

# The responsibility of industrial research towards society under global aspects

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This meeting marks the tenth anniversary of EIRMA. Having been myself associated physically some six years out of these ten with the Association, and mentally more than that, you will have to forgive me if my short presentation of global views on the Conference theme contains almost inevitably a more personal flavour than it would have before any other audience I could think of.

The creation of EIRMA ten years ago was inspired by the then heated debate on the gaps in technology between the United States and Western Europe. All opening speakers yesterday were referring to that. The OECD, with a series of sectorial studies, had analysed the reasons for the inferiority of European science-based industries compared with their American competitors. [1]

M Jean-Jacques Servan-Schreiber has made a best seller out of this widely debated and widely disputed theme under the title, 'Le Défi Américain'—'The American Challenge'. [2] One of the many reasons cited in this gap-in-technology phenomenon, besides size of the market, government R & D spending, innovation climate and level of education, to quote only some, was the fact that R & D was more advanced in the United States than in Europe. To catch up, the OECD had suggested the creation in Europe of a body similar to the American Industrial Research Institute (IRI).

Just in time for EIRMA's tenth birthday, the 'New York Times' published on 14th March 1976 a front page article entitled, 'U.S. Science Lead is found Eroding. Study notes technological advantage has been cut by other countries'. The study called 'Science Indicators 1974' was released by the National Science Foundation as the 7th Annual Report of the National Science Board and was transmitted to the United States Congress by President Ford. The study said 'that such nations as the Soviet Union, West Germany, France and Japan have been improving their inventiveness and their support for science and for worker productivity faster than the United States.' I am not suggesting that there is a close correlation between the two facts, namely the creation of EIRMA and the recent—for Europe—more favourable international comparison. What one can conclude however is that there is more reason for an increasing self-confidence in European industrial research. If there are differences in the competitive situation with other parts of the world, particularly with the United States, they cannot be attributed to the R & D performance.

The management of industrial R & D as such, and here EIRMA has all rights to claim pioneer work, within the boundaries of Europe, is more and more demystified or, in Monsieur Curien's words of yesterday—'dedramatized'. EIRMA has demonstrated through the selection of its Conference themes (or the themes for Working Groups and Seminars) that an international organization

which is almost by its nature relatively inflexible, can indeed respond quickly and effectively to a changing need pattern and, even more important, can exercise some intellectual leadership.

The theme you have chosen for this Tenth Annual Conference, 'The Responsibility of Industrial Research towards Society', is not in line with the rather negative cliché which industry bears in many circles—that of being utterly 'irresponsible'. And yet this attempt at self-reflection within the EIRMA membership is not a new one. The Annual Conference themes for the last seven years, 'Industry-University Relations' (Dublin), 'International Co-operation' (Lausanne), 'Technological Forecasting' (Stuttgart), 'Environment' (Copenhagen), 'R & D for Industry of the Future' (Brussels) 'Industry-Government Relations' (Edinburgh) have indicated without any exception the increasing preoccupation of the EIRMA member companies with their role towards *Society*. But which society do we mean by that?

I shall try now, as suggested by the Governing Board, to expand on this responsible role of industrial R & D towards what one might call 'The World Society'. In order to make the link between the point of view expressed in the previous paper by Don Blickwede and what I have to say, I should like to draw your attention to the French magazine 'Express', devoted this week to the bicentennial. In an article worth reading called 'La Nouvelle Frontière de la Science' the French Science Attaché in Washington, François Davoine, is quoted as having said [3]

'One should not regard this quarrel between technical expansion and the concern about the quality of life as a war of principle. It is rather the French talking with their Cartesian minds about projects of society. In the United States everybody looks after himself.'

Industry has from the very beginning produced products or processes for a market, i.e. for somebody who was ready to buy and was able to pay for it. Industrial R & D has, within this process, expressed in simplified terms the role of support. Ultimately it is expected that R & D should not only give the necessary intellectual and technical support to maintain a given market position, but rather to improve it, to expand it.

The process of industrialization and the industrial products stemming from it were and still are almost exclusively modelled around the needs, tastes and behavioural patterns of people living in or descending from European culture. (As a special case we have to add Japan to this picture.) The countries of this 'régime' accumulate still today more than some estimated 90% of the world's industrial output, and more than 95% of the world innovative capacity expressed in R & D-dollars, or in skilled manpower. In spite of all bilateral and multilateral efforts, mainly by governments, the almost traditional world order established

with people like Christopher Columbus and his followers in later centuries has not basically changed.

Question No. 8 of the EIRMA Task Force '76 dealt particularly with the wider, the global aspect of industrial R & D: do you think that industrial firms should significantly concern themselves with problems of the developing countries? Do you consider that the research function has a specific role to play, and if so which one?

Just slightly more than half of the replies received, namely 56%, were affirmative; 34% saw a specific role and another 22% felt that industrial firms nowadays should be concerned with the special problems of developing countries without seeing, however, a specific role for R & D.

It is difficult to interpret these replies properly. I could hardly imagine any major company today not being concerned about developments going on elsewhere in the world. As the question of the Task Force suggested, to what extent they should be *significantly* concerned with problems of the developing countries depends less on personal attitudes or tastes but rather, I would say, on the degree of awareness or on the degree of information. I should like to predict that, whether one likes it or not, the affirmative replies to question No. 8 will have in the next 5 or 10 years the highest growth rate of all responses to the Task Force questions.

Politically, at least on paper, things are already quite advanced on this issue. In the International Development Strategy of the Second United Nations Development Decade covering the seventies of this century, the General Assembly of the United Nations, with the support of all Member States, both industrialized and developing, had already stressed the importance of science and technology in reducing the technological gap between developing and developed countries. It suggested that developing countries endeavour, by the end of the decade, to spend 0.5% of their GNP in R & D (Target 1). It also encouraged developed countries to increase their assistance to foster scientific and technological activities of developing countries (Target 2) and to devote a significant percentage of their R & D activities to specific problems of developing countries (Target 3). [4]

In 1971, the United Nations published a 'World Plan of Action for the Application of Science and Technology for Development'. [5] This comprehensive and admittedly ambitious document has not received, in my opinion, the wide public attention it deserves. It was prepared by the United Nations Advisory Committee on the Application of Science and Technology to Development, a unique multidisciplinary high level body consisting of 24 individuals from 24 different countries chosen on their own merit and not representing any government. One of the most recent members of this Advisory Committee is the Honorary President of EIRMA, Professor Casimir.

In the World Plan of Action, the 24 wise men have identified an exhaustive list of priority areas for research under global aspects. This five-year-old document is at present in the process of being updated but even in its present form it is, in my opinion, very worthwhile reading (particularly, if I may say so, by those 14% of you having replied 'no' to question No. 8 and by those 30% having expressed no opinion at all).

In a rather idealistic approach to the problem, the World Plan of Action has defined three 'targets' for global R & D efforts, two of which are directly addressed to developed countries as follows:

- (1) To increase science and technology aid to developing countries: The proposed target was 0.05% of the GNP of developed countries, i.e. in concrete terms, about 2,500 billion dollars  $\times$  0.05% = 1.25 billion dollars.
- (2) To devote a proportion of R & D outlays to the science and technology needs of developing countries: The target proposed amounted to 5% of the non-military R & D expenditure of developed countries, i.e. about 60 billion dollars  $\times$  5% = 3 billion dollars.

So far, as we all know, these figures have been no more than just 'house numbers' without any relevance.

The Special Session of the General Assembly, which took place in September 1975 in New York, took this delicate matter up once again. Instead of repeating precise figures, this Special Session which is regarded by many observers of the international scene as a major breakthrough in the new world dialogue, has preferred to call for 'feasible targets'. [6]

What is 'feasible' remains to be seen. I do not think the figure is so important, the fraction of a percentage of the GNP to be devoted. More important is the new spirit which is emerging in developed countries concerning their responsibility towards their fellow citizens in the world which, at least until now, represents no interesting market, but just numbers of people. Diplomats at international gatherings, in New York, Geneva, Nairobi or elsewhere, can negotiate and bargain about percentages. They remain meaningless if they are not supported and filled with life and action at home.

On the global industrial scene, I wish to stress two activities of the United Nations which have, directly or indirectly, a bearing on the issues discussed at this Annual Meeting of EIRMA.

Firstly; the General Conference of the United Nations Industrial Development Organization (UNIDO) at its meeting in Lima last year has defined as a target—supported by all governments—that the share of the developing countries in the world industrial output, which is today about 7%, should gradually increase and reach 25% by the year 2000. [7] To illustrate the dimension of this ambitious project, I wish to recall that in 1975 the total value of the world industrial production was something like 2,600 billion dollars. The third world contributed less than 200 billion dollars to this world industrial output.

Assuming an average growth of the industrial output of the developed countries of 5%, the Lima Conference experts announced that by the year 2000, the third world industrial output should reach the amount of 2,500 billion dollars—in other words, the figure of the output of the industrialized countries today. In this almost fabulous calculation, an amount of 3,000 billion dollars has been specified for direct investments needed within the third world to achieve this goal out of which a third, it is hoped, should come from the third world countries themselves. It is not my intention to analyse here the feasibility of this clearly politically motivated target. I wish to stress the political nature of

these plans and their far-reaching consequences on the traditional word division of labour, on trade flows, on natural resources consumption, or on the world employment situation. (There are today, according to the latest figures of the United Nations International Labour Office—ILO—in Geneva, some 18 million people without jobs in the OECD area, and an estimated one billion in developing countries.) Although we are used to accepting as 'facts of life' these one billion without employment in the third world, we feel that the world is falling into pieces when we talk about 18 million people.

Secondly, I should like to say in this context a few words about the multinational corporations which the United Nations prefers now to call 'transnational corporations'. A Special Committee has recently been set up by the United Nations General Assembly to deal with this new phenomenon of modern times.

The political and social dimensions of the problem of transnational corporations are only too apparent. It is recognized in the debates within the United Nations 'that the transnational corporations have developed distinct advantages which can be put to the service of world development. Their ability to tap financial, physical and human resources around the world and to combine them in economically feasible and commercially profitable activities, their capacity to develop new technology and skills and their productive and managerial ability to translate resources into specific output have been proven to be outstanding.'

The first United Nations report on this subject and from which this quotation originates continues: '... the important contribution that such firms can make to world welfare needs to be understood in the context of the objectives that they pursue. While these operations are often global, their interests are corporate. Their size and spread imply increased productive efficiency and reduction of risks, both of which have positive effect from the point of view of the allocation of resources. Yet their predominance can often create monopolistic structures which reduce world efficiency and may displace alternative activities.' [8]

I shall limit myself by highlighting only these two very politicized issues which will no doubt engage more and more the responsibility of industry and of industrial research under these global aspects in the years to come.

The new politically inspired challenges will bring new opportunities and will particularly need new inspirations from R & D.

Let me come back briefly to the report of the Task Force '76 which explored the views of the EIRMA membership on the 'Responsibility of Industrial Research towards Society'. Both this 'society', as well as the expression 'community', used elsewhere in the report, focused almost exclusively on what one could call our immediate neighbourhood, i.e. Europe, and in case of doubt, even less than that, namely Western Europe. The same approach is probably valid to more or less the same extent in all countries with the Western style free enterprise system, say in the OECD area as a whole.

And yet, President Rutschmann in his introductory presen-

tation has clearly emphasized that the planet on which we live is a closed system. And within this closed system now live more than 4 billion people. The 4 billion mark was passed almost unnoticed only a few weeks ago. All the people together constitute the *human society*.

Should there be any responsibility of the industrial research, say of EIRMA, IRI or JATES members towards this global society, or are we not automatically—admittedly without any bad intentions—focusing only on 'our neighbourhood society'? Our whole value system is based on traditions, models and behavioural patterns influenced by the virtues or non-virtues of what we call in German, 'the Abendland'—the Western style society. Nobody should blame us for that. The Islamic countries, or those believing in Buddhism, in village gods living in the jungle, or believing in Marxism-Leninism, have their own behavioural patterns and life styles. History has so far proven that the Western type society is apparently the most suited in which to bring about innovations, to organize science and technology or to build up industry. It appears that God, in His wisdom, has created the world unevenly. There is no equal distribution of anything in life—may this be natural resources, IQ, or the life expectancy of individuals.

In short, there is no justice in life; there never has been justice in spite of the Christian or other religions, in spite of the Marxist credo even in socialist countries, and the slogan from the French revolution about 'Liberté, Egalité et Fraternité' is only good for having a day off on the 14th July!

Why should we bother?

Why should there be responsibility of industrial research—for instance within EIRMA—towards a very nebulous global society?

In trying to find an answer, or if you wish, *the* answer to this question which is the leitmotiv of my intervention, I shall restrain myself from reading you the United Nations General Assembly Declaration on the New International Economic Order. Many arguments, not all, supporting my thesis would be in that Declaration. Let me quote instead our next speaker, Monsieur Michel d'Ornano, the French Minister for Industry and Research. In his opening address last week to the International Congress of the French Engineering Society he said, and I quote: 'Besides any consideration of generosity or words it is in the interests of the rich countries to share their capital of knowledge with the developing countries.' The motivation for such a new attitude is, according to M. d'Ornano, almost compulsory and I continue my quotation, 'We have now reached a point at which the misery of the larger part of the world has to be resolved, unless we are ready to open the road to an uncontrollable adventure (... sous peine d'ouvrir la voie a une aventure incontrôlable).'

Similarly, the World Bank President, Robert McNamara, observed in February of this year at the United Nations in New York: 'The day-to-day existence of the mass of the world's population is marginal at best; they live under conditions so degrading as to constitute an insult to human dignity.'

Cynically, one might argue, 'I feel sorry for these people, but after all I am not, or are we not all responsible for that situation.' Well, things are not so easy any more.

There are some wise men who observed that at the very

moment the world population by-passed the 'sound-barrier' of 3 billion people, the old world order collapsed and the closed world system to which Jürg Rutschmann referred became unmanageable. This turning point (we tend to have short memories) was only in 1960.

Terence Price, the former EIRMA Representative of Vickers Ltd., pointed out at a recent meeting of the Science Policy Foundation in Eindhoven hosted by Dr Pannenberg of Philips, that

'the human race is at the confluence of three streams of history. One is *military*. For the past 25 years, the bomb has ruled out gun-boat diplomacy by the industrially advanced nations. The traditional method of acquiring resources—pillage and subjugation—is no longer a political option. Henceforth, nation must learn to live with nation. A second is *demographic*, stemming from the reduction in mortality rates which has led to such a huge increase in world population. We anticipate a doubling in little more than 30 years. By the end of the century another 2000 million people will be alive. A third is *material*. The demand for resources by the rich nations rises inexorably, co-existing with abject poverty elsewhere. A recent World Bank review showed that no less than 2 billion people have an income of less than 200 dollars per year. In contrast, the U.S.A. and Europe between them use roughly one-half of all the world's energy supplies. The double exponential of population and demand has had the effect of shortening warning times to the point at which we can no longer adjust smoothly to sudden shortages.' [9]

An exhaustive and politically most interesting approach to our problems debated here was introduced by the United States Secretary of State, Henry Kissinger, two weeks ago in Nairobi in his address to the United Nations Conference on Trade and Development. He proposed a five-point approach:

- (1) 'To adapt technology to the needs of developing countries, the United States supports the establishment of a network of research and development institutions at the local, regional and international level. We need to strengthen global research capacities for development and to expand intergovernmental co-operation.'
- (2) 'To improve the extent and quality of technological information available to developing countries and to improve their selection of technology relevant to their needs.'
- (3) 'To nurture new generations of technologists and technology managers, the United States proposes a priority effort to train individuals who can develop, identify and apply technology suited to the needs of developing countries.'
- (4) 'To make the process of transferring existing technology more effective and equitable. New technology in industrialized countries resides primarily in the private sector. Private enterprise is in the best position to provide packages of management, technology and capital. To enhance that contribution, both industrialized and developing countries must create an environment con-

ducive to technology transfer.'

- (5) 'To set goals for achievement before and during the United Nations Conference on Science and Technology for Development, now proposed for 1979. The United States strongly supports this conference and its objectives. Preparations for it provide a major opportunity for both developed and developing countries to review their responsibilities for the sharing and use of technology.' [10]

I would wish that other governments, as well as industry and the scientific community, would elaborate and bring forward proposals similar to those presented by the United States Delegation in Nairobi. Let me just add one comment on the forthcoming United Nations Conference on Science and Technology. This Conference will be a political conference, but in contrast to the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas held in 1963 in Geneva, it will not be a 'science fair'. It will accent the *political* and *management* aspects of science and technology as factors of world development.

It is hoped, and I am gratified for having received considerable encouragement for this hope from many countries, that those outside government circles in charge of the 'S' (Science) such as the International Council of Scientific Unions (ICSU) and the Academies of Science and those in charge of the 'T' (Technology) such as EIRMA, IRI, JATES and others, will be ready to contribute actively to the preparations of this Conference. After all, the activities of the United Nations can only be as effective or as ineffective as the Governments of the world and through them the world community wish them to be.

The international community has little incentive and is furthermore poorly organized to encourage the increased application of science and technology to pressing world problems. There are no mechanisms to ensure that the benefits of science and technology are available to the greatest possible number of people: in the absence of a world government, which seems to remain forever a Utopia, there are only the international organizations, the United Nations system, as well as regional groupings like OECD, EEC, COMECON, OAS and the League of Arab States—to quote only some—who could deal with these world issues. The performance of these international organizations is largely determined by the attitude of their individual member governments. The oil crisis has demonstrated that under pressure, governments worldwide tend to behave more nationalistically than ever, contrary to the expectations and hopes of many that a crisis situation would bring countries together.

There is no such thing as a 'world conscience' and therefore the question of any responsibility towards society under global aspects is rather rhetorical in nature.

Nevertheless, we are witnessing that non-governmental movements such as the Club of Rome, the Pugwash Conferences, or the many private institutions such as the Aspen Institute for Humanistic Studies, IFIAS in Stockholm and IIASA in Vienna bring about changing attitudes towards the needs of humanity as a whole. Bodies like EIRMA or IRI have done the same and, no doubt, will continue to do so. The series of United Nations world

conferences on the environment, the peaceful uses of atomic energy, the world food problem, on energy in general and natural resources, on water, on the exploitation of the sea bed and the forthcoming United Nations Conference on Science and Technology, are all part of the lengthy process whereby the long established ethics, justice and politics of what one could call world development, are questioned. After all, what else could one expect from any conference if not, as Bernard Delapalme called it yesterday, 'faire avancer le probleme', to 'advance the problem'?

It is this problem of *awareness* on a *global* scale which I hope to advance slightly in the context of this Tenth EIRMA Annual Meeting.

Let me conclude not in quoting as is customary, Goethe or Paul Valéry, not even General de Gaulle, as Don Blickwede just did, but in mentioning the same quotation to which EIRMA's President referred yesterday. The same words could have, in the light of my interpretation, quite a different meaning:

'Everyone agrees', Professor Speiser said, 'that industry is part of society'—of the *world* society, I wish to specify. 'It is not we' (the *industrialised* countries) 'and they' (the *developing* countries), 'it is all "we"'—the human race as a whole. Let us go even one step further: Ultimately, it has to be everybody or nobody. . . .'

This is how I would see the responsibility of industrial research toward society under global aspects.

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