

**Policy Diffusion in Research and Technological
Development: No Government is an Island**

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ABSTRACT

The paper explores the question of how the EC and several European governments almost simultaneously launched research and technological development programmes during the 1980s. It is argued that RTD policy processes within EC and individual states were linked to each other in a European policy process, and that the convergence of such policies was a function of policy diffusion. An analytical approach of policy diffusion is outlined in order to study the linkages between national and EU policy processes. A policy diffusion perspective, which entails how policies are formed in a communication between various national political-administrative systems, can be seen as an important contribution to the study of the dynamics behind the European integration process. It is suggested that the OECD with its informal and non-hierarchical cooperation structure is an institutional condition for policy diffusion, and that this type of cooperation also can be found within the EU. The EU, which can be characterized as a type of multilevel governance, enhances communication between national political-administrative systems and thus the processes of policy diffusion.

KEY WORDS

Research and technological development; European integration; Policy diffusion; European RTD collaboration; National technology programmes; OECD

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INTRODUCTION

In the revitalized European integration process which took place in the first half of the 1980s, research and technological development (RTD) was on the political agenda. Within a couple of years different RTD projects were initiated within the European Community. In tandem with dynamic EC co-operation, most of the EC and EFTA countries also launched national technological and research programmes during the 1980s. These national programmes were not only directed domestically but were also part of a more European oriented RTD policy. Were these separate policy processes or were they linked to each other, and if so, in what ways were they linked? How can it be explained that the EC and several national governments almost simultaneously called for more activity by the state within the RTD issue area? Why did the European governments suddenly need a more European oriented RTD policy? Was it all coincidence?

It is not obvious why these countries almost simultaneously needed national programmes. However, the mechanisms behind policy convergence in the European integration process is seldom analysed. The ambition with this paper is to fill some of the analytical and theoretical gaps by suggesting that the mechanism behind a convergence of national policies and European RTD co-operation is *policy diffusion*. It is suggested that a policy is formed within communications between various political levels and that the border between a national policy process and the process within the EC is blurred. Brussels is not a point of delivery where a policy package is handed over.

The ambition is to outline an analytical approach and relate some well-known empirical findings to this analytical approach. The focus lies on the important similarities between the national policy processes in the 1980s within the RTD area, particularly in Sweden, France, West Germany, the United Kingdom, and the RTD initiatives on the European level. It is suggested that the policy processes within the field of RTD in the 1980s were not parallel national processes, but a singular European policy process in which national and EC activities were intertwined

A policy diffusion perspective, based on the studies of policy diffusion between countries and states within the U.S¹ and the literature on organisational innovation and diffusion (see for example Strang and Meyer 1994; Czarniawska and Sevón 1996), can assist in the analysis of linkages between the formation of national policy processes and the European integration process. The notion of policy

diffusion can be seen as an important analytical contribution to the study of the dynamics behind the European integration process. The case of RTD illustrates a complex interaction between national policy processes and the European integration process. Thus, it raises the question of how politics are formed in Europe. It also raises important methodological issues. Conventional wisdom in the discipline is that we should avoid studies in which we have no variation in behaviour (King, Keohane and Verba 1994). This is because these studies cannot establish causal effects. I argue that theoretical anomalies should be investigated... "and if those anomalies are anomalies of similarity, then we need methods to investigate similarity" (Finnemore 1996:26). Consequently, problems of evidence are inherent in this approach - how does one 'prove' that ideas travel?

The conception of policy diffusion can be traced back to the early integration literature, although the concept of policy diffusion was not used. The transactionalist school focused on social communications, networks and channels of communication (Deutsch et al 1957, Puchala 1970/71). The early neofunctionalists focused on the two-way communication between different political levels (Haas 1958). These approaches studied European integration as a complex and multidimensional process in which there was a two-way relationship between domestic political processes and regional co-operation. The boundaries between political levels and various actors are diffuse. In his classic work from 1958, Haas analysed the co-operation process as a two-way process and claimed, although supranational decision-making was weak, that the European Coal and Steel Community had changed the way states made decisions. Early integration literature differentiated between, on the one hand, the formal and constitutional framework and, on the other, political practice and process.

The explanation of policy convergence by diffusion is focused on processes. A policy diffusion entails a process of communication in which innovations, that is policies, are copied, borrowed etc. A policy, which is a comprehensive political direction, consists of ideas. There is today a general understanding that students of European integration have underestimated the impact of ideas. In a recent publication by Wallace and Wallace the authors point to the importance of the role of ideas in the European integration process (Wallace and Wallace 1996; Goldstein & Keohane 1993; Risse-Kappen 1994). There is also a growing literature which focuses on the processes of communication between different political levels and which regards the EU as a multilevel governance (Marks 1993; Jachtenfuchs and Kohler-Koch 1995; Caporaso 1996; Risse-Kappen 1996; Scharpf 1994).

The focus on the EU as a multilevel governance indicates complex interactions between different actors and political levels. The argument is that the intergovernmentalist approach has underestimated the way in which the EU prestructures the processes of national preference formation. States are

embedded in a large social context. Wayne Sandholtz states that the national interests of EC states do not have an independent existence; they are not formed in a vacuum and then brought to Brussels (1993:3). It can also be argued that these interactions promote a standardisation of policies - different policy areas are Europeanised. An important organisation in the fostering of a Europeanised policy is the Commission (see for example Haaland Matlary 1993). This paper will also highlight the role and the co-operation structure of the international organisation OECD (the Organization for Economic Co-operation and Development) for policy diffusion processes.

Section 1 analyses the theoretical perspective on policy diffusion and section 2 discusses the organisational conditions for policy diffusion. The third section presents empirical findings regarding national RTD policy processes and the European Community RTD policy process during the 1980s. The final section explores the question of how these theoretical and empirical findings can be linked to each other.

1. POLICY DIFFUSION - A THEORETICAL PERSPECTIVE

The linkage between domestic and international politics can be analysed in two fundamental ways; a classic approach in international politics which differentiates between international and domestic politics (Goldmann 1989), and an approach which is centred on interaction between domestic policy and European integration processes. In the first approach, domestic politics respond to changes in the international environment, and it is possible here to separate between various political levels and policy processes. There is thus an indirect link between the domestic policy process and European integration. The result of the domestic policy process is delivered to Brussels and negotiated there. There is therefore an indirect link between the domestic policy process and European integration.

The second approach has been developed by Robert Putnam in his model of the Two-Level Game and Double-Edged Diplomacy (Putnam 1988; Evans et al 1993). This approach purports that the domestic process influences the state's international behaviour but that it is possible to separate the domestic and international levels. As in the first approach, Brussels is a point of delivery for the policy package. There is, however, a more direct link between domestic policy process and European integration here than in the first approach. According to this perspective and the first perspective there is, however, an indirect link between the domestic process of policy-making and European integration. This indirect link can be studied from a state strategy perspective.²

I argue that the link between domestic policy processes and European policy processes can be analysed from a modified two-level game perspective, that is that there is a diffuse border between political levels and processes. The domestic policy process is part of a larger European policy process and the link between the domestic policy process and the European integration process is direct. There is a diffuse border between the domestic policy process and the European activities. According to this transnational policy perspective, Brussels is not regarded as a point of delivery - but is part of the domestic policy process. This can be studied from a policy diffusion perspective.

Diffusion has been defined by Rogers and Shoemaker in their classic work *Communication of Innovations* as the process by which innovations spread to members of a social system (1971:12). Leichter has defined in it similar way. 'Diffusion is a process in which ideas, practices, and material objects spread across specified units of analysis (e.g., nations, cities, states)' (1983:223). The starting point is that policies from different countries are related to each other. Egeberg argues that similarities between public policies in various Western countries cannot only be explained by intranational variables. 'Standardization of public policy within this region means, in practice, that policies have much *in common* across national boundaries...My assumption is that policies cannot be adequately explained by national politics alone' (1980:236, italics supplied).

An important component in the literature of policy diffusion is that an innovation is copied, borrowed and imitated. Hence, decisionmakers use an innovation that is created elsewhere and the diffusion process entails a sender and a receiver of such as innovation. In addition, there are agents of diffusion which are carriers of a new policy and which also discover a new policy. Agents of diffusion are often bureaucrats, who collectively are part of a complex international political-administrative network (Glick and Hays 1991; Karvonen 1981).

The diffusion process is promoted by political and economic internationalisation which also increases the likelihood of contact between countries (Karvonen 1981). There should also be structural similarities between the sender and the receiver of an innovation. However, there must also be a degree of dissimilarity between the sender and the receiver of a policy (Ibid.). The reasoning seems to be that the countries must be sufficiently alike so that the legislation copied fits the receiving country's legislative structure, but there must additionally be a need for a country to borrow and copy another country's legislation. This means that the policy diffusion process takes place within an overall organisational and institutional structure which links the countries together, for example the various states within the U.S, or the countries within the British Commonwealth. Purely relational considerations are thus not sufficient to determine the process of diffusion. Strang and Meyer argue that

diffusion is affected by institutional conditions operating in a wider social system (1994). Karvonen has found policy diffusion from Sweden to Finland, but it can also be argued that the relationship between the two countries may be regarded as special since there are close historical, cultural and social bonds between the Nordic countries.

Egeberg claims that the processes of standardisation take place in complex transnational political-administrative networks. These transnational networks are non-hierarchical and are characterised by a system of bargaining and consultation between the political-administrative systems. This entanglement is referred to as the fourth level of government. 'The standardization of public policy observed has to be related to international political-administrative networks that are increasingly more complex, a fourth level of government and public policy-making' (1980:244).

An important presumption in studies of policy diffusion between countries and within the United States is that diffusion is a rational process, consciously applied choices by decisionmakers to import another country's policy. Imitation can thus be regarded as a political strategy. 'Although definitions of the policy process vary, most observers agree that it involves the following steps: problem awareness, information search, alternative structuring, and decision and implementation' (Freeman 1985:100). It is not, however, clear what is meant by a conscious imitation of a policy. How is it possible to know when there has been a conscious import of a policy? In Karvonen's study of policy diffusion between Finland and Sweden, he argues that Finland's copying of Swedish legislation was a function of Finnish needs. Finland's external orientation towards Sweden was thus a consequence of the Finnish political process and Finnish decisionmakers' perceptions and choices.

In addition to this rational actor model, there are two criteria presented which can establish that there has been a policy diffusion: the time criterion and the similarity criterion. The time criterion requires identification of the originator of the innovation; that is, the country which was first associated with the innovation. The similarity criterion entails a comparison of the policies. Egeberg claims there is a difficulty in establishing a standardisation of a policy:

Through political-administrative networks across national boundaries, policy standardization may take place even when formal harmonization or copying cannot be observed. Some standardization may be the result when identical problems are put on the agenda of different governments at the same time, when related solutions are worked out and diffused, and when information about policy impact is fed back through international networks (Egeberg, 1980:244).

Policy package or a process of translation?

It is clear that policy diffusion literature entails a rational actor model and the policy diffusion process is studied as a mechanical policy package transfer. In a European integration perspective it can be argued that policy is formed in a complex interaction between two levels: regional co-operation and domestic politics. As such, it is difficult to identify a sender of a policy and a passive receiver of a policy.

The rational actor and the mechanical transfer model has been questioned by students of organisational studies, who have analysed the diffusion process of organisational reforms, ways of organising and managing etc. (Strang and Meyer 1994; Czarniawska and Sevón 1996; see also Brunsson and Olsen 1993). These studies have a processual perspective of the spreading of ideas - the diffusion is a 'continuous editing process' (Sahlin-Andersson 1996). What is to be diffused is thus not a given phenomenon. Diffusion, as a metaphor for the dissemination of ideas, has been discussed, and the alternative metaphor of translation has been developed (Latour 1986, Czarniawska and Sevón 1996). 'I will see imitation as a process in which something is created and transformed by chains of translators' (Sevón 1996:51).

Karvonen's conclusion that Finland's decisionmakers decided to import Swedish legislation and that this was a function of a Finnish political process can be questioned. The Finnish decisionmakers' need for importing Swedish legislation can be seen as the result of intense and multidimensional contacts between the two countries. The standardisation and co-ordination of a policy can thus take place 'without majority rule and hierarchical implementation; that is without supra-national institutions, judicially speaking' (Egeberg, 1980:244). Consequently, the process of standardisation does not require any formal decision-making and bargaining.

A processual perspective on diffusion means that the time criterion (see above) is problematic since the literature assumes a time-lag between the sender and the receiver of the policy. The research and technological development programmes during the 1980s were, however, launched during the same period of time. The similarity criterion is also problematic. An alternative explanation to the similarities between the RTD policies of the EC and EFTA countries is that they are highly developed industrial countries and that they faced the same challenge - of a knowledge-based industry which called for major structural changes. It is therefore not surprising that these countries launched similar

RTD programmes. This structural similarity cannot, however, explain why the countries almost simultaneously launched national technology programmes.

A more fruitful and crucial criterion is, however, the occurrence of contacts between countries. 'In other words, we must be able to demonstrate that these similarities in some sense are caused by contacts between the two countries' (Karvonen 1981:56, translation by the author). An important task is thus to search for contacts and communication channels between various countries and how different national political-administrative systems are linked to each other.

2. THE OECD AND THE POLICY DIFFUSION

It was obvious that the European national technology programmes in the 1980s were influenced by successful programmes in Japan. The experiences from the Japanese programmes during the 1970s and the Fifth Generation Project were closely monitored by European decisionmakers. 'The announcement of the Japan Fifth Generation Project (5G) in 1981 served as a catalyst in policy formulation world-wide for advanced information technology' (Arnold and Guy, 1986:7). Japan was an example of a 'nation that has used policy intervention successfully' (Sandholtz, 1992:58) This state-led technology policy had already been established in the 1960s, and included the ambition of being a leading nation within the field of high technology; Japan could not be a freerider forever. The Japanese government, represented by the powerful Ministry of International Trade and Industry (MITI), initiated an extensive co-operation with private industry, which proved to be an important component in the Fifth Generation Project.

If Japan was the model for the European countries, then the international organisation OECD might be regarded as the strategic actor and arena for promoting an active RTD policy. Technology issues and their relevance for economic growth have been on OECD's agenda since the early 1960s. An overall concern has been how to deal with the technology gap between Europe and the U.S. and at a later stage, between Europe and the U.S and Japan. The lagging-behind theme primarily concerned the link between high technology and economic growth and not the security implications of the European countries' vulnerability and dependence on American high technology. The economic aspects of technological development has security implications of course, but these were never explicitly stated.

The OECD has not only functioned as an important communication channel for this diffusion process, but has also been an active political actor. International organisations are never neutral forums (Finnemore 1996). It has served as an arena for contacts between different national administrative and political levels, and also promoted a more active RTD policy. It is argued that the image of non-political activity within the OECD creates an overly simplistic picture of the organisation's work. The question also is raised as to whether the OECD only functions as an arena for national experts and politicians. As a policy entrepreneur, the OECD has an important impact on both national policy making and the European integration process.

Since the early 1960s, several OECD reports have been published on RTD issues as well as the need for a more active governmental policy within this policy area. The commercialisation of science has been labelled 'innovation policy' and a special report series has been published on that theme. It is possible that the OECD 'innovated' the epithet 'innovation policy' since the label is already used in the OECD's reports series 'Gaps in Technology' (1970).

The OECD's role in the European integration process has received very little attention and is often regarded as a non-political organisation and an organ for experts. There are, however, no clear demarcation lines between different international and regional organisations. Memberships overlap and various organisations work with similar questions (Nau 1975). One important reason why so little attention has been brought upon the OECD is probably its intergovernmental and non-binding decision-making structure. The OECD, in contrast to the EU, has a non-hierarchical co-operation structure and no components for supranational decision-making. The OECD's influence on national policies can therefore not be studied by studying the formal decision-making process. This is quite a different approach from a study of the EU and national policies. The OECD does not decide on any binding regulations or directives, meaning that any study of the OECD's influence on national policy making must proceed from a more informal perspective.

The OECDs' role within the international political economy has been described as a harmonising agent (Harrison and Mungal 1990). One important aspect of this harmonising activity is the different reports that the organisation publishes, such as comparative studies within a specific policy area or the annual reports on a country's economic performance. The 'matter of fact-reports' consist of policy 'advice', although not always in an explicit way.

The OECD is a complex and multidimensional system of communication between the national political administrative level and OECD organisational set-up. It is suggested that national policies are formed in this interaction. There are, however, very few studies of the link between the OECD and

national policy making. Karvonen argues that the OECD is an international organisation which 'successfully has created policy models for domestic decision making' (1981:236). In a study concerning Sweden and the OECD, Sjöstedt has analysed the OECD as a system of information in which states are linked through various communicative channels (1973). An important conclusion in Sjöstedt's book was that the link between the national decision-making process and the OECD was transnational. There is thus no sharp distinction between the national decision-making process and decision-making within the OECD. 'The co-operation has resulted in an informal network between Sweden and the OECD' (Sjöstedt, 1973:124). The communication between Sweden and the OECD is complex, making it difficult to identify senders and receivers of various policies. It appears to be a two-way process rather than simple one-way communication, with the OECD as the sender of information and a particular country as receiver of various reports. Sjöstedt argues that the OECD's reports are in fact highly dependent on information from the member states.

Above all, the OECD's influence on domestic policy processes concerns defining a problem and finding a solution for it. The role of policy entrepreneur means that the organisation advocates proposals or the prominence of an idea (Kingdon 1984:129). The OECD does not only provide 'objective' facts - it also produces so-called causal ideas. Causal ideas can be defined as perceptions of problems and solutions, and can be based on scientific research. The ideas function as road maps in an uncertain environment. 'Ideas serve the purpose of guiding behaviour under conditions of uncertainty by stipulating causal patterns...' (Goldstein and Keohane, 1993:16).

The OECD's formulation of problems and solutions within the RTD area seems to fall back on the Secretariat. RTD issues have been the object of different plans of action since the early 1960s. The lagging behind theme has been an important component in these reports. From the late 1960s the OECD published several reports in the series 'Gaps in Technology' in which this lagging behind theme was presented. 'In important product-areas that did not exist 15 years ago - electronic computers, semi-conductors, the manufacture and fabrication of titanium and satellite communications - the United States has a very strong lead' (OECD, 1968:184). These reports were put together by a special working group, the Committee for Scientific and Technological Policy. 'The OECD's technology-gap reports gave the first nudge to science and technology policy initiatives at the European level' (Sandholtz, 1992:93). Another important series is 'Science and Technology Policy Outlook'. In this series of reports a common theme has been the growing commercial value of science. 'Scientific knowledge has become essential in a widening range of technological and industrial activities. This increases the commercial value of new knowledge and raises the demand for it. To meet the demand, industry is becoming more involved in research and academic institutions are orienting more of their

research and education towards the need for industry' (OECD, 1988:7).

There are clearly prescriptive aspects to these reports, according to which the states should strengthen international RTD co-operation, especially European RTD co-operation. Other 'advice' was that the governments should help private industry to make use of technological innovations. This policy activity started in the early 1960s.

It was argued, for example, in the background report to the first OECD meeting of ministers responsible for scientific affairs (1963) that a central science and technology policy office be set up in each country to promote the formulation of a national science policy and the co-ordination of R & D activities (Wittrock 1980:269).

In summary, it can be argued that national RTD policy processes were closely linked to activity within the international organisation. It is suggested that the intense and multilevel contacts between national political-administrative systems in a transnational, informal and complex co-operation structure enhance a policy diffusion process.

3. NATIONAL TECHNOLOGY PROGRAMMES AND EUROPEAN RTD INITIATIVES

The creation of EUREKA (The European Research Coordinating Agency), ESPRIT(The European Research Coordinating Agency) and other European RTD projects have been explained by Haas' classic convergence explanation, which was fundamental in his work, *The Uniting of Europe* (Haas 1958). It is argued by Wayne Sandholtz that the process towards a convergence of policies in the 1980s was preceded by a learning process. The political leaders in France, West Germany and the United Kingdom were 'not interested in collaboration in telematics until they realised that these national champion strategies were inadequate' (Sandholtz, 1992:9). This growing political awareness thus converged during the first half of the 1980s. The American SDI initiative was an important trigger for the countries to launch national programmes, but cannot *per se* explain why there were similarities between the national policy processes (Ibid.). John Peterson also concludes in his work, *The Politics of European Technological Collaboration*, that there was a convergence of interests between the Commission and the large electronic companies in Europe. 'The making of EUREKA

must be understood against a backdrop of structural and attitudinal changes in both the public and private spheres' (1992:129-130). This convergence of interests resulted in a close co-operation between the Commission and the major European companies (Sharp and Shearman 1987).

Explanation by convergence does, however, imply that there were parallel policy processes which converged with each other at a specific point in time. The works by Sandholtz and Peterson fail to provide analysis of possible linkages between the national and European policy processes.

In the Single European Act 1986/87 (SEA), RTD issues formally became an area for a common policy of co-operation within the EU with the aim of strengthening European industry. Despite the absence of any far-reaching regulations, RTD issues and matters concerning industrial policy had been on the EU's political agenda since the 1960s. The Commission has actively pursued a policy which would give R & D the status of an official co-operation area. Industrial policy has been a source of controversy, with the Germans favouring a market-oriented approach and the French a policy of dirigisme. There have also been tensions within the EU's institutions, especially between different Directorates-General.

In the early 1980s different RTD projects were initiated within the European Community. As part of an emerging European Technology Community (COM (1985), 530). An important step in this process was reached in 1983 when the Council agreed to initiate the Framework Programme. ESPRIT was presented in that same year and a pilot-phase of the project was initiated. The Framework Programme was market-liberal in that it aimed to strengthen private industry, but was also a rather centralist and state-led programme. A more intensive market-led project was launched in 1985 - the EUREKA initiative. EUREKA was initiated by France and was a first response to SDI (the Strategic Defense Initiative) but became one of the largest civilian RTD projects in the world. EUREKA is formally outside the EC and the Framework Programme, but was still an important component in the European technology community. EUREKA can be characterised as decentralised, transnational and non-hierarchical co-operation whereas ESPRIT is more centralised, supranational and hierarchical (Peterson 1992, Mörth 1996a). The overall aim of ESPRIT and other RTD projects was to strengthen European technological and industrial competitiveness visavi the U.S and Japan. 'The aim of making Europe powerful, present and competitive on the world scene cannot be divorced from that of equipping her with a dynamic scientific and technological system...' (COM (1985), 530:1). The European RTD programmes demonstrated a growing concern over Europe's technological and industrial policies and there was a political consensus that the European countries needed to collaborate.

Simultaneous to these co-operative initiatives on the European level, the EC and EFTA countries launched national RTD programmes. 'The priority R & D areas, especially those centring in industrial technologies, are remarkably similar for many of the countries' (OECD 1985:25). These similarities were not just a phenomenon of the 1980s.

Since the 1960s the national technological and industrial R & D policy in Europe experienced three different phases. **The first phase**, which began in the 1960s, was characterised by a change in governmental science policies. Science policy was linked to economic and industrial issues and by 1970 the majority of the European states had 'shifted their science policies away from an almost exclusive focus on state-dominated sectors like Defense and nuclear energy' (Sandholtz, 1992:65). This emphasis on the industrial and economic aspects of R & D entailed a more active state. Most European countries established ministries of industries specifically for industry and other state agencies related to industry. This was the case, for instance in France, the United Kingdom and Sweden. In Germany the government had already launched a Ministry for Research in 1962. This early state-active policy to establish ministries and state agencies also had its equivalent at the EC level. In 1967 the Directorate for Industrial Affairs (DG III) was established. This was an important step towards a common EC industrial policy, and in 1970 the Commission presented a memorandum known as the 'Colonna Report' (Sharp and Shearman 1987). This memorandum and other earlier reports from the Commission called for a more active and comprehensive industrial policy at the EC level. 'Once the foundations for the customs union had been laid in the early 1960s, the Commission set out to make the case for a comprehensive and coherent industrial policy...' (Hodges, 1983:270). The Commission's ambition to create a common RTD policy has, however, been politically controversial since a common policy would strengthen the supranational components of the EC.

The second phase occurred during the 1970s and was characterised by the 'national-champions policy' - governments creating larger national high-tech companies which could compete on the international market. This policy was especially apparent in France. It was also during the 1970s that European collaboration within the field of research and technological development intensified. In 1971 France initiated the COST co-operation (Cooperation européenne dans le domaine de la recherche scientifique & technique). At the 1972 European council meeting in Paris, European leaders agreed to seek the establishment of a single industrial base for the entire European Community. The ambition to create a common R & D policy, which was personified in Commissioner Spinelli, was resisted by France, which was opposed to any supranational decision making. In January 1974, the Council of Ministers agreed to co-ordinate the national R & D policies and thus keep the decision-making on an intergovernmental level. This agreement was an important step towards a more co-ordinated RTD

policy and the reduction of differences between the national policies and programmes.

The third phase, which began in the beginning of the 1980s, can be described as a era of great national programmes within information technology. In 1982 the PAFE programme (Plan d'Action pour la Filière Electronique) was presented in France, and the German Program, 'Sonderprogramm Anwendung der Mikroelektronik' began in 1984. An information technology programme was also launched in the United Kingdom - the ALVEY program (the Advanced Information Technology Program). National information technology programmes were also initiated in smaller European countries. The Swedish government presented the National Microelectronic programme in 1983, and in 1986 a more comprehensive information technology programme was established. Similar programmes were initiated in the Netherlands and Denmark as well (Kronlund 1988). There were several important resemblances between the national technology programmes during the 1980s, and these similarities were striking. The government's initiative was important even in Thatcher's England, which otherwise advocated market-liberal solutions to industrial problems. The states

have seen the development of information technology R & D as a special case, which called for extraordinary approaches, in view of their multidimensional objectives which include technological targets, industrial restructuring, military/strategic aims, regional integration and networking, as well as other socio-economic objectives... (OECD 1989:23).

The national programmes were not only launched during the same period of time but they also contained more substantive similarities. The various governments seemed to define the information technology problem in much the same way: there was a gap between Europe and the U.S and Japan, and this gap could only be reduced by co-operation and national programmes. The national programmes were thus linked to the idea of a European technology community and the creation of the internal market. In Sweden and United Kingdom there were direct linkages between participation in the national technology programmes and ESPRIT and EUREKA. Furthermore, the programmes called for a new policy - the state should take more responsibility for the high-tech area, politically as well as financially. The French PAFE programme had a five-year budget of 140 billion francs and the German programme cost some DM3 billion (between 1984 and 1988, Friebe and Gerybadze 1984). The five-year budget (1983-1988) for the British ALVEY programme was approximately £350 million which was jointly funded by government and industry. The programmes cut across institutional boundaries within the different countries. Research and technological development concerned many policy areas and institutions. The Alvey programme in the United Kingdom 'cut across many of the

existing boundaries of institutional responsibility: civil and defence; academic and industrial. It is an attempt to weld together fragmented resources and to provide the IT community with a sense of direction and purpose' (Arnold and Guy, 1986: 124). This complex issue-area thus necessitated political initiatives and co-ordination of RTD activities within various state and society sectors.

The programmes also entailed a rather comprehensive way of co-operation between the state and private industry. In Germany, the United Kingdom and Sweden especially, the programmes were aimed at strengthening co-operation between private actors (industry) and public actors (state agencies and the government). This close relationship between private industry and government not only manifested in the sharing of the financial burdens, but private industry was also active in the formal decision-making. This was the case in Sweden and the United Kingdom. As in European projects like ESPRIT and EUREKA, private industry was given a prominent role in the programmes, and the border between private and public actors was diffuse (Peterson 1992).

In general there was an intense European activity within the RTD issue-area during the first half of the 1980s. This activity was noticeable in the European Community as well as within the EC and EFTA countries. The intriguing question is, of course, how one can explain this appearance of parallel policy processes. It is suggested that these parallel policy processes were linked to each other in a European policy process, and there was a direct link between the policy processes of the EC and individual states.

4. CONCLUSION

In this paper I have suggested that a mechanism behind a convergence of RTD policies during the 1980s was policy diffusion. The link between national policy processes and the European integration process was direct, and there was no clear distinction between the two processes - it was a European policy process. The process of diffusion did not, however, entail a sender and a receiver of a policy. It was instead a complex interaction between different political-administrative systems. Hence, the assumption that a policy diffusion is a conscious process can be questioned. Lindberg and Scheingold concluded in their classic work, *Europe's Would-Be Polity*, that the European integration process 'represents a kind of 'leap in the dark', for none can fully control its movements or predict its future' (1970:105). European integration is not a linear process but is characterised by an absence of continuity and a series of stops and goes. This does not mean, however, that the European integration

process lacks intentional actions, but that intentions can fail and that events and consequences will occur that can not be predicted (Mazey & Richardson 1995).

The process towards a convergence of policies was suggested to have taken place in an intense interaction between national governments, the EU and the OECD. This process within the RTD issue area cannot be dated to the 1980s. Completely new policies do not suddenly appear; the policy process had already started in the early 1960s and has since been an important part of the work of the OECD and EU as well as within the national political context. The Commission has been very active in pursuing a comprehensive and coherent RTD policy. Less well-known, however, is the fact that the OECD also has been very active in this area. It is suggested that the domestic RTD policy processes were formed in close interactions with the EC (especially with the Commission) and the OECD. It can be argued that causal ideas within the RTD area evolved in these close interactions and served the purpose of guiding behaviour during the first years of the 1980s when the U.S President Ronald Reagan presented SDI and the lagging-behind theme was more relevant than ever.

However, it is difficult to establish any definitive conclusions regarding the role of the OECD and the EC in fostering a European RTD policy. The comparative examples in this paper have nevertheless shown a complex picture of various political levels, and it is essential to study the interactions between the national, regional and international levels. It is suggested that the Europeanization of policies must be related to international political-administrative networks.

It can be argued that the OECD's informal and transnational co-operation structure enhances the communication between political-administrative systems, and that this intense process of communication can promote policy diffusion. The co-operation structure within the OECD is in stark contrast to the formal and hierarchical co-operation within the EU. However, it can be argued that this is a simplistic picture of the EU and that there are important informal and transnational interactions between the national and supranational level. It is highly likely that policy diffusion is enhanced in an EU which has the character of multilevel governance. The EU's transnational and complex policy-making entails many different channels of communication for national political-administrative systems. Complicated intertwining of national and supranational policy-making facilitates communication and a multilevel process. The case of RTD has shown that there have been parallel activities between different countries and various political levels. This calls for a more transnational approach in the study of European integration. It has been suggested in this paper that one way forward in the study of these complex linkages is to use a policy diffusion analysis. In doing this, students of European integration should include the processual perspective of diffusion presented by

the organisational studies.

The usefulness of a policy diffusion perspective can be shown in a comparative theoretical perspective, and can be compared with a state strategy perspective. The latter is based on the notion that policies are the result of a rational decision-making process, that actors are engaged in purposive behaviour of calculation. The state, which is often equated with government, adjusts to changes in the international environment by pursuing various strategies. The chosen strategy is a function of domestic structural factors and the character of the external threat (Buzan 1990; Ikenberry 1986, 1988; Goldmann 1978; Sundelius 1983, 1990).

The difference between a state strategy perspective and a policy diffusion perspective can be formulated in terms of three aspects. This entails a **policy package**, a **calculation**, and a **national policy profile**.

According to a state strategy perspective a policy is mainly formed by the domestic policy process, which reacts upon changes in the international environment. This is the classic approach in the field of international politics. The policy can therefore be regarded as a **package** to be delivered in Brussels. The policy diffusion perspective, however, claims that a country's choices are linked to another country's policy. National policy is formed in a complex interaction between the domestic policy process and the international environment, and can not therefore be regarded as a **package**. The state strategy perspective assumes that policies can be reduced to a cost/benefit **calculation**. There is always a strategy for any type of change in the international environment. The policy diffusion perspective paints a more complex picture of the links between the national policy processes and the so-called external international environment, which means that it is not possible to catch the European integration process in a simple **calculation**. In the state strategy perspective there are important national policy variations. It was obvious that there were national differences concerning several European countries' RTD policies. However, the policy diffusion perspective questions this national policy profile and the possibility to differentiate between **French, German, British and Swedish** RTD policy.

How then can a study of the RTD issue area be relevant for other policy areas? It is of course very difficult to generalise from one sector study. There is also a general view among students of European integration that every policy area has its own specific components. 'It remains our contention that to generalise about the policy process demands sustainable analysis across a variety of issue areas' (Wallace, 1996:5). RTD issues consist of several policy areas, but they are closely interlinked. Research and technological development concerns domestic as well as foreign and security policies.

Information technology is not only about R & D but also about economic growth, industrial competitiveness, dependency and vulnerability and other security aspects. RTD is thus a highly internationalised policy area. Nevertheless, this study has resulted in the preliminary conclusion that the process of diffusion is a useful analytical approach which can be further elaborated and refined, both theoretically and empirically. What has been presented here is an approach for studying European politics. To develop the approach both theoretical and methodological issues, not least regarding the problems of evidence, need to be addressed further. Ideas do not float freely; some ideas survive and others do not (Kingdon 1984).

This limited study shows that there is an important task in examining the OECD's role in other policy areas and how the OECD's work can be linked to the EU. Attention should thus not only be concentrated on the EU commission and other EU institutions, but also on the OECD and its activities and policy-making. The dynamics behind the European integration process can be found in a complex interaction between the national, regional and international levels. In what ways can the European integration process be linked to the international political and economical processes? The ongoing processes of internationalisation and regionalisation in the political-economical area are complementary processes rather than competitive processes (Katzenstein 1996). The theoretical and empirical awareness of the close interactions and entanglement between the national and EU levels must be supplemented with a third political level, that of international political and economic processes.

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NOTES

¹ For policy diffusion between U.S states see Walker 1969; Caldeira 1985; Glick & Hays 1991 and Jones 1991. See also Leichter 1983 and Muniak 1985 for studies of policy diffusion between the U.S and Europe and within the Commonwealth. A bilateral policy diffusion between Finland and Sweden has been studied by Karvonen (1981).

¹ Strategy is here defined as a long-term and comprehensive political direction which entails various decisions and policies (Mörth 1996b).

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