra capital for RTD.

The relative youth of the FPs is also in their favour in terms of maximum impact for minimum funds as they are directed largely towards new fields of inquiry – fields that national funding has been largely slow to adapt due to a combination of political pressures and bureaucratic intransigence. Though it is the case that the FPs are already criticised for their lack of responsiveness and the growth of pre-determined agendas. The FP's concentration on pre-competitive, as opposed to basic or near-market research, also means that its funds are more concentrated and thus hold more impact in specific areas and sectors of RTD than their

national counterparts. It can also be argued that as the FP have a larger pool of talent to choose from in providing funds, they should, in theory, be able to use their money to greater effect, though criticisms of poor project vetting and the political considerations included in project approval do detract away from this.

Overall the monetary constraints of the FPs, though limiting their impact, should not be overplayed. In offering a new source of income for RTD the FPs pose a clearly attractive target for UK actors to influence in order to ensure funding either stays in their areas or moves towards them.

Legislative Specifics

Originating under the SEA the FP4 and 5 were determined at three distinct levels of decision-making. Much of this section is adapted from Peterson and Sharp's (1998: 173) work which outlines 'a double' legislative procedure. Whilst the individual procedures covered are the same it has proved useful, for the purposes of this research, to split Peterson and Sharp's second level into two in order to highlight the distinct levels of power held by each institution at each stage of the proceedings, in particular the declining power of the individual member states and EP and rising power of the Commission the further down the legislative process.

Under the first level of decision-making the overall Framework is agreed, including the five-year budget and the broad range of areas and objectives to be covered under the FPs. The second level covers the setting of the FPs Work Programmes, whilst the third and final level covers the creation of specific Calls for Proposals and the awarding of funds. For reference, it should be noted that the decision-making procedures for the forthcoming Sixth Framework Programme have changed following the ratification of the Amsterdam Treaty which placed all Council decisions concerning the FPs under QMV.

Level One: Five Year Budget and Objective

The first stage of decision-making forms the majority of the focus of this thesis, in particular the extent to which the European level attracts the direct attention of UK policy actors and in doing so manages to bypass the potential gatekeeper powers of the core-executive of the national government.

Table 1: Level One – Budget and Structural Priorities

1. Commission submits its proposals for the FP's budget and general structural priorities to the Council and European Parliament.
2. EP conducts its 'First Reading' of the Commission's submission and proposes amendments to the Council.
3. The Council develops its 'common position' under unanimity – with reference to the EP's proposed amendments.
4. EP conducts 'Second Reading' on the Council's 'common position' and proposes amendments based on majority.
5. Council can either adopt EP amendments (under unanimity) or a 'conciliation committee' is convened between the two bodies.
6. Council and the EP reach agreement on the proposals (Council still under unanimity).

(Adapted from Peterson and Sharp, 1998: Table 8.2)

This first level involves the setting of the five-year budget and the general RTD priorities contained within it. The process usually takes around two years from start to finish, though as is demonstrated in the research in reality it is an ongoing process with a beginning and a concluding line that is only temporary given the knowledge of the ongoing nature of the FP process.

The process officially begins with the Commission, in its role as policy initiator, fulfilling its responsibility of tabling proposals for the Framework Programme to the Council and the EP. However, as indicated, much of the real substantive negotiations have already taken place prior to this submission through a myriad of official and unofficial contacts between a wide-range of state and non-state actors. For example, the Commission will produce several draft proposals for distribution to the member states and accept a range of national *position papers* months before the formal Council and EP legislative process commences

alongside direct contact with national interest groups and individual companies. Naturally this provides the Commission with a great deal of power and influence in terms of setting the agenda and in this respect provides its greatest 'pull factor' in terms of attracting policy actors from the member states.

Following the submission of the Commission's proposals a complex set of negotiations take place within and between the institutions, whose nature is largely determined by type of decision-making procedure adopted.

Under the SEA the decision-making at this level was placed under the Co-operation[11] procedure providing the Council, along with the Commission, a great deal of autonomy in the process. The Maastricht Treaty upgraded Co-operation to a modified version of the Co-decision procedure, therein increasing the input and blocking power of the EP and in doing so providing a limited degree of institutional balance between the institutions. The remaining power disparity is particularly relevant where co-decision and the FPs are concerned as they were subject to a 'watered-down' version of the standard procedure: Whilst the EP's powers were increased under this version of co-decision, the individual power of states was largely untouched due to the specific retention of unanimity in the Council.

The retention of the veto for each member states effectively subdued the power of the EP by enabling each state the power to block negotiations. Instead of negotiating in the latter stages of Co-decision with the intention of finding a Qualified Majority in the Council, the EP would be forced to find complete consensus (or at least acceptance). As Hooghe and Marks comment:

> 'unanimity raises the highest decisional barrier against change--the assent of each and every participant.' (Hooghe and Marks, 1997: 14)

This modified Co-decision procedure was clearly intended to restrict the EP's power both in terms of the overall budget - which was of concern to states such as the UK and Germany - and in terms of the actual content of the programmes, which some states, such as France, still appeared to view in terms of 'high

politics'. Indeed, the fact that only Culture policy was placed under this combined co-decision / unanimity procedure along with Research, whilst all other co-decision areas operated under QMV in the Council, suggests that the member states still viewed RTD in terms of high politics and were not willing to cede power in any real sense to the Community. The impact of this procedure on Parliament is addressed in greater detail later in this chapter.

Level Two: Working Programmes

The second part of the double procedure, falling largely outside the scope of this thesis, relates to creating specific programmes within each of the FP's research areas upon which the programme's 'work plans' and 'calls for proposals' can be based. Under this procedure the Commission gains a degree of influence over both the Council and the Parliament when compared with the setting of the overall priorities and budget. Firstly, the power of individual member states is significantly reduced through the withdrawal of unanimity and the introduction of QMV for the over Working Programme decisions – reflecting what for the member states is a more technical and less controversial stage of the decision-making process – whilst the EP is somewhat sidelined in terms of its role being reduced to one of Consultation.

At this level of decision-making the Commission makes proposals for the FP working-programmes based on the structure agreed at level one and detailed interactions with member states officials and actors. These proposals are delivered to the Council under QMV and the EP's views are taken into consideration through the weak consultation procedures. As one MEP comments:

> 'we leave-off once the co-decision procedure is completed.' (Adam MEP, 1999: 5)

Thus at this level the Parliament is largely side-lined by the institutional procedure and the 'hands off' approach its members take given their reduced institutional role.

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[11] Previously, the EP's powers in this area operated under the much weaker consultation procedure.

Table 2: Level Two – Working Programmes

1. The Commission submits individual programme proposals to the Council based on the thematic and horizontal structure already agreed.
2. The Council, following 'consultation' with the EP, adopts the individual programmes under QMV.

(Adapted from Peterson and Sharp, 1998: Table 8.2)

Level Three: Implementation

It is at this stage that the Commission's autonomy and thus power increases substantially as it does not have to put these more detailed 'work plans' and 'calls for proposals' through the legislative process.

Table 3: Level Three – Implementation

1. The Commission creates 'work plans' within the programmes agreed in the last round of legislation.
2. Based on these work programmes the Commission submits 'calls for proposals' – its competitive tendering system.
3. Proposals are judged by 'independent experts and management committees.' (Peterson and Sharp, 1998: 174)
4. Funding of projects subject to approval by the Commission.

(Adapted from Peterson and Sharp, 1998: Table 8.2)

Conclusion

This chapter has sought to highlight the growth of the FPs and their importance to national governments, the EU institutions and the fund recipients whilst noting the various issues surrounding interest representation with regard to the creation of individual FPs.

The logic for the creation of the FPs comes from a range of background factors including international competition, national budgetary constraints, increasing research costs and the impact of the SEM. The combination of these factors led to a meeting of actors interests from three key areas – the national governments, the European Commission and industrial giants – resulting in a clear 'logic of

co-operation' in the area of technology policy at the EC-level. Yet, it is safe to state that without the lead taken by the Commission under Davignon and his alliance with the 'Big 12' it is unlikely the 'logic of co-operation' that was present would have been acted upon in such a decisive manner. Indeed, it is the policy community established in this early period that was able to dominate much of the content of EU RTD policy. However, the policy community established by Davignon, though still influential, has been severely weakened by the expansion of the FPs across the science base from the initial concentration of the Esprit programme on information technology. This weakening has not been simply down to an expansion of non-state actors. As Peterson and Sharp comment, in the setting of the overall FP priorities and budget:

> 'the persistence of high politics more generally in EU technology policy, [has been a source] of profound disappointment to the Commission.' (Peterson and Sharp, 1998: 171-2)

> 'The primary lesson of the EC technology policy network as a case study is that changes in wider political agendas can change power-dependence relationships within policy networks. Increased funding for non-IT RTD, especially environmental projects, as well as more emphasis on support for SMEs and regional cohesion in EC technology policy, are evidence that changing political agendas and divergent national interests still constrain the Commission's independence.' (Peterson, 1992a: 248)

This raises the question of the extent to which member states have regained control of their national input into the process at this level. Indeed, given the above statement, one would expect to see the national governments holding a relatively strong intergovernmental role, dominating the input at this stage of the policy process. However, another angle offered by Peterson relates to the potential dominance of the Commission throughout the process:

> 'While the EC technology policy network has become less integrated over time, if there is one interest which now dominates decision making within the EC technology policy network more than any other, it is the Commission's own interest in continuing to expand its independence and powers.' (Peterson, 1992a: 245)

Further, Peterson raises a key area covered in this research when he states:

> 'Here lies a key theme which should be explored in future research on policy networks: public actors, be they government or functional bureaucracies, may

> often encourage consensus or unity within professional or producer network to serve public ends or, more bluntly, to support political or bureaucratic agendas.' (Peterson, 1992a: 246)

In this respect it can be expected that the Commission will continually attempt to foster relationships with national actors in order to re-enforce its central policy position. Hence, the interest in this research in the extent to which the Commission has utilised its central policy role to encourage consensus and unity amongst UK RTD actors with a view to supporting the continued expansion of its competence in the area.

Questions also exist over the impact of FP funding on the political outlook of its recipients. For example to what extent has the pool of funding at the EU level drawn potential recipients' lobbying activities away from the national governments? Overall, the main concentration of this research is therefore on the linkages between UK FP actors (primarily public, though with recognition of the private sector), the UK national government and the EU institutions. Analysing these linkages or networks is of key importance to understanding the way in which the UK input into the FPs is channelled and the extent of the influence that individual actors hold.

To set the UK base from which to address actor representation and policy input into FP5, the following chapter focuses on the development, structures and main themes of the UK's RTD programmes. As intergovernmentalists would state, an examination of the situation as related directly to the UK is necessary as it cannot be presumed that the pan-European analysis made in this chapter, whilst essential to understanding the workings and rationale of the FPs, is directly transferable to the UK level. In particular it is essential to establish the forces behind the development of UK-specific RTD policies and their structure and guiding norms to be able to judge the impact of the FPs on the UK RTD policy community regarding the creation of FP5.

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4) UK RTD Policy: Historical Development and Key Themes

Introduction

The impact of the Framework Programmes on UK RTD policy networks cannot be fully understood without reference to the development of UK government support of civil RTD. This chapter seeks to outline the historical development of UK public support for RTD, whilst highlighting key areas of debate and contention. In particular, the analysis centres on the decentralised nature of government RTD organisation, the growth of a 'management culture' and market principles, attitudes towards external investment, and Framework Programme support and participation. Areas of symmetry and conflict in relation to the EU's Framework Programmes are highlighted throughout with a view to informing the more detailed analysis in later chapters.

UK RTD Policy: Historical Development

Governments have to varying degrees always held links with RTD in terms of defence, whether it be through procurement policies or direct support. In contrast, large-scale government support of civil RTD is largely a product of the mid-to-late twentieth century. Indeed, until the late twentieth century it was common for government defence RTD expenditure to dwarf its civil counterparts. In Britain, it was not until the late-1960s that government spending on civil RTD began to outstrip military RTD. (Reynolds & Coates, 1996: 253) However, as the Framework Programmes are concentrated solely on civil areas of RTD, the focus of this chapter remains on similar aspects at the UK-level, leaving defence-based RTD largely untouched.

The UK was an early starter in terms of government support for civil RTD, being 'among the first countries actually to establish machinery for [such] policy'. (Gummett, 1991: 31) Indeed, government support in the UK is commonly taken as stretching back to the seventeenth century, beginning with the establishment of

the Greenwich Royal Observatory in 1675. However, there was no real progress in terms of the direct funding of science until the mid-nineteenth century with the establishment of an annual £1,000 grant to the Royal Society in 1850. This was closely followed by the creation of a Department of Science and Art in 1853 and a Parliamentary Select Committee on Scientific Instruction in 1868. (Gummett, 1991a: 14 & 31) The next major advancement in government sponsored RTD came towards the end of the century largely in response to pressure from the Royal Society for Britain to have a national laboratory comparable to that recently established in Germany. (Sutherland, 1965: 6) The result was the decision to establish the National Physical Laboratory in 1896, it's mandate being: 'the task of bringing scientific knowledge to bear upon everyday industrial and scientific *research* ... constructed in state-owned laboratories.' (Gummett, 1991a: 15) Significantly, the scale of the National Physical Laboratory would hardly register compared with the level of support in the present system. Thus, in the lead up to the First World War, despite a series of small-scale initiatives in the areas of agriculture and health, government support of Civil RTD in the UK as in the rest of Europe was extremely limited by late twentieth century standards.

World Wars and the Expansion of Government RTD

The First World War, in highlighting Britain's dependency on German manufactured goods, including electrical equipment and drugs, held a significant impact on the development of the UK's government civil RTD policy – the potential value of a strong national strategy becoming apparent. (Gummett, 1991: 32, see also 1991a: 15) The government's immediate reaction was to create an Advisory Council on Scientific and Industrial Research. However, seen to be inadequate in terms of its weak structure and powers, the Council was replaced in 1916 by a more structured body; the Department of Scientific and Industrial Research (DSIR), signalling a more determined intention by government to support civil RTD. (Gummett, 1991a: 16) DSIR operated funded research through three main channels, its own research laboratories, cooperative government / private funded laboratories, and university staff / postgraduate research grants – a system similar to that practiced by the present UK Research Councils.

However, despite increases in funding from the earlier position, it needs to be emphasised that the aggregate UK government RTD support remained dwarfed by the private sector investment. Indeed, the UK government's activities of the time were roughly equivalent to 'about that of, at most, a handful of modern western universities.' (Gummett, 1991: 32) In relative terms, it would comprise only a small fraction of the present levels of government RTD support, thus could not be equated to the forms government sponsored RTD polities exercised in Western Europe later in the century.

The establishment of the 'Medical Research Council (MRC) in 1920[12] entrenched the decentralised approach as enshrined in the 'Haldane principle of research council autonomy'.[13] (Gummett, 1991a: 16) This principle, applied across civil RTD programmes has, as examined below, remained largely central to successive UK governments throughout the post-war period. This 'Haldane principle' of autonomy clearly contrasts with the overly political nature of the creation of individual FPs and the political priorities around which each FP's themes are devised and weighted in funding terms.

State support of science received its' greatest boost from the vital importance of technological developments during the Second World War. Not only were the results of government funded science directly essential to the war effort, also the development of working relationships between previously separate groups – scientists were often integrated directly into the government administration – opened the eyes of many to the opportunities available. (Gummett, 1991: 32) Significant increases were made in state RTD investment both in terms of grants and government owned laboratories, whilst the Scientific Advisory Committee was created to report directly to the war cabinet. (Gummett, 1991a: 17)

[12] Which, along with the 'Agricultural Research Council (ARC) and Nature Conservancy (1949) plus the DSIR 'constituted until 1965 what came to be called the four 'Research Councils'.' (Gummett, 1991a: 16)

[13] The Haldane principle, ensures that in practice the Research Councils retain practical freedom of aims from ministerial control, even though, as Gummett comments: 'the intention of the [report] was to free from direct ministerial control only that research which was of value to more than one department.' (Gummett, 1991a: 16)

The successes of a range of policies established during the war led to many persisting in the post-war period, particularly in the aerospace, electronics and nuclear industries. (Reynolds & Coates, 1996: 253) As Gummett comments:

> '[RTD] having helped win the war, was now to help win the peace.' (Gummett, 1991: 32)

Whilst the First World War had demonstrated the strategic dangers of not investing in civil RTD programmes, the Second Word War had clearly demonstrated the potential benefits of active government involvement in the civil sector.

Development of an Autonomous, Decentralised Structure

Following the Second World War the debate largely moved on from one of whether government should support civil RTD, to one of how much support should be provided and how it should be arranged. The Labour government of the day was faced with two major structural options: i) Revert back to the decentralised funding pre-war arrangements with clear Royal Society, Research Council and departmental autonomy. ii) Opt for a dominant centralised science policy body. The result on the surface appears to have been a victory for centralisation, with the creation in January 1947 of the Advisory Council on Scientific Policy (ACSP), reporting directly to the Lord President who held responsibility for formulating and implementing civil scientific policy. (Gummett, 1991a: 17) However, in operational terms the structure leaned heavily towards the decentralised power model. (Mothe, 1992: 402) As Gummett comments:

> 'despite the appearance of strong central coordination ... the reality was that the decision making for S&T remained widely dispersed among the relevant government departments. ... Individual ministries [and the Research Councils] continued to build up their own competence in S&T.' (Gummett, 1991a: 17)

Indeed, even after the creation of a Ministry of Science in the 1950s the levels of autonomy were retained to such an extent that the ACSP didn't even have the authority to advise on the funding allocations of the Research Councils which took their cases directly to the Treasury, bypassing the Minister of Science. (Gummett, 1991a: 18-9) Interestingly, the UK was not alone in adopting a decentralised approach to RTD programmes in the early post-war years. Indeed, across the

Western industrialised world there was a distinct lack of dominant centralised RTD bodies until the late 1960s,[14] for example:

> 'When the first Conference of Ministers of Science took place at the OECD in Paris in 1963 ... only three of the 22 member nations had Ministers of or for science.'[15] (Mothe, 1992: 402)

However, as noted in the previous chapter, a combination of factors resulted in a significant expansion in the level of public funding for civil RTD and a growth in more directly interventionist and centralised Ministries of Science and their equivalents across Western Europe. (Mothe, 1992: 402) The political expediency for such change was derived from the sharp increase in the interest paid to RTD matters across a range of issues at the time. Firstly, concern heightened over relative economic decline, especially in high-technology sectors.[16] Secondly there were growing concerns from researchers over the distribution of limited government funds between RTD sectors, particularly given the increasing costs of RTD projects in many areas. Thirdly, as Landry comments:

> 'Until the 1960s it was thought that the process of innovation had to be directed by the market. The only notable exception was innovations related to national defense.' (Landry, 1989: 351)

This perception was clearly challenged with a growing confidence in the abilities of government planning combined with a growing scepticism over the abilities of the market to make RTD progress over the long-term. Britain's position as the 'odd one out' – indicating a more centralised approach though not carrying it out – further added to the questioning of its relatively scattered and autonomous RTD structures placing pressure on successive governments to follow the more centralised route.

As noted in the Cabinet Office *Review of allocation, management and use of government expenditure on science and technology* (1993: 3.2) the UK RTD policy structure is still largely based around the reforms of funding arrangements

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[14] Frequently this was more due to a lack of policy planning rather than a positive choice to go down the autonomy route.

[15] 'The majority of other countries were represented by Ministers of Education, indicating that less than 30 years ago science was regarded by most governments as a branch of cultural policy.' (Mothe, 1992: 402-3)

[16] As noted in the previous chapter, these concerns were reflected across Western Europe, particularly in terms of fear of US domination in key technological areas.

established in the 1960s and early 1970s on the back of growing support for pro-active centralised policies. However, as indicated, these reforms are generally seen as little more than superficial acts to allay public concern, in particular, increases in central co-ordination consistently proved to be largely superficial. (Gummett, 1991a: 18)

The most vivid example of the centralisation debate in the UK comes from Harold Wilson's famous 1963 Labour Party annual conference speech in which he talked of:

> 'The Britain that is going to be forged in the white heat of this [technological] revolution ...' (Speech, Labour Party Conference, 1 October 1963)

The tone of Wilson's speech and his commitments to increased government support of RTD and training 'clearly implied a more dirigiste approach'. (Gummett, 1991a: 19) However, as Dorey (1996: 79) comments the speech turned out to be largely 'hot air', resulting in little policy movement from the established autonomous liberal structure. The new Ministry of Technology – a central plank of Wilson's 'White Heat' reforms – became primarily concerned with manpower and other forms of industrial support rather than RTD. (Williams, 1991a: 9) Indeed, as Gummett comments, by 1969 the expansion of the Ministry into areas such as textiles meant that:

> 'from being a primarily research-orientated department 'Mintech' had become in all but name a Ministry of Industry.' (Gummett, 1991a: 21)

Whilst a Science and Technology Group operated within the Cabinet Office, ensuring ministers were briefed on relevant domestic and international RTD matters, its role was little more than advisory.[17] One of the Wilson government's most enduring creations was the Science and Technology Act 1965 which solidified public funding of RTD through the relatively autonomous Research Councils (including directly creating the Science Research Council and the Natural Environment Research Council (NERC), alongside cover for general public RTD expenditure and result dissemination. (Cabinet Office, 1993: 3.2) A central aspect of the plans were that whilst the budgets of the Research Councils were

[17] The Group also initiated studies on issues that crossed departmental boundaries and was responsible for the publication of information concerning departmental RTD operations. (Gummett, 1991a: 23)

now to be set by the new Department of Education and Science (DES), created in 1964, on the advice of a new Council for Scientific Policy,[18] the allocation of the budgets within the Research Councils was left to their existing managements. (Gummett, 1991a: 20) This level of autonomy has been maintained to the present day, as whilst the Research Councils have to take account of government objectives as represented in their mission statements, beyond this requirement they are largely independent of government interference in setting specific research programmes.

This level of autonomy established for the Research Councils in the Science and Technology Act 1965 holds clear implications for the impact of the FPs on British technology policy networks, in that they are not limited on an *institutional* level to interacting solely with UK government actors in their attempts to influence the FPs. This is in somewhat of a contrast with the government departments which are *institutionally* obliged to follow a government line when dealing with external actors, such as those within the European Commission or European Parliament. Given this, the extent to which either group of actors follows this basic institutional prescription of action forms a central part of the analysis in the later chapters.

Overall, Wilson's policy restructuring did more to shore-up the existing decentralised system than it did to reformulate it in a centralised manner, the most important aspect being to set the Research Councils autonomy at such a relatively high level. Indeed, when compared with the centralist and dirigiste policies of some other Western European nations, notably France and Italy, Wilson's reforms hardly even register.

There were a series of limited changes throughout the 1970s to try and ensure greater co-ordinated strategic and all-inclusive policies, such as the establishment of the Advisory Council for Applied Research and Development (ACARD) to improve links between public and private organisations on RTD matters. (Gummett, 1991a: 23) However, Research Council and Departmental RTD

[18] Composed of a wide-range of established scientists and industrialists.

autonomy remained virtually untouched. Indeed, the limited reforms enacted during Wilson's administrations proved to be the relatively low peak of the UK's flirtation with a centralised dirigiste structure; the principle of diversity and market-led research retaining its overall dominance in UK RTD policies.

The election in 1979 of a Conservative government unwilling to countenance the prospect of a strong centrally planned government RTD programme and determined to remove any remnants of a 'picking winners' policy reinforced the decentralised structure for over one and a half decades. For example, in 1988 the government signalled a further move from 'near-market' RTD by:

> 'set[ting] out the broad principle that public expenditure on R&D should be directed to work which was far from the development of marketable product or process. 'Near market' R&D should be the responsibility of industry'. (Cabinet Office, 1993: 3.6)

As one DTI sponsored report by Hare, Lauchlan and Thompson, stated towards the end of the 1980s:

> 'the DTI would no doubt wish to argue that ... it would be wrong for the government to seek to intervene in the industry on a larger scale than at present; and that private firms themselves should respond to the prevailing market signals and make the decision that would be right for them. Given the prevailing fashion for non-intervention, the DTI might even go further than this, to suggest that the industry itself was behind the times if it still expected the development of a 'grand strategy' for a major private sector industry to fall within the remit of a modern government.' (1989: 82)

The government's shift to a purer form of market liberalism was clearly at odds with the significant expansion of the EU's competence in this area, making the UK's acceptance of the Framework Programmes at best a reluctant one. However, several traits of the Framework Programme aided the government's acceptance: firstly, the focus on pre-competitive RTD, as opposed to 'near market' RTD; secondly, the competitive nature of the recipient selection; and thirdly, the fact that the specific research projects were designed by the organisations involved[19] (as opposed to the bureaucrats in the European Commission) therein reducing the dirigiste aspects of the programme. To adapt

[19] Albeit within defined boundaries set by specific Calls for Proposals.

Thatcher's 1988 Bruges Speech to this sector, these factors meant that it wasn't a case of the government rolling back the subsidising of dirigiste near market RTD only to see it reimposed at the European level! The implications of other major factors introduced by the Thatcher governments, including the 'management culture' emphasis and the squeeze on public RTD funding, are discussed in the later sections. (See page 99)

In terms of the structure of the FPs, whilst decentralisation has been present to some extent in the Commission from the start of the FPs with RTD policies being held to a limited extent in the DG responsible for the specific policy area, there has been a clear and growing centralisation of efforts to the specialist DG-XII for Science, Research and Development. If the FPs were to mirror the UK RTD structure, programme responsibilities would be firmly devolved to the relevant DGs. However, the UK has consistently taken a two track approach to the situation believing a greater degree of centralisation at the EU-level is beneficial if the FPs are to hold a degree of coherence – the individual DGs being seen as unable to deliver what the individual government departments can – whilst opting for decentralisation with domestic policies. This clearly holds implications for the development of UK FP policy networks. For example, it is possible that the growing concentration of policy power in DG-XII will eventually weaken the ability of UK actors from, for example, MAFF to utilise links made in one area of the CAP programme to gain greater access within the RTD section of the Agricultural DG-VI. Though the high degree of specialisation in UK departments and the Commission may mean that the departments would not have been able to take advantage of such policy linkages anyway.

The appointment of John Major as Prime Minister in 1990 led to a greater willingness of the government to consider a more pro-active role for government RTD policy, however there were not significant changes to the relatively autonomous structure reinforced the previous administrations.

The biggest potential change came with the establishment of the Office of Science & Technology (OST) in April 1992 to provide a single focal point for

government RTD policy. However, as far as UK science policy is concerned, the tradition of decentralisation was preserved, leaving the OST extremely limited in its influence over RTD policy, acting as little more than a loose co-ordinator, overseer and focal point for government funding (Cabinet Office, 1993: 3) However an early examination of the policy area indicated that it is central and highly influential to UK input into the FPs (See Figure 1: Initial Perceptions of the UK FP5 Policy Community, page 5). Indeed, its is possibly at the height of its policy dominance in the FP area, its intended role being to act as a focal point for the maximisation of the effectiveness of EU collaboration in meeting UK objectives in development of the new and existing FPs. For this reason the OST's role in the creation of FP5 is examined in-depth in the following chapter with emphasis on the issues that transform its power when dealing with the creation of a new FP.

The second significant change brought in by the Major government was the creation of a UK Technology Foresight Programme (TFP) in the 1993 *White Paper on Science, Engineering and Technology*. (Martin and Johnston, 1998: 6) Organised by the OST, the TFP was created to open up government RTD to a greater range of influence on the back of criticisms of the detachment of government from the needs of industry, for example, as Ford, *et al.* commented in the mid-1980s:

> 'the degree of involvement of scientists as a group, industrial interests and the public in general in the formulation of science policy is low.' (Ford *et al*, 1986: 272)

The TFP consists of an in-depth survey of UK experts from a wide-range of fields with a primary intention of shaping the RTD policies of government departments, Research Councils and HEFCs. The TFP, supported by Blair's Labour government, has been relatively influential, proving a valuable source of information for a range of key public sector actors, as Martin & Johnston comment:

> 'The spending patterns of the Research Councils have been appreciably altered in the light of the priorities emerging from the Foresight Programme, and the same is true (although to a lesser extent in certain cases) of the government departments which fund R&D.' (Martin and Johnston, 1998: 11)

With Senker stating:

> 'The most advanced [forecasting exercise across Europe] appears to be the UK. Its Foresight exercise established priorities which now have a strong influence on research in the UK.' (Senker, 1999: 24)

However, it remains the case that findings are advisory in nature and as such do little to erode the high level of autonomy held by the major public RTD bodies.

In conclusion, the centralised approach has never been taken fully onboard in the UK, nor does it look likely to be. (Ford *et al*, 1986: 272) Peterson commenting:

> 'The idea that overarching national RTD priorities (let alone European ones) do not and should not exist remains entrenched.' (Peterson, 1996a: 238; see also: Menon and Hayward, 1996: 278)

Despite undergoing numerous cosmetic metamorphoses, the limited central co-ordination of UK RTD policy – holding a central co-ordinating body though providing it with little direct power – has been a consistent theme throughout the post-war period. (Landry, 1989) As Reynolds and Coates state, whilst the government has remained highly involved in both terms of funding and direction in the defence sector since the Second World War, there also remains a clear rejection of the dirigiste 'government knows best' approach in the civil sector:

> 'At its core that paradigm was – and remains – an unambiguously *liberal* one: one built on a belief that industrial performance is best left in private hands, assisted only at the margin by state activity of various kinds. ... Policy to civilian industry has invariably been voluntarist, reactive and passive, limited in scale, and where consistent, primarily market-forming rather than market-shaping.' (Reynolds & Coates, 1996: 241-3)

The justification for the lack of central co-ordination rests in the belief that a strong central body would stifle flexibility, creativity and responsiveness.[20] Certainly, the OST does not hold the institutional power to produce a uniform approach to the FPs by the UK public RTD policy community. In this respect, the decentralised approach holds the potential for significant divergences in the extent to which, for example, individual government department and Research Councils have become involved in the FP policy process and is therefore highly

[20] This view is not unique amongst the industrialised world, for example, a report to the US Government-University-Industry Roundtable, by Lederman, Lehming and Bond concluded: 'Centralization is not synonymous with co-ordination or quality, and no good evidence can be drawn from the experiences of the countries examined to support the greater efficacy of the more centralized versus more pluralistic systems.' (Lederman, Lehming and Bond, 1986: 75)

significant in terms of the potential Europeanisation of UK RTD policy and policy networks, as Peterson notes:

> 'More generally, the UK lacks ... a ministry with the means and muscle to co-ordinate UK-funded actions with those of the EU. If British R&D policy has been 'Europeanised', it has happened more by default than design.' (Peterson, 1996a: 239)

Support amongst the Research Councils and government departments for the decentralised system is relatively strong and a change to a centralized approach does not look likely to be adopted under the present Labour government, which has largely followed the Major government's lead in decentralised, information directed, RTD policies. In this respect, the decentralised nature of UK government sponsored RTD forms one of the core aspects of the networks analysis throughout this thesis.

Management Culture & Market Principles

As previously indicated, since the 1970s UK government funding of RTD has carried growing emphasis on market principles, management culture, and strong financial oversight. This was reflected most vividly in the Next Steps initiative which instigated changes on the management side of government funded RTD programmes and Government Research Establishments (GREs). Indeed, across the board government was insisting on a much greater concentration on the potential measurable returns of research funding. For example as one Science and Technology Office report stated:

> 'The Financial Management Initiative (FMI) with its emphasis on the delegation of budgetary responsibility led to increased attention to systems for identifying and managing expenditure. The use of ROAME - **R**ationale, **O**bjectives, **A**ppraisal, **M**onitoring and **E**valuation - procedures or their equivalent has led to a more systematic and consistent approach to expenditure.' (Cabinet Office, 1993: 3.4)

As indicated, this management culture is by no means with customer-contractor relationships for government commissioned RTD being a goal of central government since the Rothschild Report of 1971.[21] (Cabinet Office, 1993: 3.3) Another basic aim, as highlighted in the 1993 Cabinet *Review of allocation, management*

and use of government expenditure on science and technology was the development of competitive tendering via the creation of:

> 'an 'internal' market in which public sector research providers would compete on fair terms for publicly funded R&D.' (Cabinet Office, 1993: 3.5)

Whilst there is still progress to be made if this internal market is to be fully implemented, the on-the-ground impact to-date[22] and the effect of the general rhetoric has led to UK departmental and Research Council actors expecting the same level of ROAME-type procedures governing the EU-level programmes.

Whilst the bulk of the FPs *are* subject to customer-contractor relationships and the vast majority of projects *are* automatically placed out to competitive tendering, the high expectations of the UK actors are not always met, leading to a degree of conflict with many questioning the extent to which the Commission in its FP capacity is subject to such stringent rules.[23] For example, one area of contention stems from the fact that UK public-sector actors do not feel they have enough access to information from the Commission in terms of appraisal, monitoring and evaluation, particularly in relation to country-specific data. Also, whilst customer-contractor relationships are an integral part of the FPs there is questioning of the extent to which they are enforced once the initial contract has been approved, particularly in terms of results. Equally, contentious is the role of the EU's Joint Research Centres (JRC) given that the vast majority of their funding is provided directly by the Commission outside the competitive tendering process of the FPs and with what are commonly perceived by UK actors to be lax levels of appraisal, monitoring and evaluation.

The questioning of the perceived divergence in the level of scrutiny between the UK and EU RTD policies is exacerbated by the fact that UK departments and Research Councils are attributed for FP spending under the UK Treasury's *Europes* system. Thus, quite legitimately in the eyes of the attributed UK actors

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[21] In the hope that it would provide greater focus and value for money.

[22] In 1996-7 competitive contracts as a proportion of contract expenditure totalled 73.6 per cent for government departments and 92.3 per cent for the Research Councils. (OST, 1998: Table 2.6)

[23] The main exception being a range of projects offered to the Joint Research Centres on a non-competitive basis.

it is their money that is being spent at the EU-level and as such should be subject to the same standards of checks and evaluation as spending at the UK-level.[24]

Overall, the conflicts that do exist in these areas - highlighted in greater detail in the later chapters – generally reflect concerns from the UK-level on the lack of information emerging from the Commission and the resultant questioning of quality of management of FP funding, rather than the structure of the management systems. Concerns that have been made particularly prominent due to the UK governments policy of attributing departments and Research Councils for FP spending.

UK RTD and External Investment

In general successive British governments in the post-war period have proved much more welcoming of foreign investment than their continental partners, particularly France and Italy. (Hayward, 1995b: 354; see also, Patel and Pavitt, 1991: 54) The greater acceptance of international investment is in part to be expected given Britain's traditions as a trading nation, its vast investments abroad, and wide-spread belief that the UK economy as a whole benefits from increased inward investment. These factors were also bolstered by the close relationship held with the United States, which reduced fears held by other states that American economic dominance would diminish their political freedom. As Hayward comments:

> 'There was little fear that the British government's decision-making would be constrained, while substantial benefits were assumed to accrue in terms of access to advanced technology and improvements to the balance of payments, industrial efficiency and regional development.' (Hayward, 1995b: 358)

The 1980s saw this open investment approach reaffirmed with the embracing, by successive Thatcher governments, of the free market – effectively burying any fragments of a civil national champion strategy. During the 1980s and 1990s, this approach evolved from one of acceptance of foreign investment to, in many sectors, the active encouragement of the location of foreign owned firms (FoFs)

[24] For further details refer to the Attribution & the *Europes* Mechanism section, page 111, in the following chapter.

in the UK. (Hayward, 1995b: 359) Contrary to popular perceptions much of this investment was not in simple 'screwdriver assembly' plants with a large proportion of the FoFs investing heavily in UK-based RTD. Indeed, by the mid-1990s FoFs in the UK were spending an average of 2% of their turnover on RTD compared with a poor 1.5% for their domestic counterparts (The Economist, 08/01/00: 85-6) with the result that between 1992 and 1996:

> 'amongst the larger R&D spending countries, the UK had a higher proportion of national technological activities performed by foreign firms [than any other OECD nation].' (Patel and Pavitt, 1998: 11) [25]

Indeed, in the year of 1996 FoFs:

> 'accounted for 12% of America's R&D spending, 19% of France's and a remarkable 40% of Britain's.' (The Economist, 08/01/00: 85-6)

The UK's relatively open investment policy has created resentment at times on the continent, particularly with the wave of Japanese investment in the UK during the 1980s, being seen by some states as undermining their ability to resist 'external' competition. For a range of economic, political and simple culturally bias reasons S. E. Asian investment became the new focus for particularly heavy criticism across European governments and within the Commission. This criticism manifested in an unwillingness to allow FoFs access to EU funds and combined with the opportunities present to bias EU legislation to favour EU-based firms – for example in terms of new technology standards – clearly represented a major stumbling block restricting the UK's acceptance of the value of the FPs. I.e. the UK government was not willing to support a policy that discouraged the participation of the very firms it was attempting to attract

The EU's High-Definition Television (HDTV) RTD programme (concerning plans to create a European HDTV standard dominated by EU firms) is one case where the penetration of S. E. Asian investment in the UK may have fuelled

[25] Though in criticism it could be argued that such statistics owe as much to a failure to stimulate domestic firms as they do to the attractions of FoFs.

opposition to the Commission's RTD strategy. As Verwey comments, UK opposition was: [26]

> 'somewhat strengthened by the fact that the United Kingdom hosted some big Japanese electronics companies. In the British vision it would show bad taste to bring in the Japanese warmly only to join the Brussels harassment behind their backs (*NRC Handelsblad*, December 16, 1992).' (Verwey, 1994: 35-6)

A further example of this conflict is provided in the form of the UK's ultimately successful arguing for the continued inclusion of ICL in EC's JESSI project following a take-over by Fujitsu of Japan. Fujitsu-ICL were initially provided with assurances that ICL's participation in JESSI would not be compromised by the acquisition if the Japanese government were to relax its restrictions on FoFs participating in its domestic programmes. However, the year after the purchase:

> 'the Community acted ... to expel ICL from membership of the IT Roundtable and to remove it from three of the five JESSI programmes in which it participated ... as well as from JESSI's management committee.' (Wyatt-Walter, 1995: 434)

For its part, 'Japan was in fact moving towards a policy of unconditional access for FoFs in national technology projects.' (Wyatt-Walter, 1995: 434) These actions clearly went against the UK government's wishes and led to a concerted diplomatic effort to overturn the approach, stressing the importance of location above ownership.[27] The dispute was eventually resolved in 1992 with ICL gaining new FP contracts. The UK victory of ideas in this area meant that by the early 1990s the issue of FoFs had largely fallen from contention as states across the EU moved towards a greater acceptance of the potential benefits to their national economies. Indeed, even the French have displayed an albeit tentative welcoming of US and Japanese collaboration with a range of their 'national champions', including Bull and SGS-Thompson to the extent that Wyatt-Walter noted:

> 'an emerging policy consensus in Europe to move away from policies which discriminate based upon ownership towards policies which see location as the primary consideration.' (Wyatt-Walter, 1995: 441)

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[26] The opposition of British satellite operators, including Rupert Murdoch, further served to reinforce the UK opposition to the project. (Verwey, 1994: 36)

[27] For its part to placate the continental interests Fujitsu remained at arm-length from ICL, even announcing in early 1992 that ICL would take charge of some of *its* Euro and US concerns.

In qualification, Wyatt-Walter does not see the re-admittance of ICL as a total victory for the UK position:

> 'Though few of Britain's European partners fully accepted such an argument, a British alliance with less protectionist forces in Europe [particularly Ireland and some of the other smaller states] could generally defeat the more exclusionary-minded Franco-Italian bloc.' (Wyatt-Walter, 1995: 435)

If the UK had lost the argument over FoFs it is possible that the future growth of the FPs would have been severely restricted by the UK government fearful that its policy of encouraging inward investment would have been adversely affected. Thus, in conclusion on this point, the scope for policy impact in this area is significantly diminished given the UK government is generally satisfied with the present high levels of FoF interaction access to the FPs.

UK Framework Programme Support & Participation

Under the EU's unanimity rules the UK government has been a full participant in the creation of the FPs and their gradual expansion. Successive British administrations have also supported international collaborative research in varying forms throughout the post-war period. (Hicks and Katz, 1996: 43) However it is fair to state that the UK government has never fully supported the concept of an expanding RTD role for the EU. Indeed, concern over handing the Commission such a potentially expansive policy area led the Thatcher government to lend support to the French inspired intergovernmental EUREKA programme.[28] As Sharp comments:

> 'much of the initial British support for EUREKA stemmed from a desire to counter Community ambitions on new technologies.' (Sharp, 1991a: 72)

This indicates that the UK's scepticism should be seen in the light of a rejection of the supranational Brussels system, rather than a rejection of a European approach to technology policy in general.

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[28] As noted in the previous chapter, at the time EUREKA was seen by many of the member states and the Commission as a competitor to the FP, though at present the two are seen as 'complementary with Eureka concentrating on the competitive end of R & D and the EC programmes, pre-competitive R & D.' (Sharp, 1991a: 72)

Not one FP budgetary increase has been encouraged by the UK since their inception.[29] Much of the logic behind this stance derives from the fact that UK government departments and Research Councils are attributed for EU RTD spending. Indeed, the financial arrangements surrounding UK RTD programmes and the UK's nominal contribution to the FPs are central to understanding the foundations of the UK FP5 actor relationships. In respect of this contemporary UK funding of RTD policies are examined in detail in the following chapter.

Budgetary disputes have not been solely based on the merits of FP funding against other national priorities, with cross-issue factors occasionally overriding the specific RTD considerations. For example in relation to the creation of FP4:

> 'British objections to the level of funding [were] influenced partly by the wish to use this as a counter in the wider budget discussion on the funding of agriculture...' (Sharp, 1989a)

The willingness of the UK government to sacrifice the development of the FPs at the expense of other EU goals reinforces the low regard in which they hold the policy.

Whilst the UK government has rightly been commonly perceived as a 'perennial Framework programme sceptic', (Peterson, 1996, p.41) at best showing only a lukewarm support for the FPs, UK participation has been particularly strong. Indeed, UK participation in the FPs has consistently been amongst the highest in Europe, with the UK receiving more overall returns from the FPs than it nominally invests. (OST, 1996: 2) As Peterson comments:

> 'British organisations have forged more collaborative links through the Framework programme than have organisations from any other Member State'. (Peterson, 1996a: 238)

This success has clearly contributed to the general acceptance of the FPs by the UK public actors. Though as noted earlier, the UK's attribution system remains an insurmountable block on public sector support for FP expansion – no matter how well the UK participants are fairing.

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[29] Only the German government has consistently been a strong supporter of the British line in

Conclusion

In conclusion, as the FPs move towards the end of their second decade of operation, there is a clear acceptance across Whitehall of the value of the programme to UK RTD. To put this in perspective one just has to ask the question, 'If Britain were not a member of the EU would it be applying for associate membership of the FPs?' The likelihood is that it would. However, the general acceptance of the FPs and high levels of UK participation must not be confused with full-blown support.

A policy networks approach would predict that the introduction of a new programme and set of actors would alter the existing relationships in a policy area as resource dependencies shifted. Some evidence of changing relationships has been provided in this chapter, however it is necessary to examine the contemporary impact of the FPs on actor relationships, set against the largely historical analysis provided here to fully understand developments that have taken place. The following chapter begins this process by examining funding arrangements and the role of the OST regarding the FPs at the time of the FP5 negotiations. The chapter provides an essential base from which to understand the roles of the other three predicted policy community members (See Figure 1: Initial Perceptions of the UK FP5 Policy Community, page 5) – government departments, Research Councils and industry and university actors – and to look at the role of the EU institutions in the remained of the thesis.

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terms of the budget.

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5) The Dominance of '*Europes*' and the Office of Science and Technology

Introduction

The following chapter provides an introductory analysis of the two main factors central to the formulation of the UK's negotiating position for the European Union's Fifth Framework Programme: the UK RTD financial structure dominated by the *Europes* attribution system; and the role of the Office of Science and Technology (OST) in heading the formulation and implementation of the UK's negotiating strategy. The first half of the chapter examines the present aspects of UK-funded civil RTD, whilst the second half provides a specific focus on the Office of Science and Technology's role in the creation of FP5. Given the centrality of both the OST and *Europes* to the UK FP policy process, it should be noted that the analysis of their role in the UK FP RTD policy network is developed throughout the remainder of the thesis in much greater detail.

Present Aspects of UK Public Funded Civil RTD

The UK government has been consistently accused of under funding RTD relative to its European counterparts. (Cabinet Office, 1986: 26, in Ford *et al*, 1986: 271) Indeed, one of the most consistent features of UK public RTD support has been the continual reports and warnings from government bodies and ministers on the limits to government funding and the resulting need for strict financial discipline. (Lederman, 1985: 142)

Throughout the 1980s and 1990s UK government RTD funding as a percentage of GDP has shown a gradual decline, falling from an average of 0.97 per cent of GDP for the years 1982-1986 to an average of 0.68 for the years 1992-1996.[30] (OST, 1989 SET Statistics Table 7.3) In real terms total RTD expenditure was 17.1 per cent lower 1996-97 when compared with ten years earlier.[31] However these figures

[30] Note: figures include civil and defence funding.
[31] Excluding NHS expenditure.

do not detail the whole story as whilst Ministry of Defence declined by 29.9 per cent, spending on Civil RTD only fell by 2.2% over the period: Departmental RTD falling by 0.2%, with Research Council and Higher Education Funding Council (HEFC) RTD expenditure actually increasing by 12.1 per cent in real terms.[32] (OST, 1998: Table 3.2 / Annex) This squeeze in general resources has made the focus of RTD programmes particularly salient, particularly when combined with the growing costs of RTD projects, with questions frequently being raised over the continuing ability of the UK to retain a significant presence across the science-base and of the continued UK presence in non-EC large-scale international RTD activities. (Lederman, 1985: 142)

In the spending year 1996-97 UK Government funded RTD expenditure totalled £6132.6m. As depicted in Figure 6: UK Government RTD Expenditure 1996-7, this total can be broken-down into five main sectors: Defence, Science Budget,[33] Higher Education Funding Councils (HEFCs), Civil Departments, and the UK's indicative contribution to EU RTD.

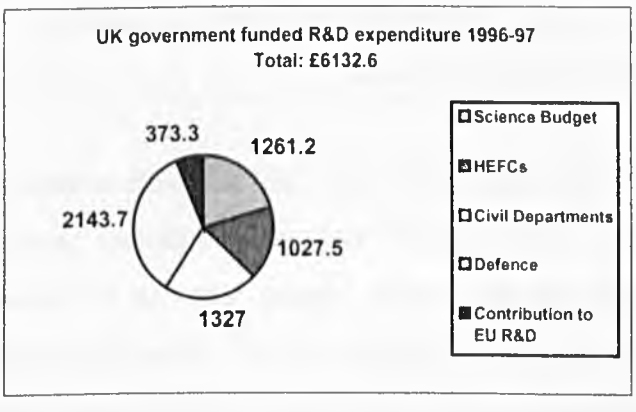

Figure 6: UK Government RTD Expenditure 1996-7

Adapted from OST, 1989 SET Statistics Table 3.1

Defence clearly comprises the largest proportion of Government RTD accounting for 35 per cent of the total investments, followed by the Civil departments, HEFCs and the Science Budget, with the UK's indicative contribution to EU RTD standing at a clearly significant 6 per cent of its total RTD budget. (OST, 1989 SET Statistics: Table 3.1)

[32] See Table 3.2 (OST, 1998) for further details.
[33] Comprising the OST and Research Councils.

The scale of the indicative EU RTD funding becomes even more pronounced if the Defence RTD funding is removed from the equation to allow a more representative comparison of the UK's civil RTD with that of the EU.[34] In this like-for-like analysis the UK's contribution to EU RTD represents over 10 per cent of UK Government funded civil research, as depicted below in Figure 7: Indicative UK Contribution to EU RTD Budget as a Percentage of Total Civil RTD (exc. EU):

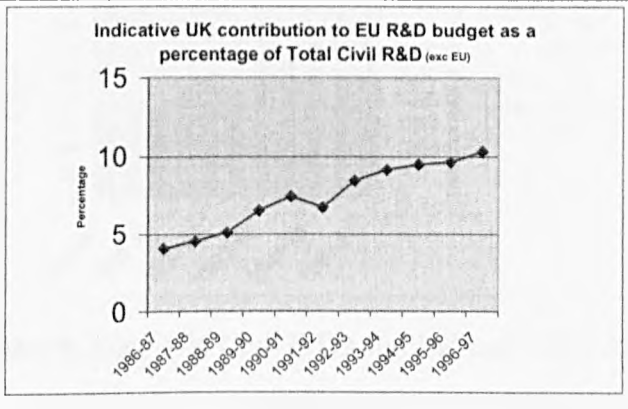

Figure 7: Indicative UK Contribution to EU RTD Budget as a Percentage of Total Civil RTD (exc. EU)

Adapted from OST, 1989 SET Statistics Table 3.1

To put this figure into context, the UK's yearly indicative EU RTD contribution now represents nearly one-third of the total funding of the combined Research Councils, equivalent of the total yearly funding for the Biotechnology and Biological Sciences Research Council (BBSRC), Engineering and Physical Sciences Research Council (ESRC) and Natural Environment Research Council Research Council (NERC).

Surprisingly, as recent as 1993 the FPs were still frequently seen as a sideline issue in terms of overall public RTD support in the UK, for example the 1993 Cabinet Office document, *Review of allocation, management and use of government expenditure on science and technology*, only devotes one small paragraph to discussing their impact. However, as depicted in Figure 7 and Figure 8: Total UK Civil RTD and Indicative EU RTD contribution, the growth

[34] As noted in the previous chapter, EU RTD is focussed on the civil sector.

in the EU RTD contributions has been rapid – during the period of 1986-7 to 1996-7 the indicative contribution increased by 146.7 per cent in real terms, from 4.1 per cent of the total civil RTD budget to 10.3 per cent. Again, the growth is particularly pronounced when contrasted with the civil RTD budget: the EU indicative contribution more than doubling in the space of ten years whilst total Civil RTD experienced an overall decline.

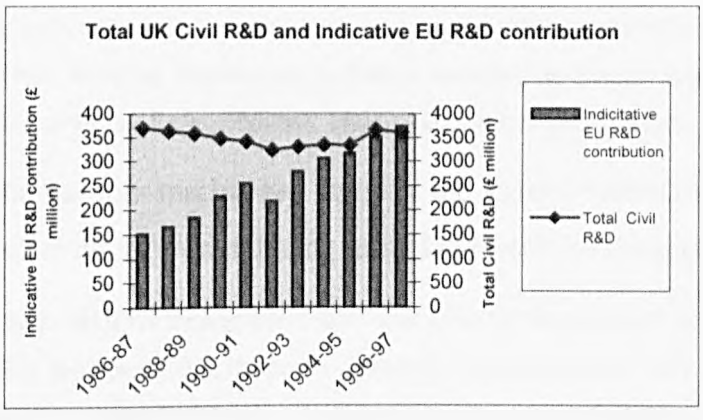

Figure 8: Total UK Civil RTD and Indicative EU RTD contribution

Adapted from OST, 1989 SET Statistics Table 3.1

The growth in the indicative contribution creates to one of the most important factors in the analysis of the technology policy networks: which sector of government absorbs the extra financial burden? The importance of which is highlighted in Peterson's comments:

> 'In Whitehall, the Framework programme is viewed with a mixture of apathy and contempt. Most British ministries loathe increases in EU R&D funds since the practical effect is to reduce funds available for national programmes.' (Peterson, 1996a: 239)

The following section examines the mechanism behind such feeling within Whitehall.

Attribution & the *Europes* Mechanism

"*Europes* is used as a 'spectre' for all of us" (Unattributable Departmental A, 1998: Interview)

'*Europes*'[35] is Treasury terminology for a financial practice unique to the UK's government's approach to the FPs that dictates the UK's contribution to EU RTD operates under a system of attribution – as opposed to additionality as is common throughout the rest of the member states. The policy of attribution for EU RTD in this manner has been in place since the creation of the initial Esprit programme in 1984:

> 'with the British Treasury ... seeking to keep approved public expenditure targets and therefore requiring Departments to look at spending on Europe as an integral part of their priorities for expenditure.' (Hare, Lauchlan & Thompson, 1989: 26)

Put simply, the *Europes* mechanism involves the Treasury attempting to retrieve funds allocated to the FPs via reducing related domestic RTD expenditure:[36]

> 'Under the EUROPES arrangements any increase in EC funded R&D is attributed to spending departments [including the Research Councils via the OST] according to their policy responsibilities as a first charge on their domestic budgets.' (Cabinet Office, 1993: 3.7)

In this respect, the overall 10 per cent civil RTD indicative contribution[37] is central to understanding the impact of the FPs on UK technology policy networks as it *represents* money being 'spent' on the FPs that would otherwise be allocated within the UK RTD budget – as opposed to the indicative contributions of the other member states which are absorbed within aggregate public spending.[38] Williams comments:

> 'It has sometimes proved difficult to balance equity and efficiency, with participating countries understandably seeking *juste retour* for their contributions.' (Williams, 1991a: 8)

In the UK, *Europes* has effectively moved this argument down from the level of countries seeking *juste retour* for their contributions to the level of government departments and Research Councils.

From the Treasury's perspective the logic of *Europes* is clear: if the UK government has already paid RTD to be completed once via the EU's budget, it

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[35] Pronounced Euro – pez.
[36] The more detailed mechanics of *Europes* are examined in Chapter [UK institutions]
[37] See Figure 8
[38] For example, the Spanish indicative contributions to the FPs are absorbed within their Foreign Office.

shouldn't have to pay again for similar research at the national level. In the words of the HM Treasury, *Europes* is designed:

> 'to ensure that growth in Community spending does not lead to an unplanned increase in total public expenditure, and with a view to achieving optimal distribution decisions and value for money from national and Community expenditure taken together.' (Treasury, 1997, p. 218)

In this respect, the Treasury sees positive effects of *Europes* in terms of resource allocation and FP participation by UK public actors. For example, *Europes* acts as an incentive for departments and Research Councils to avoid duplication of research efforts – a common aim of both the UK core-executive and the European Commission, in that the actors are not going to want to pay for the same research twice. *Europes* also reduces the temptation of departments and Research Councils to argue for non-essential areas to be included in the FPs as they will in effect be paying for such research to be carried out. Finally, the fact that *Europes* contributions are allocated on the indicative UK contribution to the FPs, rather than actual participation funds received back from Brussels, is seen to push the departments and Research Councils into a more active role ensuring the FPs are targeted to areas where UK RTD can benefit and a more active role in promoting UK participation in the FPs as they effectively are attempting to retrieve 'their' funding from the Commission.[39]

To date the UK public sector RTD programmes have been shielded for direct attribution. Departmental RTD programmes have been partially shielded from the direct application of *Europes* through its absorption within their overall baseline budgets, whilst the Research Councils receive similar protection with the OST absorbing their attribution. However, not one of the major actors can be confident that this protection will last indefinitely, particularly as the levels of attribution have been continually rising since the inception of the FPs. In this respect the *potential* for the *Europes* contributions to be directly applied has created a potentially large impact on the departmental and Research Council approaches to the FPs due to the prospect of significant domestic budget cuts

[39] I.e. if the departments and Research Councils were attributed on UK participation in the FPs they would be more likely to discourage UK actors from applying for FP funding as this would represent funding that would otherwise be theirs to distribute.

being imposed as the FPs grow in their RTD areas. If this potential has been realised it is therefore highly likely that the departments and Research Councils would actually lobby for funding freezes for the FPs despite EU RTD being one of the few areas in which the UK remains a net beneficiary from EU funding. Such a position would clearly be to the detriment of the overall British RTD science base as FP funding may move to the areas suiting the UK's potentially more vociferous partners[40] within the FPs. It is for this reason that calls have been made from some quarters for *Europes* to receive greater public justification from the Treasury if the policy is to stay in place and that the UK's unique *Europes* attribution system merits centrality in the analysis of UK FP policy networks. (House of Lords, 1990b, Williams, 1991a: 9)

Office of Science and Technology

The Office of Science and Technology (OST) acts as the focal point for both public and private sector input from the UK into the Framework Programmes. A central main question of this research is how strong is the OST's position, how did it arrive at it and how do the other members of the policy community relate to its role. This section provides a brief analysis of the OST's general role and its position in the UK RTD FP policy networks. In providing this analysis, the section acts as a base from which to examine the OST's roles in relation to the other key actors in the later chapters, including at the UK-level the Research Councils, government departments, academic institutions and various private sector interests, and at the European level the European Commission and European Parliament.

As noted in the previous chapter, the OST was initially established within the Office of Public Service and Science (OPSS) under the Cabinet Office in April 1992 to provide a single focal point for government RTD policy. In July of 1995 the OST was moved to the DTI in order to provide greater transparency[41] and ensure public RTD support greater attention was paid to the needs of industry and a greater degree of value for money was achieved. (Williams, 1991a: 10) However

[40] Due to their key public sector actors not being attributed, their national treasuries choosing to absorb the FP contributions within their foreign policy or overall domestic budgets.

it is essential to note that the OST's remit covers the whole of UK RTD and in operational terms the DTI is not supposed to receive preferential treatment over other UK actors from the OST despite the close institutional relationship.

In keeping with the tradition of UK science policy, the OST is extremely limited in terms of centralised control of UK RTD policy, acting as little more than a loose co-ordinator and focal point for government funding, its role being largely limited to co-ordination, scrutiny and influence in relation to best practice in the 'allocation, management and use of S&T funds'. (Cabinet Office, 1993: 3) Whilst the OST's budget for 1997-98 totalled £1278.9m, it is important to recognise that the bulk of this is distributed directly to the Research Councils, the Royal Society and the Royal Academy of Engineering and therefore moved out of the OST's direct control. (Office of Public Service and Science, 1995a: 1.3) Indeed, the OST's does not conduct RTD programmes of its own beyond small scale projects directly related to the efficient execution of it's co-ordination / oversight responsibilities. (Office of Public Service and Science, 1995a: 1.3) Basically, the OST's responsibilities are based in developing and co-ordinating internal UK government RTD and its promotion in the wider business and international arenas rather than engaging in the research directly. In this respect, the OST's main official areas of responsibilities cover a whole range of science and technology issues, with international issues, such as the FPs concerning only one small part of their remit, as noted in Table 4: Office of Science and Technology Responsibilities, below.

[41] Relating to the difficulty of publishing Cabinet Documents in the public domain.

Table 4: Office of Science and Technology Responsibilities

- To maintain the excellence of RTD in the UK
- To improve public understanding of RTD contribution to the UK
- To develop publicly-funded RTD in relation to the UK's future needs
- To take account of the *Technology Foresight* project
- To take account of industrial and general business needs
- To foster partnership between the science and engineering base to fully exploit RTD
- To foster partnership between the industry and government to fully exploit RTD
- ***To maximise the effectiveness of European Union and international collaboration in meeting UK objectives***
- To promote effective and efficient collaboration between Government Departments.

(Adapted from: www.dti.gov.uk/Contacts/science.htm, 10/01/99 [Bold & Ital. added])

In order to deal with its wide-ranging remit the OST is split into several directorates, the International Directorate being the one concerned with the FPs. The International Directorate has two main objectives noted in Table 5: Primary objectives of the International Directorate of the Office of Science and Technology, below:

Table 5: Primary objectives of the International Directorate of the Office of Science and Technology

1 'to plan, co-ordinate, develop and manage UK involvement in the European Union's science and technology activities'

2 'to develop and strengthen links with major scientific partners across the rest of the world on a bilateral and multilateral basis which hold the most promise of a scientific, commercial or political return to the UK.'

(www.dti.gov.uk/OST/ostbusiness/middleo.htm; 04/01/98)

Whilst the final stages of UK government's input into the formulation of FP5 are delivered through a combination of the UK Permanent Representative and the Science Minister (John Battle MP during the bulk of the FP5 negotiations) in the Council of Ministers, it is the OST's role to develop this position and inform the government on the most effective policy options for the UK as a whole. This

strong centralised role of the planner, co-ordinator, developer and general manager / overseer of the UK's involvement in the FPs clearly provides the OST with strong foundation on which to establish a domineering position in the UK's FP policy networks. Thus, whilst the OST's role is relatively weak in terms of it's direct influence on the provision of UK RTD, its mandate to maximise UK objectives though effective participation in international collaboration via the FPs provides it with ***the*** dominant central role in UK FP policy in institutional terms.

In respect of the above, a basic institutionalist approach (excluding the EU-level actors) would determine the OST to be the dominant actor in the UK policy community sitting at the top of a hierarchical structure consisting of both UK public and private sector actors (see Figure 1: Initial Perceptions of the UK FP5 Policy Community for a graphical depiction). However, as indicated in the theoretical chapter, it is clearly not adequate to simply state that an institutional structure will necessarily dictate the structure of a given policy network. There are a range of other factors, highlighted by policy networks theory that need to be considered, such as resource constraints, access to information, the relative strength of actors external to the policy community. If the OST it to be dominant at the head of a UK FP policy community one would also expect to see the OST to hold an advantage over the other actors in many of these areas.

In respect of the above, the OST's dominant position in the UK policy community is reinforced by its high level of dedicated FP resources relative to the other UK actors. For example, whilst the OST was unable to provide information on the actual monetary cost of establishing the UK's FP negotiating position it was clearly indicated by Rob Wright, the OST's Director of International Science and Technology Affairs during the FP5 negotiations, that financial and staffing resource constraints were not really an issue for the OST in relation to this particular area of policy. (Wright, 1997: Interview)

The OST's budget in relation to the FPs varied widely depending on the stage of the policy cycle. For example, the OST was spending £2 ¼ million per annum at the peak of FP4 to promote UK involvement, though by the time of the

negotiations for FP5 the figure been much reduced. (Wright, 1997: Interview) It would also be misleading to take the OST's overall spend on FP promotion as an indication of the resources it had at its disposal for establishing and delivering the UK's FP negotiating position as the bulk of the promotional material involved one-way information transfers from the OST to potential FP4 participants with little to no opportunity for feedback. For example, a significant bulk of the spend related to the production of promotion literature and advice sheets on submitting proposals.

It terms of human resources the OST also held a significant advantage over the other UK actors due to a combination of it's internal staff and it's access to the staff of other public bodies that had an obligation to help it in it's tasks. Specifically, at the time of the FP5 negotiations the OST had a total of twenty-one staff working on FP related matters, whilst being able to call directly on the services of another fourteen programme managers from various government departments and Research Councils. This figure is in clear contrast to the other major actors, such as the government departments, Research Councils and large scale private enterprises which rarely had the equivalent of more than one full-time member of staff dedicated to the overseeing FP involvement and input into the negotiation processes.

Overall, the indication of a perception of adequate human, monetary and informational resources by UK FP policy network actors was only noted by the OST and was not reiterated by any of the other UK FP policy actors, either public or private sector. The OST's high capability-to-requirements ratio reinforces the analysis of the OST's potential dominance in the UK arena which is developed over the remainder of the thesis.

As a break in the analysis of the OST's potential dominance, it needs to be noted that in any given policy community the actors are to some degree mutually dependent, including the actor at the top of the hierarchy.[42] This is clearly the case with the OST for two main reasons. Firstly, the OST is heavily reliant on

[42] A degree of mutual dependency is a key component of a policy community.

the other actors for the scientific and political information required to establish valid and persuasive negotiating positions. Secondly, on an equal footing, the OST also requires the co-operation of departmental and Research Council actors in the implementation stages of the existing and proceeding FPs. The existence of such mutual dependencies clearly offers the prospect of variable constraints on the OST's negotiating positions in that it needs to be seen to be representing key UK policy community interests in order to retain strong working relationships to fulfil its own agenda – providing the Research Councils and government departments in particular with a strong line of access. Assessing the extent of such mutual dependencies and their ability to act as variable constraints on the OST's negotiating position forms a key part of the analysis in the following chapters.

In conclusion, it is clear that the OST International Directorate's role in the formulation and delivery of a UK government policy position for the FPs is designed to be institutionally central in terms of acting as the focal point for public and private sector interest formation and representation, with this institutional dominance backed up by a resource dominance in certain key areas. Given this, it is important to establish to what extent the OST has managed to dominate the policy community in this area, with particular recognition of the contrast between this clearly centralised role and the traditionally weak role that the UK government has taken as regards centralised co-ordination of national science policy.

The OST's FP5 Negotiating Position

Whilst this thesis is not directly concerned with the actual practical aspects of the FP5 policy – the main investigation being centred on the UK policy community's approach to the creation of FP5 – it is necessary to acknowledge a brief outline the main features of the UK governments / OST's preferences during the negotiations.

The main OST objectives for FP5 are noted in Table 6: OST Objectives in the Fifth Framework Programme Negotiations, below. In general terms the OST's

main goals surrounded a greater targeting and focus of resources than existed within FP4, especially in addressing European-level challenges and ensuring the delivery of concrete results that are of direct potential benefit to the UK RTD-base. In particular the OST was keen to ensure that FP research standards were monitored to similar levels as publicly funded research in the UK and that any research conducted under the FPs held an 'added European value', i.e. it was research that actually benefited from being conducted on a EU-level over that which could be conducted at the national level.

Table 6: OST Objectives in the Fifth Framework Programme Negotiations

- 'An objective-led approach, targeting research in FP5 on specific industrial and policy needs
- The involvement of users of research, to help define the programme better and monitor it strategically
- Concentration on research that can be done best at European level (meeting the added value and subsidiarity principals)' (www.dti.gov.uk/OST/ostbusiness/middleo/.htm: 20/0299)
- A streamlining of the application and decision-making procedures
- A greater transparency of decision-making
- A greater availability of country specific data
- No significant increases in FP funding.

A key further area of contention for the UK government was the wish to restrict the budgetary growth of the FP, particularly given the proposed expansion plans offered by both the European Commission and European Parliament. This position was position made clear by several official OST statements, including the following extract:

> 'The UK believes that there is considerable scope for getting better value for money from current resources. It cannot accept the Commission's proposal for a budget of 16.3 BECU (£11.4 Billion)' (www.dti.gov.uk/OST/ostbusiness/middleo/.htm: 20/02/99)

This area of dispute, in many ways related to the *Europes* discussions, is examined at length in the remaining chapters in relation to the individual policy community actors. The following section provides an analysis of the way in which the OST came to decide on the above goal / aims.

The Formation of the FP5 Negotiating Position

> "OST will distil it all down and eventually feed that into the Commission." (DoH, 1998: Interview)

In establishing the UK government's negotiating position for FP5 the OST aimed to based its analysis on information gathered from the widest practicable range of RTD sources. These sources were to include both the public and private sectors as well as a range of large and small-scale participants in FP4. However, whilst intended to be an open process there is evidence that the existing UK technology policy community and particularly the existing FP4 community dominated much of the process.

The greatest initial source of information for the OST was derived from its wealth of experiences with the existing FP4. This was followed by the collation of information already available through reference to such official projects as *Technology Foresight* and *Forward Look*. The OST also claimed to benefit, particularly in the early stages of the process, from the views expressed by various actors to the House of Lords Select Committee on Science and Technology inquiry on FP4. (See HL Paper 49-I; Wright, 1997: Interview).

Following the process of collating existing information the OST informally initiated requests for information concerning the establishment of the UK government position through engaging contacts with the key departmental and Research Council actors. As Chief Scientific Officer of the DoH states:

> 'The negotiations started with OST going round to the spending departments and the Research Councils and saying: "Well, we are coming up to thinking about FP5, how would you like FP5 to be structured, as opposed to FP4, and what would you like to see in it?"' (DoH, 1998: Interview)

Establishing contact with the major public sector actors was a relatively straightforward task for the OST as there already existed a relatively tight policy community for the management of UK input in the ongoing FP4 and other significant international RTD projects. This policy community largely circled around two main committees: i) ICIA – Interdepartmental Committee on

International Affairs - composed of key research personnel of the government department ii) PMM - Programme Management Managers Committee - composed of government department and Research Council personnel assigned to represent the UK in FP4 Programme Management Committees with the EU. (DoH, 1988: Interview) The utilisation of established expert advisory groups is a key part of the OST's strategy to gain information on what the potential user groups of FP5 would most likely to see in the programme, as one senior departmental actor states:

> "the UK is organising its own shadow expert advisory groups so that it can get a consensus [of] what the user community would like to see in the work programmes - what the user community would like to see from the Commission. It is very important because the user community can tell us what they want and we can get that put on the agenda ... and we can get the *juste retour* for the investment we have made. ... This is all co-ordinated through the OST: [e.g.] We have a life sciences management group which is chaired by OST and we input nominations for whom UK experts might be to attend these expert advisory groups, who might be chairmen, who can rapporteur, so that the UK then can build up a consensus from the academic community, that gets fed into OST. Information from my policy colleagues gets wrapped up and fed into OST. The same is true for the Research Councils. OST will distil it all down and eventually feed that into the Commission." (DoH, 1998: Interview)

As well as requesting information, the OST also provided these key actors with pointers as to how it believed the FP5 negotiations were likely to develop at the EU-level and the general direction in which it would prefer the programme to develop in order to 'temper' their potential demands to what was deemed practicable.

Following this initial informal stage, as Rob Wright, the OST's Director of International Science and Technology Affairs comments, their strategy was to:

> '[to] open up the debate as wide as possible and to encourage people to give their views as to what they wanted to see in FP5.' (Wright, 1997: Interview)

The OST initiated this 'open' stage of the formulation of its FP5 negotiating stance in late 1995 primarily through a consultation paper distributed to the four main policy community groups (government departments, Research Councils, Higher Education institutions and key private sector interests) and select

periphery actors. In an attempt to ensure a wide-range of input the main recipients of the consultation paper were requested to consult their individual research networks, with resulting information to be collated in their overall responses or related directly to the OST.

In a perfect information situation the OST's negotiating position would therefore have represented the sum negotiating position of the UK RTD community following weightings based on the value of each contribution. In practice of course this was not the case, nor was it ever likely to be given the natural advantages held by the key policy community actors in purveying their views when contrasted with the generally smaller actors that exist on the community's periphery. As a senior OST official commented:

> '[Small and Medium Size Enterprises] have their voice through some formal structures within DTI and beyond, ... but inevitably they are more filtered than large businesses.' (Unattributable, 1997: Interview)

Clearly the OST could not, in practical terms, gather and analyse detailed information from all the participants of FP4 with equal measure, thus it relies to a great extent on actors further up the research chain, such as the CBI or the Research Councils, to perform many of these functions for it.

The OST also utilised key seminars and presentations as tools for gathering information. For example, Rob Wright, the OST's Director of International Science and Technology Affairs, gave a presentation based on the consultation paper to the Parliamentary and Scientific Committee, composed of MPs, academics and scientists, with the express intention of widening the debate beyond the dominant institutional players. The UK Houses of Parliament's activities were also closely monitored with the relevant debates, select committee evidence and reports being taken into account. For example, the OST benefited in the early stages of its policy stance from the views expressed by various actors to the House of Lords Select Committee on Science and Technology inquiry on FP4. (See House of Lords, 1997: Paper 49-I)

Following this process, the views of the UK research community were moderated by the OST in relation to a combination of: ministerial and HM

Treasury demands; the OST's own policy preferences; and by the realms of what were considered to be practical goals based on the initial stances of the European Institutions and the other member states of the European Union.

After the publication of the UK position paper, based on the results of the above processes, the OST reported a drastic decline in the number of contacts with periphery actors. From this stage, feedback and ongoing dialogue between the OST and UK actors became virtually monopolised by the existing FP4 policy community as examined in the following chapters.

As noted, a key aspect of the establishment of the UK negotiating position and the OST's role that fits in perfect with the policy community analysis is the combined 'official-unofficial' approach that was adopted. Indeed, such was the OST's willingness to adopt a dual approach to its interaction with other actors that both it and the actors in question were occasionally unsure as to which channels they were actually communicating through. As one senior departmental official stated:

> 'I say this without fear of favour: The whole process is totally bizarre, ... because a very close interaction between formal and informal contacts and it is sometimes quite difficult to distinguish between the two because as OST come to us and say "hey, you know, you really ought to start thinking about what is what" and they will eventually ask for a formal input; they will also request informal input. ... we all feed into a collective intelligence.' (DoH, 1998: Interview)

The reasons for the OST's dual approach are based around three main factors. Firstly, many of the actors understandably would not have publicly liked to state in which areas they would be willing for the OST to compromise in the overall negotiations for fear of losing the support of their own colleagues. Secondly, the habit of the Commission to request responses to official texts simply does not allow enough time for the OST to operate solely though official channels. As a DoH official states:

> 'Why it is bizarre and why it needs to be bizarre ...is that very often the Commission will want official responses at incredibly short deadlines [so the national officials will not have time to conduct full official consultations].' (DoH, 1998: Interview)

Finally, the closeness of the policy community enabled the key actors to hold confidence in the closed nature of their 'unofficial' discussions enabling them to engage in frank discussion in a way that would simply not be possible in a more loosely based issue network. Without such a combination of factors it is clear that both the quality and responsiveness of the OST's information resources would have been drastically reduced.

OST and the EU-level: Unanimity and The UK Presidency

Two key institutional factors at the EU-level that were present during the negotiations for FP5 and will not be present for the UK during the negotiation of the Sixth Framework Programme held the potential to significantly impact on the OST approach to proceedings: Unanimity in the Council over the agreement on the overall FP and the turn for the UK to take over the Presidency of the European Council and Council of Ministers. However, the potential impact of these proceedings does not appear to have been realised, as outlined below.

Somewhat surprisingly the unanimity requirement for the overall framework was not seen by the OST to have played a major role in either the formation of its negotiating position or style. Indeed, the OST appeared to view unanimity as a red herring – in practical terms offering little to enable the UK to force its partners to accept its position. As one senior OST official comments:

> 'Unanimity doesn't help in that context as you still have to live in the real world with other people who are also living with unanimity and making compromises too.' (Wright, 1997: Interview)

Here one clearly needs to go beyond a straight institutional analysis and examine the broader picture. Unanimity was seen as a potential boost if a state was particularly concerned about gaining a single issue extra prominence, but for the OST the UK's success across the range of potential FP5 areas left no single overriding area that should be pursued at the cost of others. This combined with the recognition of the need for final agreement amongst the member states and the wider-agenda of not wanting to rock a whole national European strategy over the blocking of a technology policy rendered the use of the veto too much of a *nuclear option*.

In respect of the above, given the OST's perception of unanimity as somewhat of a red herring in this policy area, the UK's acceptance of the introduction of Qualified Majority Voting (QMV) in the Amsterdam Treaty for the agreement of future FPs is not entirely surprising. Not only was the weight of argument clearly against the use of the national veto in this area anyway, but utilising formal QMV should prove an advantage to the OST as it means that those countries concerned with specific science areas would not have as much weight in the negotiations as previous, whilst the largely 'global gainers' from the programme such as the UK would be relatively unaffected in their negotiating tactics.

One other EU-level factor that could have held a significant impact on the UK negotiating behaviour and thus its preferences was the prospect of the UK taking the role of Presidency of the European Council and Council of Ministers in the first half of 1998 – during the concluding phases of the FP5 negotiations. The OST's official position in relation to its role during the Presidency included a recognition of the major challenge facing the UK in attempting to bring the FP5 negotiations to a conclusion, with specific goals to:

- 'reach an early 'common position' on the Framework Programme legislative decision
- make good progress on the initial work for the 'specific programmes'.' (www.dti.gov.uk/OST/ostbusiness/middleo/.htm: 20/0299)

Beyond placing the responsibility for a key stage of the overall FP5 negotiations in the hands of the UK, holding the Presidency effectively required the OST to take a more 'European' perspective on the negotiations – as on senior OST official commented:

> 'As the Presidency, we will be required to be more European than national, a good deal of our job will be trying to pursue an outcome for Europe, rather than slavishly pursuing the UK interests ... we have to be more conciliatory'. (OST, 1997, Interview)

Evidently, the responsibilities of the UK Presidency could therefore have held a significant impact on the OST's negotiating line and therefore on the UK's FP policy community. For example, if the onset of the Presidency had pushed the

OST to compromise UK interests in an attempt reach agreement by promoting the interest of the EU as a whole, it could have contributed to pushing the other UK policy community members away from the OST to lobby directly to the EU institutions in a belief that the OST was not able to pursue their best interests.

However, despite the clear potential clash of interests between holding the Presidency and pursuing the UK RTD interests, the OST appeared to sit quite comfortably on both the domestic and *European* stools – retaining the confidence of the UK policy community whilst appearing particularly conciliatory at the European level. The OST managed this feat in best of statecraft traditions: by taking an exaggerated UK position in the early stages of the FP negotiations prior to the UK Presidency whilst informally, though explicitly, warning the main actors in the domestic policy community that it would not be able to meet all of its publicly stated goals, the OST was able to tone down UK demands once the six-month Presidency began without compromising what it perceived to be the UK's core interests and still being perceived to be 'onside' by the other major members of the policy community. (Unattributable Interview, 1997) This provides an example where institutional requirements – such as the requirement for a European outlook as holder of the Presidency – can be circumvented by resourceful actors.

One important aspect of the OST's strategy that needs emphasising is that it did ***not*** attempt to monopolise British representation at the EU-level in relation to FP5 negotiations, represented by the fact that it was and remains actively willing to suggest to UK actors that they foster European contacts to get their points across. (Wright, 1997: Interview) Indeed, so strong is the UK policy community that the OST has on occasion suggested to actors that they use the European path when their goals do not fully collate with the national stance. In terms of the policy community, this can be explained in relation to the OST perceptions that the stability and broad base of the UK actors' relationships offers a high probability of long-term dividends from such an apparently 'unselfish' approach. To use an analogy, the OST has frequently acted more the part of a porter opening the door to the EU-level rather than a gatekeeper blocking the way. However, as examined in the following chapters, it is essential to note that despite being built

into to the OST's policy strategy the 'unfettered access' policy was not entirely universal in its application.

The relationship between the OST and the EU institutions is examined in further detail in the following chapters and specifically in chapter 9) EU Institutions and UK Policy Networks, page 222. However it is important to recognise at this stage that two factors, the European Commission and the need to secure agreement with other member states in the Council of Ministers, clearly held the primary focus of the OST in formulating the FP5 proposal. Whilst the OST did make reference to the European Parliament at the early stages of proceedings, it came a rather distant third in terms of the EU level, with its role increasing in importance only slightly for the OST as the policy process progressed. (Wright, 1997: Interview) The remaining EU institutions, such as the Economic and Social Committee and the Committee of the Regions barely registered with the OST – a state of affairs which was reflected throughout by the rest of the UK policy community.

Conclusion

Clearly, both the *Europes* attribution mechanism and the central position of the OST were dominant factors in the creation and development of the UK FP policy community. However, such a simplistic analysis is clearly not adequate to explain fully the complex working of the UK FP RTD policy community.

As noted in the first half of this chapter, the role of *Europes* also differs from actor to actor, in theory impacting on the government departments to the greatest extent, whereas for private sector interests the impact should in theory be negligible (at least in direct terms) – providing a clear requirement to examine each group of major actors in turn. Also whilst, as noted previously, it is not sufficient to simply state that an institutional structure alone ensures the OST to be the dominant actor, it is equally insufficient to treat all of the actors below the OST in the same manner.

Although a key pillar of this thesis is based on the conclusion that the OST is at the head of a hierarchical FP policy community amongst UK actors, this does not equate with a conclusion that all of the actors below the OST are subservient in equal measure. Indeed, the policy networks literature, whilst requiring some commonality of traits amongst policy community members, indicates that hierarchical structures can have many levels and many dimensions (see Chapter Two, Section: Policy Networks, page 36). It is to be expected that different actors in the policy community will hold varying levels of contact with and influence on the OST, and even varying levels of *faithfulness* to the boundaries of the existing policy community. For example, a combination of varying goals, resources, levels of access and institutional constraints will almost certainly lead some UK actors, in an attempt to influence the FPs, to opt for greater contact with the European Commission or the European Parliament.

Chapters Six to Nine are dedicated to examining the other major actors within the UK RTD community – the government departments, Research Councils, Higher Education establishments and private sector interests – and the major actors external to the UK RTD networks that are in some respects competing with the OST for attention – the European Commission and the European Parliament. Throughout, reference is made to the impact of *Europes* and the extent to which the OST has managed to fulfil its centralised mandate as noted in Table 5: Primary objectives of the International Directorate of the Office of Science and Technology. The following chapter begins this process by examining the role of the UK Government departments in the creation of FP5.