

RENAISSANCE THROUGH TECHNOLOGY: THE EUROPEAN COMMUNITY DECISION ON ESPRIT

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The recent European Community (EC) decision to fund a new high-technology program known as ESPRIT (European Strategic Program for Research in Technology) is a major step towards EC unity in an area of growing importance. The development of information technology is a field in which Europe has been falling far behind the United States and Japan in recent years. In this article Pierre-Henri Laurent discusses the pressures behind the EC agreement to establish ESPRIT. He analyzes future European requirements in the information sector and the impact which ESPRIT could have on the European economy in general. ESPRIT marks a major new European initiative towards closing the gap between the levels of European and U.S./Japanese technological development, he argues. Mr. Laurent reviews the problems inherent in a program requiring long-term economic and political support from all EC members and suggests areas where short-term results could help promote the program. The author concludes by assessing the prospects of EC unity in sustaining support for ESPRIT and the consequences for all involved if this new program fails.

Major strategic initiatives and policy decisions made by the ten member states of the European Community (EC) in the last few years have been overshadowed by bitter in-fighting and squabbling over farm and finance differences. The apparent end of the five year stalemate reached at the Fontainebleau EC summit in June 1984 left the ten nations (or Ten) free to concentrate on larger issues of European economic resurgence and unity. It is important to note, however, that while the EC negotiations faltered from one summit tragedy to another between 1979 and 1984, the leadership of the Common Market did compose one new overall

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European design. Europe's technologically lagging industries and the challenge of narrowing the gap between Western Europe and her American and Japanese competitors were addressed in a bold and novel initiative.

The recent evolution of an EC high priority program for its information technologies (IT) represents a significant breakthrough in confronting European economic problems of the new technologies. The development of this program signals real community unity in a crucial area; such an action, if sustained, could also serve as a springboard for a collective renaissance and economic renewal of the entire EC. The following article delineates the process which evolved a European framework and sense of Community in terms of its industrial and technological policy decisions. It furthermore assesses these moves toward transnational cooperation within the context of a Europe of nation-states.¹

EVOLUTION OF THE ESPRIT PROGRAM

As the general economic recession deepened and the future prospects of EC nations took a downward plunge in the late seventies, there was a recognition in the EC Commission ranks that Europe's badly fragmented markets had severely hindered her ability to compete in many major fields. As a result of this new awareness, a task force report looking into future economic growth in the next century was completed in 1979. In effect a recognition and acknowledgement of the very limited success of the Ten in creating a real common market, the report concluded that stunted economic development in new industries was increasingly prevalent. Continuing, it stated that diminished regional and international political influence followed on the heels of that economic decline. If economic and political barriers continued to inhibit major new production areas, the individual and collective efforts of Western Europe since the Second World War would be quickly reversed and the continent "vascularized" by the economic titans of the globe.²

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1. Most of the information and the resulting points of view in this article concerning the EC decisions on ESPRIT were gained through interviews with officials in Brussels between January and April, 1984. The author expresses his appreciation to these EC staff members, particularly to Pierre DeFraigne.
 2. Yao-su Hu, *Europe Under Stress* (London: Butterworths, 1981) 103-111; also see *The Report of the Commission of the European Communities — Europe Plus Thirty Project, 1974*, and Lord Wayland Kennet, *The Futures of Europe* (London: Cambridge University Press, 1976), 132-145 for the EC perspectives in the late '70s; for an overview of this period, see Stanley Hoffmann, "Cries and Whispers: Thoughts on West European-American Relations in the 1980s," *Daedalus*, vol. 113, no. 3 (Summer 1984), 221-250, and Paul Taylor, "The Nation-state in the European Communities: Superficial Realities and Underlying Uncertainties," *International Journal*, XXXIX, no. 3 (Summer 1984), 577-598.

The impetus for a strong inter-governmental hand in promoting one core area of industry came from Commission leaders, notably Etienne Davignon, the Commissioner in charge of industry and technology policy. His argument hinged on two prime factors: the necessity to return to the theory of sector integration which Europe had begun with the Coal and Steel Community in 1951, and the critical role not just of technology in general, but of information technology — specifically in the economies of scale — as they moved into the 21st century. Davignon and his Berlaymont associates argued that a concentrated assault in one critical economic area could turn the economic potential of the Ten into a reality — a position of global leadership. Economic revival and prosperity were involved, for real cross-border European cooperation in IT would intensify collaborative research, eventually enlarge the markets, and stimulate greater capital investment.

The centerpiece of this new EC sector priority was ESPRIT (European Strategic Program for Research in Technology). There was no question that other technologies — such as biotechnology, telecommunications, space and nuclear technologies — would play an essential role in the comprehensive European movement. But the central decision that the EC launched and that the Ten agreed to administer and fund was IT in the form of ESPRIT. The rationale for IT was almost too simple: the dominant source of technological advance in contemporary societies would come from information technologies since it would soon become one of the world's largest manufacturing areas, perhaps the most significant area of modern industrial competition up to the turn of the century and after. In the short run, then, IT was appealing as a large source of new economic activity and therefore new jobs. This single aspect, the capacity to push forward a solution with enormous "spillover effect" in the creation of jobs, was a central point in the EC process of persuading the national leaders to accept ESPRIT in the early eighties.³

The need to develop swiftly the essential new technologies, particularly IT, demanded a large scale, centrally coordinated mobilization of finance, manpower, and market opportunities throughout Europe. Homegrown IT industries, already almost the size of the biggest traditional industries such as steel and automobiles, were in the forefront of world trade until 1975, contributing to a substantial European trade surplus of \$2 billion. By the end of 1983, however, the global decline of Europe's national IT programs resulted in a trade deficit of over \$8 billion with a projected increase to \$10 billion by mid-decade.

The main reasons for this bad performance, according to the EC

3. European File, no. 18/82, "Euronet Diane: Toward a Common Information Market."

assessment, were not simply great American and Japanese research, production, and marketing successes, but the limitations of the numerous national endeavors and small markets in Europe. The continent had to accent its combined strengths with a large, harmonized EC market that featured an integrated IT infrastructure and compatible standards. The serious defects of the separated and isolated enterprises, the absence of a continental approach, and an EC-wide dimension were the basis of the EC Commission appeal for ESPRIT. Led by Davignon and his primary assistants, Michel Carpentier and Pierre DeFraigne, the EC told national IT leaders that it was imperative to challenge their competitors by embarking on an unprecedented transnational research program.

In a series of talks with major firms from 1979 to 1982, the EC asserted what it believed to be the obvious: high technology research and development (R and D) was already so expensive that it could not be justified unless accomplished for a huge economy of scale. Individual EC markets in information technology — even the large British, French, and German ones — could never alone mount and sustain in an efficient manner the kind of competitive “technological push” which could achieve parity with or superiority over their global competitors. The Davignon team consulted with not only the sector giants but also with medium and small-sized companies, pointing out the advantages of launching a Community scale program.⁴

The EC experts in the Directorate General of Industrial and Technological Policy who created ESPRIT saw IT acting as a dynamo industry which would generate globally competitive economic activity, while at the same time revitalizing older industries. The realization of such broad goals required a radically new strategic dimension. Beyond higher standards and procurement amelioration, ESPRIT had to encourage the entire IT environment with technology transfer improvements, building links between engineers and scientists of large micro-electronic firms to avoid a duplication effort. The plan was to unite some 3000 of Europe’s “best and brightest” minds in a ten year partnership in certain select fields of application. Representatives of IT and the EC staff agreed that three “enabling technologies” were essential for any lift-off phase: advanced micro-electronics, advanced information processing, and software technology. Two additional areas were cited for attention: office automation and computer-integrated flexible manufacturing for factories.⁵

Action in these five critical target areas was scheduled for implemen-

4. Journal Officiel, CEE, numéro C 31430, 11/30/82; European File, no. 8/84, “The European Community and the New Technologies.”

5. Commission of the European Communities, “ESPRIT for Europe’s Future,” 1984; Bulletin of EC, 5/1983, pt. 2.1.34 and 10/1983, pt. 2.1.29.

tation in 1984. A budget of \$1.3 billion, financed half by the Ten and half by European industries, was agreed to for the first five years. The first decade, it was decided, was to be a "catch up" phase in which broad research would generate a new technology base for the next century's IT products and systems. Europe's decline would be stopped and the second stage of ESPRIT (after 1994) could proceed to reverse that standing completely. But before all this, between 1982 and 1984, a series of 15 pilot projects — each involving numerous avenues of research — was begun. More than 600 large, medium, and small-sized firms, research institutes, and universities were to participate. The performance of these pilot experiments would determine the viability of the entire program.

The definition of IT was critical, due to its broad scope and wide impact on the general economy. The project would not be limited to electronic data processing but would also include office and factory automation, process control, and telecommunications areas as well. Although IT industries employed only 5 percent of the work force in 1980, it affected half the working population and two-thirds of all economic activity. Selling ESPRIT meant convincing both industry and national leaders that significant IT growth could be a key to rolling back the recession. The entire notion made sense in the European setting: it required large amounts of skilled manpower, which the Ten had, and few raw materials or energy sources, which Europe had in short supply.

The electronics firms were faced with difficult decisions in considering support of the EC programs. Europe had a solid technological base, though fragmented, with duplications in several national economies. Stimulating a technology-driven economic resurgence meant uniting computer companies in basic research projects while addressing root problems at the same time. Linguistic and legal barriers also imposed sharp limitations on EC firms during the initial phases of research and product development. IT organizations were aware that EC anti-trust rules might block some transnational projects. Many agreed that Europe's technology shortcomings could be attacked if Europe's combined scientific potential were linked to its manufacturing base, thus creating so called "enabling technologies."

The scope and magnitude of such an undertaking and the problems it presented were immediate stumbling blocks for some in the private sector. In general, the French and Italians were mostly supportive, the British, though uneasy, were willing to experiment, and the Germans were the most reluctant. For many, there was a tendency to accept a third best position to the dominance of the U.S. and Japanese firms as overseas partnerships and protectionism had helped the Europeans to participate in the world battle for IT markets. Some argued that Europe

should stick with special subsidies and tariff walls on one side while working with multinational corporations on the other. Linguistic, cultural, and geographic diversity meant a complexity of financial, legal, and industrial infrastructures. Attempts to amalgamate them, many believed, would be at best frustratingly slow and probably incomplete.⁶

The EC strategy that finally succeeded was based on demonstrating the short-term, and therefore inadequate, nature of the separate national approaches. National protective devices and trans-oceanic licensing arrangements led to limited success, expensive and time consuming in the former, often secondary status and minor profit sharing in the latter. With all its potential pitfalls, ESPRIT called for the construction of a cross-frontier infrastructure to aid IT innovation and production and the transfer of technologies. The process did insist on systematically dismantling many national (and even some EC-made) barriers to a continental market. This meant the alteration of rules and regulations and even national mentalities. There was agreement that it was imperative to mount an offensive from the top and from within to transform the national structures and thinking.

Perhaps the greatest achievement in establishing ESPRIT was convincing both the private IT leadership and national governments to ignore previous cooperative failures of the sixties and early seventies. Proponents of ESPRIT were able to convince the potential participants that while previous ventures in the technology sector had achieved poor results, these were under vastly different conditions than those that ESPRIT would encounter. The stigma of earlier failures was indeed a major barrier; the nuclear reactor project ORGEL and the computer program UNIDATA had both encountered large financial losses. In both cases, EC support and funding identified the Community with the failures. The same EC backing, however, had resulted in immediate triumphs in the aeronautical program AIRBUS and the nuclear fast breeder reactor pooling project NERSA. The example of the European Space Agency and its quick ability to translate cross-national electronics research into worthwhile and profitable programs was frequently used to illustrate that linkages of a public and private nature among various collaborating nations could surmount seemingly endless difficulties.⁷

6. Michel Carpentier, "Toward a New Kind of Community," *Europe*, no. 243 (May-June 1984).

7. Michel Richonnier, "Europe's Decline is not Irreversible," *Journal of Common Market Studies*, XXII, no. 3 (March 1984) 220-243; Stephen Woolcock, "Information Technology: The Challenge of Europe," *Journal of Common Market Studies*, XXII, no. 4 (June 1984), 315-331 argues that there is a strong case for common IT approaches but European initiatives will have to be blended with continued links with Third countries. He wisely asserts, as was argued in the EC debate, the need to address the issues of procurement standards and the liberalization of the telecommunications services.

Once the various national IT industries agreed to accept the general program, the EC member states gave their consent, subject to a review of the outcome in the pilot projects phase. As in many other EC quarrels, a Franco-German division emerged. The German government was cautious and wary, for the continued vitality of its entire economy and the competitive strength of its own IT made it view the Franco-Italian sponsored program with mixed feelings;⁸ the final decision was based on the overwhelmingly positive pilot stage results, and on two elements of timing in 1982-84. The actual decision to go ahead with the ten year phase was reached as the EC floundered and faltered over budget contributions and farm reform in 1983. The depths of this discord seemed to push the Ten to agree on ESPRIT not only as a potentially viable set of goals but as a mechanism to reunite a badly wounded regional association. Another fortunate circumstance was the emergence of a new Mitterrand in 1983. In part driven by the less than successful national economic policies in his early tenure of office, the French President became a super-enthusiast of the technological path to European recovery, reorganization, and independence. His role in the critical decisions at the Stuttgart and Athens summits in 1983 was central to the final adoption of ESPRIT.

One major event which took place outside Europe in the early eighties also pushed the Europeans toward ESPRIT. The American attempt to block European exports to the Soviet natural gas pipeline and the subsequent conflicts over East-West trade definitely aided Europe in accepting ESPRIT as a program that would promote European development of more independent technology. President Reagan's opposition to the pipeline, though unsuccessful, illustrated to Europeans what was at stake: European economic prosperity and growth was in many ways directly related to economic and political independence.⁹

In the actual program, the EC was authorized to solicit IT projects from businesses, research organizations, and universities which were in the five fields originally announced. All applications had to be from more than one member state to aid in the creation of an information network and to insure the wide dissemination of research results. This pooling of research would receive all possible aid from the EC and national governments, especially through special escape clauses (frequently from EC anti-trust legislation) which might be needed to overcome obstacles to cross-border cooperation. In effect, these "engagements" between firms at the research level would lead to "marriages" at the industrial level only if

8. *Financial Times*, 3/29/84; Laurent Fabius, "Le défi technologique," *Politique étrangère*, Janvier 1984, 49-56.

9. *Le Monde diplomatique*, 12/5/83. See also Commission of the European Communities, "Proposal for a Council Decision adopting the First ESPRIT," 6/2/83.

the entire program had a benevolent, lenient, adaptable, and powerful overseer.

ASSESSMENT OF ESPRIT

ESPRIT requires speed, determination, and above all, support and leadership. It is here that one finds the more invisible barriers not only to the European *relance* via a technology renaissance but specifically to the future viability of ESPRIT itself.¹⁰ The theory behind ESPRIT emphasizes a concerted financial push and commitment by the EC, national governments, and various IT firms. It stands on shaky ground in all cases. From the EC side, it has gained support in a time of crisis (perhaps *because* of the depth of crisis) but it is debatable whether that long-term pledge will be upheld. A vastly altered European Commission will be at work as 1985 starts, populated with officials whose commitment to ESPRIT may not match that of earlier Commission members. The absence of Davignon himself will be a detrimental aspect to the continuance and overall supremacy of the IT project in the EC endeavors over the next decade. National personalities such as Mitterand, who has been a positive influence, will need to give more support to further funding and the persistence of the EC technological focus. These questions of certain key actors and their domestic political survival cast a shadow over the future, as does the reluctance of some major German businessmen to back ESPRIT enthusiastically.¹¹

ESPRIT must vie for the attention of EC leaders, as well as national leaders, and compete successfully against formidable budget competitors: unemployment, agriculture, development, and enlargement. The compelling need to create new jobs for a Europe marked by high unemployment can perhaps be turned to ESPRIT's advantage since it can be hypothesized that IT growth will make numerous new jobs. It is more difficult to push aside Common Agricultural Policy (CAP) reform in the total EC picture, even if recent EC decisions appear to downgrade the overall place that the farm will play in Europe's future. The political clout of the farm sector continues to gain the respect and support of many European leaders. Recent EC decisions in negotiating the third

10. *New York Times*, 5/21/84.

11. *New York Times*, 5/29/84. In the EC, the new President of the Commission, Jacques Delors, has been "pro-European" but his agenda is unclear, whereas the new French Prime Minister, Laurent Fabius, has staunchly defended the IT strategy. On the German side, large national expenditures in the technology area continue to be approved that are relatively distinct and separate from ESPRIT, reflecting substantial hesitancy among many industrial leaders about the EC orientation. See also, John Newhouse, "One Against Nine," *New Yorker*, October 22, 1984.

Lomé convention with the 66 developing countries of the ACP (African, Caribbean, and Pacific) indicate that the funds to improve trade and aid have lost the high priority status they held in 1975. Yet, these demands of the Third World could be resuscitated at Brussels as well as in all the national capitals and be a further drain on EC coffers. Lastly, the necessities of the third enlargement of the EC with the two Iberian states, Spain and Portugal, may require the EC member states to divert more money and energy in that direction than initially projected. One institutional factor also has the potential to obstruct or damage ESPRIT: the recent assertions by the European Parliament (EP) of its own place and power in EC decision making — seen most recently in its move to block the budget rebate payments agreed to at Fontainebleau — could manifest themselves in possible financing problems for ESPRIT. Even though EP sentiments on such a program are presently unknown, the priorities of the recently elected 434 members could downgrade the high position of ESPRIT.¹²

Even if these other arenas of continued activity do not directly sidetrack the EC goal vis-à-vis ESPRIT, there may be other drains on limited EC resources. It is true that the Fontainebleau summit reached an accord on expansion of the VAT (in effect a European sales tax) from 1 to 1.4 percent, thus creating a larger financial base for EC coffers. There is, however, some doubt about Community follow-through capability on this issue as an increased VAT only takes effect in 1986. Furthermore, the move to “Europeanize” the military forces of the Western Alliance will call for larger expenditures from the European governments. This issue could become a major determinant of ESPRIT’s future. Whether it is American insistence for more burden-sharing within NATO or European ventures to develop their own more independent security means (such as the recent decisions for a joint construction of a new tactical fighter), the end result will be increased competition for EC and national funds.

Beyond military and security requirements, there are also what one expert has called “internal competitors.”¹³ These technologies, which rival IT for European-financed aid, are mainly space and biotechnology. The advocates of ESPRIT eventually won their victory between 1979 and 1984 in an indirect competition with the proponents of a new technology push which stressed action programs in the life sciences. These programs include food processing, chemical and pharmaceutical industries, and biomass energy and recovery of waste projects. In addition, rival tech-

12. *Le Soir*, 3/12/84; *International Herald Tribune*, 5/25/84; and *New York Times*, 6/1/84

13. *International Herald Tribune*, 7/13/84.

nologies also include peaceful uses of space such as the Ariane rocket program and the Eureka space laboratory — potential competitors of the American space shuttle. The position of Mitterand on this last issue makes ESPRIT especially vulnerable, given his increasing support for space projects.¹⁴ The battle over which sector or sectors will have first priority on EC funds will no doubt continue. The forces behind ESPRIT and related technological programs must continue to display supremacy in any forthcoming divisions of the Western European monetary pie.

CONCLUSION

There are those who say that Europe, in desperate need of a new impetus, has found it in the IT thrust. The achievement of real European industrial cooperation in future technology would go a long way in aiding the continent to avoid tertiary status in this Third Industrial Revolution. But it is a risk-laden avenue Europe has chosen that smacks of "all the eggs in one basket." This decision is a calculated risk. The program cannot have any significant feedback or impact in global terms until the 1990s, which some analysts believe is too late. If the end results of much joint R and D cannot become available for European industry until the next decade, the European market and its consumers will, in the interim, continue to be dependent on the technological supremacy of the U.S. and Japan. This notion of a retarded response does not necessarily suggest that ESPRIT will fail, but does say that the protracted period of program development allows further and perhaps final external penetration and control of the European technology market by U.S. and Japanese firms.

Others emphasize that project funding, both now and into the 1990s, is insufficient.¹⁵ A major German worry is that ESPRIT may encourage growth of new trade obstacles against non-Europeans that will shut off world markets. Most of the pessimism and skepticism, however, is based on past failures, and the continued strength of the factor that most believed caused those failures — national parochialisms. The major national purchasers of IT and IT related products — the defense ministries, telecommunication groups, and utility firms — have consistently chosen national (and sometimes non-European) companies in their contract decisions. Another group of critics point out that previous government research funding has been in government-owned industries such as aerospace and telecommunications, whereas IT is almost thoroughly private.

14. *Le Monde*, 2/25/84.

15. The original EC task force report requested twice the amount finally approved for the first five years of ESPRIT between 1984-89 and suggested five times the original amount for 1989-1994.

More sophisticated arguments about the independent and non-commercial nature of European research — and particularly among academic researchers — imply that cultural impediments, especially the individualistically oriented European *mentalité*, may play a large role in any potential for ESPRIT's success.

Above all, the success of ESPRIT will depend on whether the past performance of European business can be changed. Up to now, when decisions in the IT area were made, European businesses have gone for a transatlantic connection or even a Euro-Asian link over the European one. The pull of multinational firms and their large markets have enticed investments. Europeans have argued these capital-formation projects are impossible in Europe, given the European market's small profit and sales volume. The attraction of the well-established partnerships with the U.S. and Japan will only enlarge in the future. Most observers feel that only a steady diminution of European participation in and with American, Japanese, and multinational firms can insure ESPRIT's survival. In the field of information technologies, European dependence on foreign partners must come to an end.

In sum, the Ten have made a momentous decision which appears sound in its logic and rational in its goals. The very enormity of the stakes is why the IT program was conceived in the first place. It was not seen merely as a mechanism for creating new products and gaining new markets but as a way of fostering new attitudes of cooperation and harmonization in Western Europe. As in the past, Europe feels compelled to rise above national concerns. This time, however, it has chosen a path which demands that it do so with continuity for a decade or more. Such a grand scheme for Europe's joint future in technology also requires confidence, a quality in short supply after the debilitating struggles of the recent past. The ambitious undertaking is a question mark in itself, given all the changes it will demand of Europe and Europeans, but it is even more troublesome in that so much of Europe's future world role has been attached to it. A gamble it is, but to increasingly more Europeans, a necessary one.

