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# Industrial Innovation and Foreign Trade in the 80's

by Klaus W. Grewlich, Brussels\*

**The 1980's will be decisive for Europe. But Europe, to use Valéry's phrase, seems to be entering the future backwards. Not a few Europeans are beginning to worry about their political, economic and cultural future. Poor in raw materials and energy, burdened with a considerable downward trend in the economy and rising unemployment, confronted with a shift in the international division of labour, politically fragmented and only to a limited extent capable of action, Europe seems to many to be heading for "the decline and fall" which was forecast more than 50 years ago. But anxiety can be a creative force, provided we have the courage to analyse its causes and to transform it into tangible proposals for action.<sup>1</sup>**

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For an allegedly "decadent society" Europe has in the past shown an extraordinary vitality. After the United States, the European Community is the world's most powerful industrial unit. The combined Gross National Product of the Community is somewhat higher than that of the United States. With 260 million citizens the European Community exceeds by 30 million the population of the United States and by 150 million that of Japan. The community is the world's major donor of development aid. Were this Europe to speak with one voice – it and its Third World treaty partners – at the United Nations and in other forums of international economic conference diplomacy, it would enjoy a majority. True, complete agreement is an illusion, but the example set by the two Lomé Conventions proves that Europe enjoys greater political repute than it credits itself with. Besides, the European model of a combination of States without a hegemonial power in which smaller countries retain an opportunity to play their part is tailor-made to suit the requirements of today's interdependent world.

It is true that in the technological sector Europe's position is no longer undisputed. But the European potential is still impressive. There are roughly 400,000 research scientists and engineers in the member countries of the European Community, compared to 370,000 in Japan and 670,000 in the US.

Aggregate research and development spending, both public and private, in Europe currently amount to roughly 2 % of the combined GNP of the EC-countries. Comparable ratios of the R & D expenditure to GNP are to be found in Japan (1.9 %) and the United States (2.3 %).

European scientific achievements in certain sectors of basic research are among the world's best. European successes in nuclear physics, especially fusion research, are undisputed. Accomplishments in chemistry, pharmaceutical research, mechanical engineering and plant construction are in part still impressive, too. It may be said that in absolute terms expenditure on civilian research and development projects in the United States and the EC is roughly comparable. In terms of public expenditure EC research and development is about twice as high as in Japan.<sup>2</sup>

Yet both the United States and Japan are clearly in the lead when it comes to industrial innovation and technological utilisation of research findings. Why is this the case? There is no lack of intelligence and talent in Europe, which enjoys the additional advantage of an organic variety of cultures, which can promote creative forces. On the other hand the Europeans have a decisive disadvantage. In the current European Community there are seven languages and ten different research and technology structures and policies. What is more, within the EC there are also differences in educational policy, the extent of subsidies extended to top-flight research and the mobility of research staff. Variety may indeed foster performance and creativity,

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<sup>1</sup> Commission of the European Communities (FAST-team): *The Old World and the New Technologies*, Brussels 1981; Peter Hall: *Europe 2000*, London 1977; Klaus Grewlich: *Technology – The Basis of European Security*, in: *Außenpolitik – German Foreign Affairs Review*, No. 3, 1981, p. 211.

<sup>2</sup> See Günter Schuster: *Prospects for a European Scientific and Technological Policy*, Council of Europe, 5th Parliamentary and Scientific Conference, Helsinki, June 3-5, 1981. It is recognized that such statistics on investment in R & D measure input rather than results. Current attempts to develop "scientific and technological indicators" (counting patents, analysing the production and diffusion of innovations, correlating R & D efforts with productivity growth) are still in their infancy; see Jean-Jacques Salomon: *Technical Change and Economic Policy*, OECD-Observer No. 104, 1980, p. 16 ff.

<sup>3</sup> See André Danzin: *Science and the second renaissance of Europe*, New York, Paris 1979; Commission of the European Communities (Report of the Study Group on the New Characteristics of Socio-economic Development): *A blueprint for Europe*, Brussels 1977.

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\* EC-Commission; this contribution is based on a speech by the author in the framework of the Annual Briefing of the Management Centre Europe, Brussels. The views expressed and the facts stated are the sole responsibility of the author.

but only provided it is coupled with an optimum of European coordination and concentration in the fields of R & D, industrial policy and innovation.<sup>3</sup>

Industrial policy and foreign trade are in a sense two sides of the same coin. An industry under heavy competitive pressure will be tempted to ask for protection through the medium of trade policy. Many efforts in this direction were in fact made in sensitive areas during recent years. This is true for the steel and textile industries but also for certain sectors particularly affected by Japanese export industries – automobiles, machine tools and entertainment electronics. So far the Community has resorted to defensive trade policy measures only in specific cases, very selectively, and only for limited periods in conformity with GATT rules.

The EC accounts for nearly half the exports of the industrialized countries, with trading between the EC-countries representing 51 % of the EC's total trade volume. The EC-countries have a mean ratio of exports to GDP of 25 % – or 12 % if one deducts trade among themselves – compared to 7 % in the case of the USA and 12 % for Japan. The EC clearly constitutes the crossroads of international trade. It sells and buys practically three times as much as the US, four times more than Japan and nine times more than the USSR.<sup>4</sup>

However, this central role played by the EC in world trade and the dependence of Europe on the rest of the world for its energy supplies and for non-energy raw materials is a source of vulnerability, in particular in times of crisis. The EC is roughly 55 % dependent on imported energy. If oil supplies from the Middle East were, say, halved the estimated result could be an average 15 % decline in GNP per annum in EC-member countries. In commodities Europe's average dependence on imports amounts to 75 %. The exact position varies by country and commodity.

The shift in the international division of labour produces disintegrating forces for the EC. This change has been caused largely by the fact that Third World countries, in particular the so-called "Newly Industrialized Countries" have, because of their more favourable labour costs, increasingly attracted the production of standardized mass items, such as synthetic fibres, textiles, leather goods, sports goods, games and toys. The Third World countries are keen to gain ground in European export markets, as well as in European domestic markets. They are hard on Europe's heels in much the same way as Europe was hard on America's heels in the 60's and 70's.

At the same time, European countries are running the risk of being permanently outrivalled in many know-how intensive product lines. In these advanced technology sectors – such as photographic equipment, tool-making equipment, motorcars, radio and television sets, clocks and watches –, where Europe has been able to ensure high real earnings to offset losses in classical markets, the European countries have come up against the Japanese challenge and the growing technological potential of others that have followed in Japan's footsteps. As a result of these developments Europe's economic security could face increasing problems.<sup>5</sup>

### Relations with the US

With the United States the Community had, and to some extent still has, a certain number of difficulties<sup>6</sup>: in relation to the currently high interest rates, which can only come down if the US inflation rate is reduced, to export credits, steel, textiles and petro-chemicals, and to some extent high technology. But despite these problems and certain misunderstandings with the new US Administration the trade problems at present do not seem likely to erupt into a major clash. The Community remains the largest market for US exports. During 1980, while the overall trade deficit of the US improved slightly, the Community's overall deficit has deteriorated dramatically, reaching \$ 61 bn. The Community's bilateral deficit with the US doubled between 1979 and 1980 to \$ 24.7 bn. During the first half of 1981, however, a slight improvement could be observed. The US enjoys a trade surplus with every individual Member State of the Community, except Germany, with whom it has a marginal deficit.

Despite this development and the consequently growing protectionist pressures, the open trading system has so far been successfully maintained. However, against the background of slow growth and trade imbalances pressures will become more vocal in sectors where producers consider that their foreign competitors benefit from artificial advantages.

<sup>5</sup> See Wolfgang Hager: *Westeuropas wirtschaftliche Sicherheit* (Western Europe's Economic Security), Bonn 1976. See also the analytical part in M. Noeike, R. Tayler, W. Hager: *EEC Protectionism: Present Practice and Future Trends*, Vol. 1, Brussels 1981; Ernest Preeg: *Economic Blocs and U. S. Foreign Policy*, Washington 1974, p. 27 ff.; M. Preisinger-Monloup (Stiftung Wissenschaft und Politik): *Zur Politisierung der Internationalen Handelsbeziehungen* (On the Politicising of International Trade Relations), München 1975.

<sup>6</sup> Commission of the European Communities: *The European Community and the United States*, Brussels 1980; H.-D. Jacobsen: (Stiftung Wissenschaft und Politik): *Asymmetrien und Interdependenzen in den Transatlantischen Wirtschaftsbeziehungen* (Asymmetries and Interdependencies in Transatlantic Economic Relations), München 1980.

<sup>4</sup> Statistical Office of the European Communities: *Eurostat Revue 1970-1979*, Luxembourg 1980.

During the past year, both sides were able to settle, or at least to come to a provisional agreement on, a series of bilateral problems. Some of these problems are, however, still outstanding, and certain of them assume an aspect of urgency:

*Cars.* The voluntary restraint by Japan of its car exports to the US has triggered off a request for analogous treatment by the EC-Commission and the Member-States.<sup>7</sup> The EC-Commission continues to consider that the car problem is not a bilateral US/Japan issue but basically triangular and that further close consultations by all parties are needed.

*Steel.* The trigger price system remains in fact very restrictive. The pressure from firms whose products traditionally constituted the bulk of the EC's exports to the United States to obtain an exemption from the system is bound to remain very strong, particularly as the devaluation of European currencies vis-à-vis the dollar now places them in a very strong position to claim such an exemption. European firms have boosted exports to America, but would like to do a lot better. Therefore the trigger price system, the survival of which the EC still views as being in the mutual interest of the US and EC governments and industries, remains under serious threat. So far the US Administration has responded negatively to the EC's request for corrective action. The Administration's objectives and policy in this field are at the moment far from clear<sup>8</sup>.

*GATT activities.* Both the EC and the US have agreed to consider holding a GATT ministerial meeting in the course of 1982. This would be a political act designed to bring about further progress in liberalisation. The US frequently brings up its interest in progressing towards international discipline concerning services and trade-related investment issues. The latter includes the question of investment incentives and disincentives and the possible distortions in international investment flows because of a sharpening of differences in the ability of different countries to attract investment.<sup>9</sup> The US and the EC agree on the necessity of working, and of strengthening international cooperation, in these fields.

*Textiles.* Relations in this field have improved. There remains one major problem: trade distortion, as a result of the continued dual pricing of natural gas in the US;

could increase considerably unless there is an early decontrol.

*Agricultural Issues.* The US is very much concerned about the trend of EC policy in the agricultural sector<sup>10</sup>, in particular the increasing level of protection afforded to EC-production by rising price levels and the disposal of surpluses through subsidies. The US rationalises its attitude by pointing to its official commitment to free trade ideas and an economic policy aimed at fighting inflation, enhancing productivity and limiting public expenditure, in particular subsidies. The EC-Commission, in reply to this criticism, reminds the US of the bilateral trade deficit in agricultural products, points to the difficulty of structural adjustment in the present economic situation and assures that the Community will continue to show moderation in its pricing policy.

*Technology Trade.* High technology, such as for instance information technology, is very R & D intensive and correspondingly the "goods" being traded are difficult to express meaningfully in traditional terms. It is necessary to distinguish between the process know-how for components and the production know-how of applications. The various aspects of the issue of how to measure technology-intensive trade and flows of information are dealt with in a rather scattered way bilaterally and in various international forums. From a conceptual point of view the problem has not yet been well understood.<sup>11</sup>

### Barriers to Technology Transfer

Most countries and, in particular, the US have laws and administrative regulations and practices designed to monitor, survey and regulate technology transfer for military, but to some extent also for economic, reasons. In the US, the "Export Administration Act" and the "Office of Foreign Technology" play an important role in this respect. The notions of "critical technology" and of "keystone equipment" are of particular relevance for the application of the various instruments of surveillance.<sup>12</sup>

The US is the world's greatest scientific and technological power. It represents about one-third of the world's research potential. Notwithstanding this clear superiority, the US is increasingly preoccupied with the erosion of its competitiveness on the world market. It

<sup>7</sup> For an analysis of the main problems facing the car industry in Western Europe see Georg Koopmann: R & D options concerning future problems of the European car industry (unpublished), 1981.

<sup>8</sup> Frankfurter Allgemeine Zeitung, Oct. 12, 1981, p. 13.

<sup>9</sup> See for instance Robert Hormats: New challenges in international investment policy, USA Documents (US-Mission to the EC) September 23, 1981; see also Klaus Grewlich: Direct Investment in the OECD Countries, Alpen aan den Rijn 1978.

<sup>10</sup> See Financial Times, Oct. 9, 1981, p. 20.

<sup>11</sup> The OECD-Directorate for Science, Technology and Industry has – like many other national and international institutions – begun to work in this field. As to the US, see for instance Edward Graham: Technological Innovation and the Dynamics of the U. S. Comparative Advantage in International Trade, in: Christopher Hill, James Utterback: Technological Innovation for a Dynamic Economy, New York 1979, p. 118 ff.

<sup>12</sup> US Federal Register 1980.

has reacted by directly or indirectly stimulating industrial innovation in many fields of modern technology such as information technologies and telecommunications, space exploration, radar systems, nuclear and aircraft technology, molecular biology and genetics, agricultural research and weak interaction physics.

Collateral to efforts designed to reestablish the American export and technology potential<sup>13</sup>, a certain tendency to protect certain fields of high technology is to be observed. One example may illustrate this development: recently a bill<sup>14</sup> has been introduced in the House of Representatives which would tend to classify, inter alia, much computer research. This bill – an amendment to the “Arms Export Control Act” – would cause items relating to military hardware to be given a security classification until officially cleared by the government. The range of items referred to is comparatively large and would e. g. include “very high speed integrated circuits (VHSIC)”. The unusual feature of this bill is that information may not be disclosed unless the Secretary of Defence, in consultation with the Secretary of State and Secretary of Energy, determines that withholding it would be contrary to the national interest.

This means that possibly even harmless material would not be publishable or transferable unless it could be shown to be beneficial to the United States. The bill speaks of national interest rather than national security. Since the national interest normally also includes foreign trade, the bill could, in the view of certain observers, allow the Government to control publications on computer technology – for example, the kind that might give an economic edge to competitors such as Japan and Europe.

The new US Administration is very much concerned about technology-intensive East-West trade and, therefore, could possibly be in favour of expanding the so-called COCOM-list, to include not only items of potential military use, but also items which might improve the sophistication of Russian production technology in general. Certain European countries with high levels of unemployment and a certain amount of trade relations with the USSR may, however, possibly show some reluctance to follow suit.

Europeans will have to understand that technology trade and transfer from the United States to Europe will become much more difficult in the future. There is a shift

in perception and attitudes. It would, however, be a mistake to dramatize this change irresponsibly. The Americans have reacted sensitively to the perceived challenge – also from Japan – and have not hesitated to consider ways and means of safeguarding their technology superiority.

### Relations with Japan

The major trading difficulties which the Community faces relate to Japan. The essential components of the problem in commercial relations between Japan and the EC are a combination of the large EC trade deficit with Japan, the concentration and growth of Japanese exports to sensitive sectors of the European economy and the limited access to the Japanese market for EC exports.<sup>15</sup>

The trade deficit has been growing steadily from \$ 1.3 bn in 1973 to \$ 11 bn last year as Japanese exports of automobiles, television sets and tubes as well as numerically controlled equipment continue to flow into Europe. In 1981 Japan's trade surplus with the EC threatens to rise to a record of \$ 15 bn.<sup>16</sup>

From the EC's point of view Japan's poor propensity to import manufactured and processed goods, particularly in sectors where Europeans are competitive, is exacerbating this situation. Japan's worldwide imports of manufactured goods last year accounted for only 22 % of its total imports. The comparable figure for EC countries is about 45 %.

Japan began – under increasing pressure from foreign governments – dismantling tariffs and quotas in the 1970s. With the removal of restrictions against imports and foreign capital inflows, the market today is technically as open to foreign sellers as the United States and the European markets.<sup>17</sup> But foreign businessmen in Tokyo say that their penetration of the market is still hampered by an array of invisible barriers and cultural inhibitions, notably the particular forms of interaction of Japanese companies, the vertical-horizontal links of conglomerate industrial and commercial groups and the very complex distribution channels.

It is true that once the agreements reached under the Tokyo Round of multilateral trade negotiations are put

<sup>13</sup> See Science, Vol. 213, July 10, 1981, p. 183 ff; also Klaus Grewlich: Technology, Industrial Innovation and Trade – An opportunity for a positive chain reaction, West-Ost-Journal, No. 1, 1981, p. 25 ff.

<sup>14</sup> 97th Congress, 1st Session, H. R. 109, January 5, 1981.

<sup>15</sup> Eberhard Rhein: Europa, Japan und die internationale Arbeitsteilung (Europe, Japan and the International Division of Labour), Europaarchiv, 1981, p. 209 ff.

<sup>16</sup> See the Special Supplement to the International Herald Tribune, September 1981 (18 pages).

<sup>17</sup> See Nobutoshi Akao, Maureen White: Japan's Economic Security, in: INTERECONOMICS, No. 3, 1981, p. 155 ff.

into effect Japan's average across-the-board tariff will be 3 %. But this may conceal that a number of sectors of major interest to the EC are subject to much higher rates. There are now quantitatively fewer quota restrictions but non-tariff barriers exist, such as extremely strict public health, environmental and plant sanitary regulations, which to some extent prevent the entry of competitive EC-products.

There are political aspects to the problem. Japan is being pressed to buy car parts from the US. Why should Japan buy car parts from the US and not from the EC? The EC can certainly match the US as far as the quality of the parts is concerned and in terms of the bilateral trade imbalance the EC is in a far worse position than the US.

Such European claims are certainly justified but do not appreciate the basic political relationship. Europe may still regard the US as a primarily Atlantic power but in reality a new gravitational sphere is emerging in the Pacific. Statements in Washington to the effect that the most important ties between the US and any one single country are those with Tokyo must be taken seriously in Europe. The importance of the ties between Tokyo and Washington diminishes the relative significance of the economic difficulties arising from the pressure of innovation and advanced technology categorised by talk of the "Japanese challenge". In comparison, there is no such political substance to ties between the European Community and Japan. Economic difficulties are not offset by the existence of fundamental political protection and support obligations.

This reasoning does not, of course, diminish the seriousness of the situation for the Europeans. The Community gave Japan an unprecedentedly clear warning of possible tough action on trade policies. Threats being made to Japan, should it fail to restrain its exports and to abolish import barriers, range from the EC's invoking the pertinent sections of the GATT-agreement to temporary controls to provide a protective "breathing space" for Europe's most vital industries. The European Commission has thus shown renewed determination that Japan must act quickly to redress the worsening trade imbalance<sup>18</sup>.

In preparing for its technological come-back the Community could – as far as possible – also favour increased industrial cooperation, notably in third markets. So far, the overall technology balance with Japan is still in favour of Europe. Both sides may be able to benefit from more systematic cooperation in fields where a balanced "give and take" is possible. Such

cooperation may contribute to overcome certain obstacles to international technology transfer, partly due to the lack of European experts in Japanese cultural and business behaviour since the language barrier poses great problems of access to Japanese technical information.

There is no doubt that Japan is extremely successful in its industrial policy and that the real battle-field is industrial innovation and not trade policy. A process of technology intensification is now under way in Japan. By the mid-1980s, when the post-war medium-term investment cycle should be largely completed, Japan will have firmly established itself as a leading, if not the leading, manufacturer of a widening range of products of advanced calibre, which will be highly competitive on international markets. Japan's technology-intensive products will tend to be exported to other industrialized countries, including certain "take-off" countries, rather than to developing countries. The crucial competition will take place in these markets, where a high premium can be earned.

As to the basic problem of correcting the present imbalanced trade relations between Europe and Japan, the fundamental question is whether Japan will be integrated more closely with the other industrialized countries through a greater division of labour resulting in a more substantial share of the Japanese market for Europe, and, on the other hand, how rapidly and efficiently Europe will be able to reorganise and readjust its production apparatus and to develop and better utilize advanced technology in order to maintain its position on world markets, as well as within the Community market itself.

### The European Response

There could be a case for asking for Japanese restraint in certain export areas to obtain a "breathing space" while European industry readjusts. This is, however, not an easy choice, as experience shows that there is a tendency, once such measures are instituted in one sector, for them to be replicated in other countries and other sectors. This could, over time, have a corrosive effect on the free trade system and possibly diminish the competitiveness of our industry.

Protectionism is certainly not the answer. Europe has to apply a balanced combination of trade policy and diplomacy, on the one hand, and industrial policy and self-reliant efforts on the other hand. But there should be no doubt that the ultimate solution lies in a vigorous European effort regarding industrial reorganisation and innovation, research and technology intensification.

<sup>18</sup> See Financial Times, Oct. 9, 1981.

This does not mean that Europe should abandon classical industrial sectors such as chemicals and synthetic fibres. Such a policy would be naive. Structural readjustment cannot imply weakening the European industrial basis, and therefore massive unemployment, without alternatives being offered. Why should the motorcar play the role of motive force for industrial renewal and employment in other parts of the world while it loses that role in Europe? Today there are 9 million unemployed. Assuming that present developments continue and taking into account the demographic trend, there will be more than 15 million jobless in 1985. In certain regions of Europe this would amount to an unemployment rate of more than 50 %. Many people are beginning to understand what that means in terms of social cohesion and internal security.

What Europe needs in this situation is a high degree of solidarity and cooperation at Community level both in new growth technologies and in certain "mature industries", thus facilitating the necessary increase in productivity and technological progress in a Common Market dimension. This also means in particular the elimination of hindrances to readjustment and innovation.

The EC-Commission is working very hard to push forward a common strategy<sup>19</sup>:

□ There is for instance a six-point strategy in the field of communication technology that includes a European effort to overcome resistance to innovation, to create a uniform open market by encouraging uniform standards in telecommunications and computer hardware, to develop the basic microelectronics technology required to make Europe competitive, to create data banks competitive in the world market, to establish a multipurpose data network linking industries and capitals in member countries, and to coordinate the work of organisations concerned with telecommunications.<sup>20</sup>

□ The preparation of a more general Community policy in the field of industrial innovation is considering inter alia the following questions: barriers to information, the American and Japanese measures for the stimulation of innovation, the funding of innovation, the influence of public procurement, the aggregation of markets, the role of information, patents and licences.

□ The EC-Commission and EC-member countries will have to consider as appropriate the development of an overall Community Industrial Strategy, a strengthening of energy policy and more ambitious common policies in the field of science and technology, including in

particular agriculture, health, environment, information technologies and biotechnologies.

□ The Community has established a "think tank" (FAST: Forecasting and Assessment in the field of Science and Technology). The outcome of FAST's endeavours should be a redefinition of the priorities of Europe's science and technology policy taking into account in particular the social implications<sup>21</sup>.

The basic condition for a successful strategy is Community solidarity and cohesion both in the field of industrial and technological innovation and in trade policy. The EC-Commission advocates a wide-ranging dialogue with Japan and the US on the basis of a common Community strategy. The temptation of individual action by EC-Member States exists. But for the EC to allow itself to be divided, is to renounce the negotiating strength which the combined support of ten Member States – accounting for more than a fifth of both global trade and of the world's technological potential – can give to the Community.

The struggle which is being waged among the technological powers of the West must on no account degenerate into ruinous competition. Competition must be accompanied by bilateral and multilateral diplomacy and cooperation. All concerned can learn from one another. There are many technological sectors in which international cooperation is useful and necessary, especially those which are not directly trade-related such as commodity conservation, ensuring energy supplies, transport, garbage disposal, environmental protection and medical data systems. The Western industrialized countries' policies designed to promote, rejuvenate and adjust certain industrial sectors and the increasing concentration on advanced technology will also have to take Third World requirements into account.

Europe – running in third place, far behind the leaders, in the race on which the industrial and technological powers of the West have embarked – should become aware of the need for unified action. The 1980's will be a period of decisive alternatives for the better or for the worse. Europe needs a clear idea as to where it is going.

<sup>19</sup> To some extent these policies are the EC-Commission's response to the so-called "Mandate of May 30, 1980" (EC-Council of Ministers, May 30, 1980).

<sup>20</sup> See in this context Giovanni Dosi: Technical Change and Survival: Europe's semiconductor industry, Sussex European Research Center 1981.

<sup>21</sup> For a description of the FAST-programme see Klaus Grewlich: Forschung und Technologie bestimmen die Zukunft Europas (Research and Technology determine Europe's Future), in: Wirtschaft und Wissenschaft, No. 3/4, 1980, p. 10 ff.