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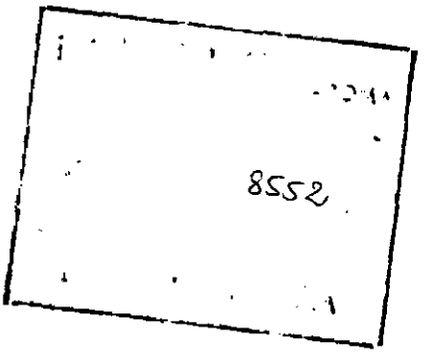

THE NATURE OF THE WEST EUROPEAN SYSTEM
AND THE DYNAMICS OF INTEGRATION
Stiftung Wissenschaft und Politik
<Ebenhausen?>, 29/IX - 1/X/1988

1. "Agenda"
2. "Tentative list of participants"
3. "Is there a West European system? alternative moldels of West European interaction"/ William Wallace
4. "Technological cooperation and competition: public and private interaction in the Western European context"/ Margaret Sharp and William Walker

STIFTUNG WISSENSCHAFT UND POLITIK (SWP)

FORSCHUNGSINSTITUT FÜR INTERNATIONALE POLITIK UND SICHERHEIT

Agenda

THE NATURE OF THE WEST EUROPEAN SYSTEM AND THE DYNAMICS OF INTEGRATION

September 29 to October 1, 1988

Thursay
September 29

Upon Arrival	*Please check in:* *Conference Secretariat,* *SWP Conference Center*

AFTERNOON SESSION:
CONCEPTUAL APPROACHES
Chair: Werner Link

17:00 - 20:00	1. Is There a West European System? Alternative Models of West European Interaction **William Wallace,** RIIA, London 2. Network Analysis as an Approach to West European Interaction **Albert Bressand,** Promethee, Paris Commentator: **Wolfgang Wessels,** IEP, Bonn
20:15	*Buffet Supper* *Conference Center*
21:30	*Transportation to Hotel Dorint*

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Friday
September 30

08:30	*Pick Up at Hotel Dorint*

MORNING SESSION:
MAPPING WEST EUROPEAN INTERACTION: SECTORAL APPROACHES
Chair: Helen Wallace

09:00 - 11.00	3. Patterns of Trade and Industrial Production **Per Wijkman,** EFTA Secretariat
11:00 - 11:30	*Coffee Break*
11:30 - 13:00	4. Monetary Management and Finacial Flows **Hans-Eckhard Scharrer,** HWWA, Hamburg
13:15 - 14:15	*Luncheon* *Conference Center*

AFTERNOON SESSION:
SECTORAL APPROACHES
continued
Chair: Philippe de Schoutheete

14:15 - 15:45	5. Technological Cooperation and Competition: Public and Private Interaction within the West European Context **William Walker,** SPRU, Sussex
15:45 - 16:15	*Coffee Break*
16:15 - 18:00	6. Security Dimension: West Europe in the Context of the Atlantic Alliance and the East-West Confrontation **Reinhardt Rummel and Peter Schmidt,** SWP, Ebenhausen
18:00	*Transportation to Hotel Dorint*
20:00	*Reception and Dinner* *"König Ludwig Stüberl", Hotel Dorint*

Saturday
October 1

08:30	*Check Out and Pick Up at Hotel Dorint*

MORNING SESSION:
EUROPEAN POLICY PROCESS
Chair: Reinhardt Rummel

09:00 - 11:00	7. The Community and its Sub-Systems **Philippe de Schoutheete,** Belgian Permanent Representative to the EC 9. Authority, Bargaining and Policy-Making in West Europe **Helen Wallace,** RIIA, London
11:00 - 11:30	*Coffee Break*
11:30 - 12:30	Priorities for Future Study - Concluding Remarks and Open Discussion **William Wallace**
12:30	*Luncheon* *Conference Center* *followed by departures to Munich airport or station*

Tentative List of Participants

(as of August 24, 1988)

The Nature of the West European System and the Dynamics of Integration

September 29 - October 1, 1988

Rafael L. Bardaji, Grupo de Estudios Estrageicos, Madrid

Mark Blacksall, Dept.of Geography, University of Exeter, Exeter *

Gianni Bonvicini, Istituto Affari Internazionali, Rome *

Martin Brand, University of Leiden, Leiden

Albert Bressand, Promethee, Paris *

François Chesnais, OECD, Paris *

Christian Deubner, Friedrich Ebert Foundation, Paris *

Peter Flora, University of Mannheim, Mannheim

Alexis Jacquemin, Commission of the EC, Brussels

Peter Katzenstein, Cornell University, Ithaca

Werner Link, SWP, Ebenhausen *

Alan Milward, London School of Economics, London *

Mario Monti, Universita Commerciale Luigi Bocconi, Milan

Dieter Ruloff, University of Zurich, Zurich

Reinhardt Rummel, SWP, Ebenhausen *

Hans-Eckhart Scharrer, Hamburger Weltwirtschaftsarchiv (HWWA), Hamburg *

Peter Schmidt, SWP, Ebenhausen *

Philippe de Schoutheete, Permanent Representative of Belgium to the EC, Brussels *

Margaret Sharp or William Walker, Sussex University, Brighton

Christian Thune, University of Copenhagen, Copenhagen *

Jérome Vignon, Secrétariat Général, Commission des Communautes Européennes, Brussels *

William Walker, Sussex University, Brighton *

Helen Wallace, RIIA, London *

William Wallace, RIIA, London *

Wolfgang Wessels, Institut für Europäische Politik, Bonn *

Per Wijkman, Association Européenne de Libre-Echange, Geneva *

Bruno de Witt, European University Institute, Florence *

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IS THERE A WEST EUROPEAN SYSTEM? ALTERNATIVE MODELS OF WEST EUROPEAN INTERACTION

William Wallace

What is 'Western Europe'? Those policy-makers and business strategists in Japan and the United States who talk of an emerging tripolar world see Western Europe as an integrated economic bloc: a more highly integrated European Community, post-1992, with defined external boundaries and clear central authority. Those (in Europe and in the USA) who talk in security terms of the 'European pillar' within the Atlantic Alliance often reduce its boundaries to the seven member-states of Western European Union - though the wider memberships of the Eurogroup and the European Independent Programme Group offer alternative bases for definition. 'Democratic' Western Europe, at its broadest, may be institutionally defined through membership of the Council of Europe.

It is self-evident that 'the European economy' is not precisely co-terminous with the European Community. The pull of the strongest European economies extends well beyond the boundaries of the EC; and it is open to argument whether Switzerland should be regarded as part of the core of the European economy rather than of its fringe. 'European' federations of political parties have come to focus more around the EC's institutional structure since the advent of a directly-elected European Parliament. But almost all the political 'parties' extend beyond the EC itself. Rhetorical assertions about the existence of a 'European identity' have survived successive changes in the definition of that identity as new members have joined the Community. Some countries around the edges of Western Europe now wish to assert their European identity by applying to join the EC: Turkey, Malta, potentially Cyprus. Others, more secure both economically and politically, are so far more reluctant to apply. But current debates within Sweden, Norway and Austria raise underlying issues about the changing shape and structure of Western Europe, and about the appropriate links to be drawn between informal processes of economic and social interaction and formal processes of political (and security) integration. Similar questions are posed for the present member governments of the European Community in responding to these potential applicants and to their Mediterranean petitioners.

The aim of this project is to provide a rather clearer definition of Western Europe - as a region, as an economic, political, social and security system, to feed into and inform the policy debate about the future development and political organisation of West European cooperation. This is a field where almost all terms are ideologically loaded: 'cooperation', 'integration', 'union', 'community', even 'Europe' itself. Empirical investigation of trends, of patterns and of intensities of interaction, it is hoped, may provide a foundation of common ground for the contested interpretations and presumptions which shape the debate on European policies in national capitals and in Brussels. It is however impossible to select or organise empirical data without an initial framework, or set of assumptions. In order to make progress, a number of initial assumptions and hypotheses are therefore set out below.

Assumptions

1) There is no single defining characteristic for Western Europe, and no drawing of any core structure and set of boundaries which could fit all patterns of interaction. This is not a new problem. Even in the optimistic years of the 1960s, when the Community of Six appeared to observers to define core Western Europe, when trade among the EEC-6 was expanding much more rapidly than trade between the member states and third countries, the EFTA-7 formed a closely interconnected outer group. Association Agreements with Greece and Turkey hinted at further enlargement; WEU, ELDO and ESRO and other intergovernmental organisations, brought together different groupings. Those authors who happily compared the empire of Charlemagne to the 'Europe' of the Six assumed the logic of a combination which two very different sets of historical circumstances had brought about. It was evident in 1965, as in 813, that pressures from inside and outside this combination would reshape it soon.

2) It will be useful to describe characteristic patterns of interaction across a wide range of distinctive fields, from financial flows and investment patterns to travel and intergovernmental consultation. Statistics for some of these are more readily available, and more reliable, than others. Necessarily, therefore, some functional maps of Western Europe as a region will be more impressionistic than accurate. But in social science the elements that are most difficult to measure are often among the most significant: changing patterns of cultural affinity or identity, for example. The overlap of different forms of interaction will in itself provide an indication of the underlying coherence (or diversity) of Western Europe as a region

3) Systems are commonly defined in social science as stable patterns of interaction. If we accept the tighter Eastonian definition of a political 'system', then we must also look for regular patterns of interaction within that system, reflecting the existence of implicit or explicit rules, of a structure of authority which makes rules and allocates resources. It

has recognisable boundaries, defined as observable discontinuities in patterns of interaction, and reacts across these boundaries with its environment, feeding back to its rule-making authority informaton which enables it to adjust to changes in that environment. The mere existence of intense interaction does not in itself constitute a 'system': a degree of stability, of autonomy from broader or interconnecting patterns, of implicit rules and mechanisms for shaping them, is necessary.

4) International interaction, measured across a wide range of indicators, is undergoing rapid change. 20 years ago, for example, there were 8 million journeys out of Britain each year (and 8 million in); in 1987 the figure was 40 million. Increases in trade, in financial flows, in multinational production, in ministerial travel and official meetings, have been as remarkable. Much of this has been directed towards other West European countries; but the rate of increase in interactions between West European states and countries outside Western Europe has also been remarkable, and has in some instances been more rapid. A study on foreign direct investment flows under way at Chatham House, for example, indicates that from the early 1960s to the beginning of the 1970s broadly similar patterns are observable in Britain, France and Federal Germany, concentrating more on the West European region; but that during the 1970s in all three countries new foreign investment flowed more strongly out of Europe, to North America and the rest of the world. We therefore need to examine trends as far as the data makes possible.

5) The forces which make for increasing international interaction - or integration, which is here perhaps a less loaded term than it has become within the European debate - are partly, even primarily, informal. The existence of formal structures - GATT, the IMF, the BIS, the ICAO, etc. - sets the context and provides a framework of rules: but the impetus comes from changes in market behaviour, improvements in techniques of management and production, advances in technology, and above all improvements in both physical and electronic communication. The formal structures which exist within the West European region, above all the European Community (and the Atlantic Alliance and the integrated structures of NATO, which are most intense in their impact within Western Europe) are much stronger than at the global level. But it should be taken as a matter for investigation whether the formal structures of rule-based organisations have shaped patterns of interaction or have responded to them; I assume that the relationship between formal integrative structures and informal processes of integration will prove to differ significantly from area to area.

6) This project would not be necessary if we were to assume that formal structures and informal processes coincided. It is precisely because we assume that they do not coincide that we wish to investigate current patterns and trends. The enlargement of the European Community has brought in some states which are peripheral to many patterns of European interaction, and left outside some others which are close to its core. It is assumed at the outset of this study that the 'core' area for much observable West European interaction is Federal Germany and the Rhine valley. But no assumptions are made about the

outer extent of such interactions, or where the most easily observable boundaries lie. Like medieval empires, what we may observe is a 'core domain' at the the centre, close dependencies around its edge, outer 'Marks' or 'Marches', with some territories which in effect pay tribute to different distant lords without clearly belonging to one imperial system or another. We should not, therefore, assume that a distinctive West European region is to be found unless and until investigation demonstrates its existence. The interaction between North America and Western Europe is of obvious interest, demonstrating how far Western Europe forms part of a wider Atlantic and global system; the involvement of the DDR, and to a lesser extent of Hungary, is also of active interest; and the dependent relations of Mediterranean countries with the rest of Western Europe should where possible be described.

Questions for Further Investigation

These follow, I hope fairly self-evidently, from the starting assumptions. They include:

1) Is interaction among West European countries distinctive, or does it represent a subset of a wider system?

2) What are the trends? Has the West European focus become more or less intense in the past five to ten years? Have the boundaries shifted as peripheral countries have been drawn into the network or as interaction among the central countries has intensified more rapidly?

3) Can we identify a 'core' area where interactions are clearly most intense? Can we identify relatively clear boundaries? Are there peripheral areas which form an outer tier?

4) What are the distinctive characteristics of particular types of interaction? How far are they driven by informal developments, and largely unaffected by formal boundaries and legal or institutional discontinuities, as against dependence upon formal structures (inter-governmental agreements, common legal frameworks, etc.)?

5) What is the balance of interactions in each particular area? Do we observe particular directional flows, to the 'advantage' or 'disadvantage' of some areas against others?

Alternative models - the search for an analytical context

This is intended to be primarily a ground-clearing exercise. But eclecticism is not enough; we need to consider alternative conceptual frameworks to test the evicence against, even if we are successful in refusing to force the evidence into any single predetermined framework.

The analytical framework from which I start is drawn most directly from that of Karl Deutsch, whose pioneering work on The Nerves of Government and on Political Community in the North Atlantic Area thirty years ago sought to examine and explain 'community' by examining flows of communication, people and goods. Deutsch's work, like that of the integration theorists, has been criticised for its failure to distinguish between interaction as such, interdependence and integration. It is not self-evident that high levels of interaction lead through interdependence to integration in all cases; they may well provoke counter moves to resist integration. Preoccupation with national autonomy and national identity throughout Western Europe, disappointing the hopes of the integration theorists that higher levels of interaction would lead to the emergence of a higher European identity, demonstrates the limitations of this approach. In Deutsch's own terms, however, the West European area has long since become a security community in which war is unthinkable between the different member states, borders are relatively open, and the different member states commonly differentiate between each others citizens and those from third countries - although the case with companies and banks, as well as with military forces, is much less clear. Deutsch's concept of 'community' assumed an underlying shift of attitudes which followed from closer acquaintance and recognition of inter-dependence. But his example of the US-Canada open border demonstrates that the creation of a security community does not in itself necessarily lead to formal integration.

The collapse of integration theory has left both academic observers and political participants bereft of a convenient framework for describing European trends, or relating them to preferred objectives. The underlying problem for integration theory was in tracing the links between political, economic and social processes. Some put great faith in the capacity of economic interaction to affect social attitudes, to attract political interests, and so to transfer loyalties. Others, both in the high days of the post-war debate on European unity and in the disillusioned atmosphere of the mid-1970s, saw the creation of formal political structures as the key to providing a stable framework for economic interaction, intergovernmental cooperation, and popular identity. This was the underlying theme of the Marjolin report; it is echoed in the Padoa-Schioppa report, which argues that the benefits of economic interdependence are subject to disruption and potential breakdown unless there is an established institutional framework to manage instability and to ensure that the benefits are distributed relatively evenly. The conceptual language of the Padoa-Schioppa report is itself of interest: "The cement of a political community is provided by indivisible public goods such as 'defence' and 'security'. The cement of an economic community inevitably lies in the economic benefits it confers upon its members."

The first task of a social scientist is to examine the concepts used by practical men and policy makers, to critically examine them, define them more precisely, and relate them to empirically-observed trends. In starting to rebuild acceptable models of West European interaction, we therefore need to start with the range of concepts in current use. The loosest is that in popular use among French politicians: a 'European space'. It is taken from geo-politics, is used both as a description and a prescription, but has little explanatory (or prescriptive) power. The concepts

of 'political community' and 'economic community' are less imprecise, but do not easily lend themselves to precise definition. The concept of Western Europe as a 'network' provides a somewhat more precise and researchable framework, on which Albert Bressand will be presenting a parallel paper.

The concept of a 'system' is however my preferred model. It enables us to focus on the links between formal and informal aspects of West European interaction; to ask questions about the stability or instability of relations within the system, and thus of the system itself; it enables us to ask about the autonomy of the system within its environment. I anticipate that we will find ourselves able to describe a loosely identifiable West European system, with a relatively clear 'core', with patterns of rule-making and rule-enforcement which vary very considerably from one area to another, and with boundaries which are imprecise and highly variable.

The questions for policy follow on from there. Ought policy-makers to aim to adapt formal structures to fit changing patterns of informal interaction? Should it be the aim of the European Community to expand its membership, in other words, to include all those countries whose trade and financial relations are dominated by the pull of Western Europe and whose political and social structures fit the criteria for open access to a single European market? What are the appropriate links between political, security, economic and social interaction? What is the appropriate balance of benefits and obligations among those who participate within this system, thus broadly defined?

These broader political questions are ones which I hope to throw back to the policy-makers at the end of the project, on the basis of the evidence we have assembled. I hope also to have reached a tighter definition of the distinctions between 'interaction', 'interdependence', and 'integration', undeterred by the wrecks of so many previous attempts. This is a study intended to pose more precise questions rather than to provide new answers. There may well be no precise answer to be found to the relationship between political, economic and social integration; but the politicians of Western Europe, as well as the social scientists, are all agreed that there is a relationship among these, that it carries political and economic consequences, and that the political bargaining which characterises the European political system will continue to revolve around these contested issues for many years more.

TECHNOLOGICAL COOPERATION AND COMPETITION: PUBLIC AND PRIVATE INTERACTION IN THE WESTERN EUROPEAN CONTEXT

Paper for the Ebenhausen Workshop September 29 - October 1

Margaret Sharp and William Walker
Science Policy Research Unit, University of Sussex.

The purpose of this paper is to provide some preliminary thoughts on the issues of technology and technological collaboration, their impact on industrial structure and their role within the framework of Western European integration. Its aim is in no sense to provide definitive answers, but to raise questions which we hope will provide food for a fertile discussion.

What's happening to technology?

By way of introduction it is worth setting out what we see as the main features and consequences of current technological developments. In line with many of our colleagues at the Science Policy Research Unit, we see current developments as part of a wider revolution which is taking place and which, like the industrial revolution of the late eighteenth century, or the advent of electricity in the early part of the twentieth century, will have major repercussions on products, processes, working methods and lifestyles. The pace of change has not been even. In the past we have experienced periods of intense technological activity and change which have then slowed to more manageable proportions. Today it would seem we are in the middle of one such period of intense activity. Technology is reducing costs, expanding the range of goods and services available, and making obsolete older products, equipment and skills. Moreover, today's new technologies - microelectronics, information technology, automation, biotechnology, new materials -are pervasive. All industries are affected, leading to the reinvigoration of the old as well as the development of the new.

There are three implications of note:

(i) the growth opportunities are very substantial as a result both of cost reduction and the opening of new markets. Given sound economic management, the inflationary threat of 1970s also seems limited, partly because there is an inherent bias in the new technologies towards savings in energy, raw materials and labour

which relieves pressures on scarce resources;

(ii) the technological discontinuity implicit in this scenario and the need for wholesale renewal of equipment and skills destroys established positions of power and offers opportunities for new entrants. This leads to an intense jockeying for position in the new power structure which will eventually emerge, and in turn therefore a period of intense competition between old and new players;

(iii) the redistributional effects are also strong and surprisingly quick to take effect. New inequalities are being created as the old disappear. Very rapid changes are occurring in the balance of industrial power (e.g. the emergence of Japan and the growing strength of South East Asia), and the repercussions of this are being felt between blocs; between nations; within nations; between corporations and within corporations.

Recent trends towards economic liberalism are in part a response and in part a symptom of these changes. They reflect the difficulty many countries have in assimilating new technologies into old industrial structures and need to open up ossified market structures to new entrants. Implicitly they assume that the gains in terms of growth and new activity will outweigh the distributional costs. Within Europe, for example, it is assumed (and hoped) that the benefits will 'trickle down' to the weaker members and regions of the Community even if the benefits accrue to the stronger actors. It remains to be seen whether the present phase of economic liberalism will survive tensions caused by unequal development, especially if growth rates are not sustained.

Finally, it is worth noting that the revolution involves more than just technology - it involves major changes in institutions and political relations. As on previous occasions, three phases can be identified: the first when the new technologies emerge but do not diffuse or combine thoroughly; the second when there is widespread diffusion accompanied by major institutional innovation both to help assimilate new technologies and to mitigate their negative distributional effects; and the third mature phase when there is considerable growth but along established trajectories. We appear to be in the second phase. The institutional changes are occurring at various levels:

(i) in production and distribution, with new approaches, particularly following the Japanese, in the organisation of productive activities e.g just-in-time techniques, quality circles;

(ii) in the very processes of technological change as new techniques cut across established boundaries of production organisation e.g. CADCAM integrates design with production; biotechnology requires project teams which combine chemists and biologists with information scientists and engineers;

(iii) in intra- and inter-industry structures as new technologies require industries to redefine their core activities and diversify outside traditional areas;

(iv) in regulatory structures with new industries requiring new structures (e.g. on use of genetic engineering) and because technology is making nonsense of old regulatory structures.

Competition and Collaboration

It is surprising on the face of it to find collaboration emerging as so strong a theme at a time when competition is so intense. But collaboration should perhaps be seen as the mirror image of competition - it relieves the pressures of competition. The question which we need to be asking is whether the collaboration we are observing today is more than this temporary relief pressure valve. Whether it is in fact an institutional change which is a necessary adaptation to the new technologies.

Within the context of economic integration, we can see integration currently proceeding on two planes. Market driven integration underlies the process of globalisation in which national and regional oligopolies are being replaced by global oligopolies in a number of key industrial sectors. Technology, which has raised R&D entry costs and put a premium on cumulatively acquired experience and distribution networks, has helped to fuel this process and in doing so provided an alternative focus for integration. But in breaking down established regulatory barriers and opening the way to new entry, technology has also added to the intensity of competition at the global level as aspiring oligopolists jockey for position with one another.

Collaboration is an alternative form of integration. The impetus for collaboration is coming from two different sources - private and public. Firms are taking the initiative and arranging collaborative deals between

themselves, and they are being urged, encouraged and subsidised to do so by governments. The public initiative has followed the private initiative although part of its remit is to encourage firms so far outside the collaborative network to follow suit. And whereas the private initiatives usually involved an element of market sharing, the public initiatives focussed almost exclusively upon technology.

Underlying the public programmes is an implicit assumption that technological collaboration is a 'good thing' (i.e. that there are externalities which benefit society as a whole rather than just the individual firm). Probing further these public good elements they would seem to be:

(i) that there are benefits to be gained from programmes of collaborative pre-competitive research of the type pioneered by MITI in its VLSI (very large scale integration programme) of the mid-1970s in terms both of accelerating the progress of science/technology and of diffusion amongst participants;

(ii) that while private collaborations will follow profitable opportunity, this may lead in the longer term to undue technological dependence upon one country or group of countries which could have geo-political implications. Public sector participation may therefore, as with the EC and EUREKA programmes, be a deliberate attempt to bias the trend of collaboration in a particular geographical directions;

(iii) moreover, for a number of reasons (associated with traditional economic links, old competitors etc) firms may neglect opportunities for collaboration closer to home even though these might actually make economic sense. Where there are worries about technological dependence it is worth encouraging firms at least to consider alternatives.

The European programmes contain all three elements. The EC programmes such as ESPRIT and BRITE are co-ordinated programmes of pre-competitive R&D aimed both at up-grading Europe's capabilities in important areas of new technology and at countering the tendency of European firms to form alliances with US and/or Japanese firms. EUREKA was originally established as a bid to counter the pull of the US Star Wars programme: although it tends to concentrate on competitive R&D and has no central funding, it is explicitly about encouraging intra-European collaboration. Both

programmes have, however, provided an important channel for cooperation among European firms.

Collaboration and Integration

Collaboration can thus be seen as a route to integration. It is a route that is, from the firm's point of view, more constrained than the competitive route of expansion and takeover, but it can be less costly both to the firm and in its distributional consequences. And there is no doubt that the European programmes, by bringing European firms together, are promoting European integration.

An illustration of this is the degree to which ESPRIT, the EC's information technology collaborative programme, has created an important constituency of firms pressing for the completion of the internal market. First the programme provided a forum for creating convergent expectations, and when Europe's large electronics firms put their heads together they rapidly came to realise that competition would get tougher, that tariff and non-tariff barriers could provide only temporary protection given free mobility of capital, and that national champions shielded from the rigours of the market by public purchasing were in danger of losing touch with market developments. To compete successfully, even within Europe, these companies came to realise that there was no alternative but to set their sights on global markets and global competitiveness. Once they had discarded their national champion role, it was logical that they begin to look to Europe as their home base and to see the divergent European standards in, for example, data transmission, as major hindrances to effective operation in these markets. Hence their commitment to the ESPRIT programmes aimed at establishing Europe wide standards for IT products. A number of these have been outstandingly successful. The Communications Network for Manufacturing Applications(CNMA) has created software which allows differnet types of robots to work together in the automated factory; and a similar range of software has been developed for office systems (Office Document Architecture) which enables documents to be passed form one computer to another without loss of formatting. It is working together to create these standards and recognising the value to their own operations that has created in companies such as Siemens, Bull, ICL and Olivetti a constituency which recognises and promotes the virttues of the single European Act.

Collaboration - institutional change or temporary trend?

What lies behind the moves for collaboration? There are a number of features in new technologies which favour such moves:

(i) **The rise of pre-competitive R&D** More than on any previous occasion (except perhaps with nuclear power) new technologies are pushing back into the science base and making old distinctions between basic and applied research inapplicable, with the concomitant disappearance of the neat division between government-sponsored basic research and firm-sponsored applied research. Hence the new emphasis on pre-competitive research - the development of tools and techniques of research of general applicability and which all working in the area will need to use. Firms and universities alike can contribute to their development. Collaboration makes sense today in a way that it did not in the past.

(ii) **Cost factors** New technologies are by definition 'technology intensive', which means the employment and equipment of a highly skilled scientific workforce. The more complex the new technology the higher the costs involved. The R&D costs of a new generation of chips is now in the region of $300m; of a new generation of telecommunications switchgear, $1000million. Such costs are out of reach of all but the largest firms.

(iii) **Added to the cost factors is greater uncertainty.** Firms are confronted not only by the unknowns of launching new products on new markets - will they work? will they sell? - but also with uncertainties about life cycles - how quickly will a competitor introduce an alternative which will make the product obsolescent? In these circumstances, sharing costs and risks makes sense.

(iv) **Convergence** The 'convergence' of new technologies means that project teams frequently need to draw upon skills not previously used within the firm or to access new skills which are not readily accessible. It takes time to build up such project teams, - to identify people who would fit happily into the corporate framework. Collaboration offers a quick and easy way of accessing these skills, often with the minimum of commitment. It is a matter of matching complementary assets. Sometimes these are found in large and sometimes in small firms.

Whether these factors underlie a wholesale change in institutions which is here to stay, or merely a temporary phase of development is a moot point. On the one hand collaboration can be seen as the response to insecurity - the uncertainty of where technology is taking us combined with intense competition in international markets. It is interesting to observe that both the 1880s and the 1930s brought a similar phase of collaboration, in those days organised cartels and trusts. Anti-trust laws and commitments under the GATT limit the extent to which today's collaboration can explicitly deal with market sharing. But we have seen a considerable relaxation in the US anti-trust stance in order to accommodate collaborations such as the Semiconductor Industry Association(SIA) and many cynics regard the European schemes as under cover routes to market sharing.

There are reasons other than purely cynical ones for thinking that collaboration may be temporary. If we are right in suggesting that we are currently going through the second phase of the 'revolution' in which there is still considerable turbulence from the emergence and rapid diffusion of new technologies, and that this is followed by a third, mature phase of growth along established trajectories, then two features of the four identified above are likely to prove temporary rather than permanent. Uncertainty will lessen as new technologies become tried and tested technologies. This in turn destroys much of the cost argument - firms such as Siemens are not really inhibited from R&D costs of $1000million if the markets are safe and long lasting. Likewise the scarcity factor fades in importance. Skills which were difficult to access become readily available skills, and firms have had time to recruit and assimilate new team members and internalise the economic rent from any scarcity value that remains. In the longer run, collaborations, whether with large or small firms, may well lead to takeover - a staging post on the way to greater concentration. Witness, for example, how Thomson collaborated through Telefunken with Thorn-EMI before taking over the Thorn Ferguson TV plant. Likewise, Honda is seen as the 'obvious' parent for the Rover Group as the global oligopoly sorts itself out in motor vehicles.

Yet the case for collaboration representing a longer term, institutional change is also there. It fits the new 'Japanese' model of industrial organisation - collaborate in R&D but compete hard in product markets. It recognises the increasing integration of activities which seems to be a mark of new technologies. It provides a framework for voluntary regulation

mark of new technologies. It provides a framework for voluntary regulation (e.g. over standards) when statutory regulations have been abandonned. It also meets what might be called the Airbus constraints, when for reasons of defence and national security governments wish to maintain independent production capabilities yet need some mechanism to enable their firms to compete in international markets. Indeed, in defence sectors, collaboration seems likely to become increasingly important. Elsewhere the key issue seems likely to be the pace of change. If this continues to accelerate, then collaboration seems likely to become a way of life.

The Agenda for Research

Technology is one of the core areas within the wider project on the Dynamics of Integration in Western Europe. In this paper we have discussed our perceptions of current developments in technology and the respective roles being played by competition and cooperation (collaboration) within that scenario. We have given some consideration to the issues of integration, and indicated that we see technology currently playing an integrative role within Western Europe. It seems to us that jointly the 'modules' on technology and industrial structure need:

(i) to map out the changes that are taking place in Western European industrial structures and the degree of integration (between national industrial structures) that is already taking place,

(ii) to differentiate between formal integration, where one or two firms have come to dominate one sector (as, for example, Electrolux has come to dominate the domestic appliance sector) and the informal integration achieved by collaborative agreements;

(iii) to identify the degree to which these changes have been driven directly or indirectly by technology, and/or the extent to which technology is in fact pulling in other directions, for example, towards closer relationships with US and Japanese rather than European firms.

In the light of this analysis we need to consider how much further the process of integration is likely to go, the role within that framework for collaboration and the extent to which governments, both national and at a European level, should actively promote collaboration either as a stepping stone towards a more cohesive industrial structure, or as a means of integrating markets such as that for military equipment where nation states are unlikely to accept full industrial integration. Finally, we need to

consider the likely outcomes of these processes and the extent to which Community institutions will be suited to the demands to be made upon them. An obvious example is anti-trust, where the processes of integration seem likely to create large firms operating in the global market place with little accountability or control.