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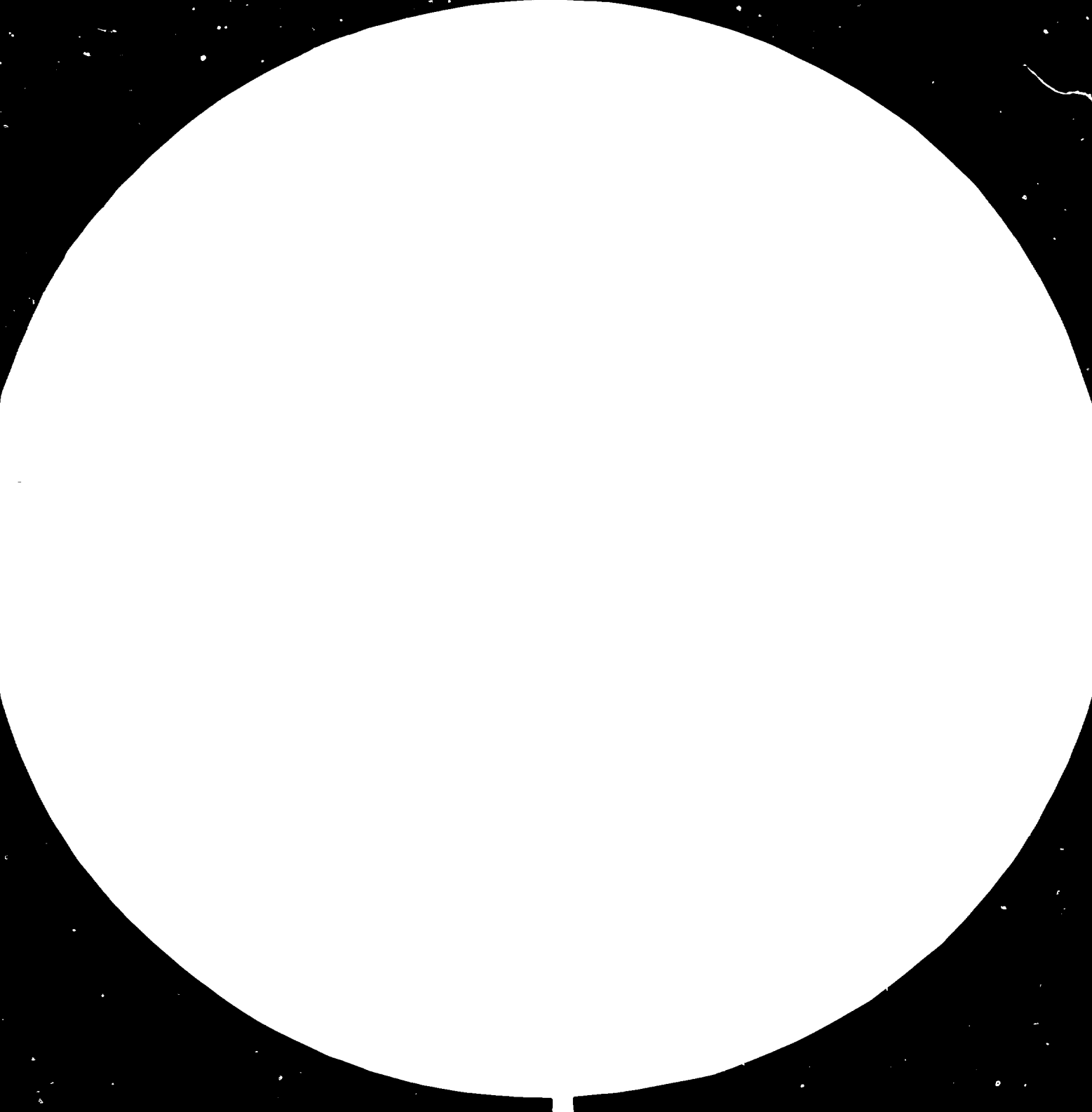
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CRISIS AND TRENDS IN THE RESTRUCTURING OF
THE IRON AND STEEL INDUSTRY

Implications for the scenarios *

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* This document has been translated from an unedited original.

More than two years have passed since the Working Group Meeting held at Algiers in December 1979. That year in fact saw a marked resurgence of the iron and steel industry suggesting that the worst period might be over.

The first version of the scenarios was drafted at the beginning of 1981 at a time when grounds for optimism were still being found in the recovery in the United States of America and when some people were insisting that there would be a shortage of steel in 1984 or 1985.

The scenarios method undoubtedly provides an instrument enabling one to escape from the tyranny of current trends and to advance from the mechanical extrapolation of the trend to true forecasting. That does not alter the fact that now, at the beginning of 1982, the evolution of the global economic context must be reviewed and questions asked about the compatibility and plausibility of the hypotheses adopted.

1. The crisis has been continuing for nearly eight years (1974-1982). After the false starts in 1976 and 1978-1979, no real recovery has yet occurred. In fact, for the last few months the trend has been in the direction of an aggravation of the crisis.

The short-term projections (1981-1982) published by the Brussels International Iron and Steel Institute ^{1/} indicated:

That the growth in the apparent consumption of steel in the Western industrialized countries would be slightly negative from 1980 to 1981 (- 0.1%) and would then pick up in 1982 (+ 3.9%), without, however, returning to the consumption level attained in 1979 (- 3.5%).

The Institute notes in this connection (writing in September 1981) that there is a higher probability of a downward movement than of an upward movement in 1982.

There are also many indices reflecting a slackening in growth in the centrally-planned economies and, in particular, a slackening in the growth of the iron and steel sector (production and consumption). The Economic Commission for Europe notes in this connection ^{2/} that "a process of consolidation of resources is under way in these countries in line with the new development

^{1/} IISI, 1981. Survey of the Short Range Outlook - Committee on Economic Studies - October 1981.

^{2/} "The European economy in 1980", United Nations Economic Commission for Europe, Geneva, 1981, chapter 1.

priorities, with the aim of restoring economic equilibrium at the national level" (provisional translation). This is reflected in iron and steel activities by increasing emphasis placed on the qualitative intensification of production rather than on its expansion. The result is that some countries are sending back their iron and steel development plans to the drawing boards ^{3/} in order to take into account changed conditions (energy prices, trends in demand, etc.).

This has led the Brussels Institute to advance the following hypotheses concerning trends in apparent consumption in countries with centrally-planned economies: ^{4/}

	(10 ⁶ tonnes raw steel equivalent)						
	1976	1977	1978	1979	1980	1981	1982
USSR and Eastern Europe	200.9	203.4	212.8	211.6	207.0	204.0	204.0
China and Democratic People's Republic of Korea	30.1	35.7	47.0	48.7	50.0	46.0	46.0
Total	231.0	239.1	259.8	260.3	257.0	250.0	250.0

On the basis of these hypotheses, the slackening-off would thus be general, affecting the USSR, the countries of Eastern Europe and Eastern Asia, where the growth of consumption in the Democratic People's Republic of Korea would not offset the slow-down in China.

The slackening-off also affects the developing countries taken as a group; here iron and steel consumption grew as follows: ^{5/}

(in 10 ⁶ tonnes raw steel equivalent)			
1979	1980	1981 (E)	1982 (Forecast)
95.3	98.5	99.2	104.2
1980/79 1981/80 1982/81			
3.35% 0.7% 5.0%			

^{3/} An example is Hungary, reconsidering the strategy for the development of its iron and steel industry. See the Metal Bulletin, 15 December 1981.

^{4/} IISI, op. cit. (see footnote 1), p. XV.

^{5/} IISI, op. cit.

In some regions and countries of the third world this slackening-off or decline was more marked than in others.

There was a drop in consumption in the Republic of Korea in spite of the continued growth of production: ^{5/}

	(in 10 ⁶ tonnes raw steel equivalent)					
	1977	1978	1979	1980 (E)	1981 (Forecast)	1982
Consumption	5.7	7.01	7.46	6.10	6.79	7.88
Production				8.55	11.2	12.0

There was a fall in consumption and production in the larger countries of Latin America, except for Mexico: ^{5/}

	(in 10 ⁶ tonnes raw steel equivalent)					
	1977	1978	1979	1980	1981 (E)	1982 (Forecast)
<u>Argentina</u>						
Consumption	3,646	2,918	3,827	3,237	2,700	3,190
Production	2,679	2,782	3,200	2,681	2,600	3,175
<u>Brazil</u>						
Consumption	12.0	12.4	13.3	14.6	13.4	14.5
Production	11.1	12.1	13.7	15.3	13.5	-
<u>Venezuela</u>						
Consumption	3.39	3.41	2.85	3.11	2.99	3.02
Production	1.41	1.47	1.63	2.18	2.20 (E)	2.76 (E)

This is the first drop in iron and steel production that has occurred in Brazil for a very long time, and in Venezuela there has been a prolonged decline in steel consumption in spite of the increase in the price of petroleum. Positive forecasts for 1982 would tend to indicate that what is in question is no more than a temporary weakening; however, they do not suffice to remove any doubts regarding the sustained dynamism of iron and steel consumption and production in the developing countries.

In this context of slackening-off and the reassessment of prospects, some observers continue to forecast a shortage ^{6/} for 1985, 1984 and even 1983. W. T. Hogan, for example, thinks that it will be enough for the demand for steel to increase by 1.5 per cent annually in order for the limit of actual capacities available to be reached by 1985. ^{7/} World Steel Dynamics originally forecast a shortage of steel for 1984 (Core Report N, July 1981); some weeks later, when recession was making itself felt in the United States, it became less positive and stated "that conditions will remain very difficult for a large part of 1982 ... so that the steel shortage will probably not occur before 1985 ..." (The Steel Strategist, August 1981). Conditions have proved even more difficult than was predicted, with the result that the predictions of imminent shortage are not being heard so often.

This is in line with the trends observed in Japan and the European Economic Community.

The Japanese have been seeing a quantitative decline in their exports for several years - from 37.0 million tonnes in 1976 to 28.9 million tonnes in 1981, and the figure is expected to drop below 28.0 million tonnes in 1982; domestic consumption, which decreased in 1981, is not expected to return to the 1979 level in 1982. The production forecast for 1985, 125 million tonnes of raw steel (now about 110 million), is being revised downwards. The Japanese iron and steel manufacturers, who quite recently were making efforts to obtain assurances of increased iron ore supplies from Australia and Brazil, now seem less in a hurry to conclude negotiations which have lost their urgency.

As far as the European Economic Community is concerned, the 1983 targets are being revised and predictions developed for 1985. It seems that the consumption figures expected for 1985 will show only a small advance or none on 1980, taking particularly into account the strongly negative impact of the trend in the specific consumption of steel.

In this context, most analysts naturally see no risk of shortage in 1984 or 1985, or in the following period. ^{8/}

^{6/} IISI, op. cit.

^{7/} The phenomenon of shortage is reflected in fact by surging prices.

^{8/} For example, Anthony Bird Associates, Metal Bulletin, 18 September 1981, or James F. King, ibid.

2. The evolution of global scenarios: new views

The "Proposals for the scenarios" (UNIDO/IS.213/Add.1/Rev.1) have selected from the many global scenarios available:

The Interfutures scenario of the Organisation for Economic Co-operation and Development (OECD);

The (energy) scenario of the International Institute for Applied Systems Analysis (IIASA);

The United Nations scenarios: those of Leontief and UNIDO.

The main macro-economic hypotheses expressed through annual growth rates of gross domestic product are assembled in the following table:

	IIASA ^{9/}		Interfutures ^{10/}				Leontief ^{11/}		UNIDO ^{12/}
	High scenario	Low scenario	A	B2	C	D	OEO	NEO	Normative
Developed countries	3.9	2.8	4.5	3.8	2.8	3.7	3.9	3.6	3.7
Developing countries	5.3	4.0	6.5	6	5.35	6	5.4	6.9	7.3
World	4.2	3.1	5	4.4	3.5	4.3	4.2	4.5	4.5

(*) Based on the low United Nations hypothesis regarding population growth.

(**) Continuation of past trends as far as the developed countries are concerned.

(***) Scenario A: Consensus in favour of high growth
 B2: Convergent-moderate-growth scenario
 C: North-South rift scenario
 D: Protectionist scenario

NEO = New international economic order - scenario C

OEO = Old economic order

^{9/} International Institute for Applied Systems Analysis, "Study on scenarios for energy supply and demand".

^{10/} Interfutures: Facing the future, Organisation for Economic Co-operation and Development, 1979; rates deduced from table 21.

^{11/} The Future of the World Economy: a United Nations study, 1977.

^{12/} UNIDO, "The UNIDO world industry co-operation model" (provisional document for the IFIP Conference on Global Modelling, Dubrovnik, 1-5 September 1980).

The most optimistic scenarios are the Leontief NEO and UNIDO NEO scenarios, characterized by the following growth rates (annual averages):

	<u>Leontief</u>	UNIDO
Developed countries	3.6	3.7
Developing countries	6.9	7.3
World	4.5	4.5

The most pessimistic scenarios are the Interfutures C and the IIASA "low" scenario:

	<u>Interfutures C</u>	IIASA (low)
Developed countries	2.8	2.8
Developing countries	5.35	4.0
World	3.5	3.1

The scenario proposed by the World Bank in World Development Report, 1981, fits fairly well into this general framework:

World Bank scenario

	<u>High</u>	<u>Low</u>
Developed market-economy countries	3.7	2.8
Developed planned-economy countries	3.9	3.9
Developing countries	5.7	4.6

Even in the World Bank's "high" scenario (5.7 per cent) the annual average growth rates of the developing countries are relatively much lower than in most of the scenarios quoted earlier; the "low" scenario for the developing countries (4.6 per cent) is higher only than the IIASA "low" scenario (4.0 per cent)

On the other hand, the UNCTAD Trade and Development Report, 1981 ^{13/} considers that the World Bank scenario is very optimistic in that "a return to former rapid rates of economic growth is unlikely in the foreseeable future ... The World Bank's assumptions in this respect appear to be somewhat optimistic, particularly

in view of the outlook for 1981-1982. For example, assuming an average rate of growth of GDP of about 1.8 per cent in 1981-1982, the World Bank's 'low' scenario would require that the developed market economy countries achieve an annual average rate of about 3.1 per cent for the remainder of the decade ... In the light of the problems facing these economies, it is unlikely that even the 'low' assumption will prove realistic unless policies change significantly". (op. cit., pp. 84-85).

These considerations lead UNCTAD to propose the following projection for the decade 1980-1990:

Developed market-economy countries	2.4
Socialist countries of Eastern Europe	3.5
Developing countries	4.2

The growth prospects of the developing countries are also declining: the rate proposed is almost as low as that in the most pessimistic scenario, the IIASA "low" scenario. The UNCTAD report explains in this context that this projection "reflects the constraints on the volumes and terms of financing that are expected for developing countries in the 1980s ... It is already clear that many developing countries have reached the point where they cannot afford further financing of their deficits on non-concessional terms and are adjusting to the current recession through a curtailment of imports and a slackening of growth".

The report emphasizes the consequences for the developing countries that will inevitably follow from growth rates as slow as this, particularly with regard to employment. The non-agricultural population of the developing countries should grow at an annual rate of 4.6 to 4.8 per cent during the 1980s; that implies that, in order to prevent any aggravation of unemployment, the developing countries would have to achieve an annual growth rate of 6.9 per cent in the non-agricultural sector and a minimum general annual growth rate (agricultural and non-agricultural sector) of 6.3 per cent.

The report goes on to say that these arguments provide the rationale for the growth target of 7 per cent for the developing countries adopted in the framework of the Third United Nations Decade, around which the normative scenario for the period 1980-2000 can be constructed.

UNCTAD normative scenario

	(Annual average growth rates)				UNCTAD low scenario 1980-1990
	1960 1970	1970 1980	1980 1990	1990 2000	
Developed market-economy countries	4.94	3.24	2.40	2.55	2.4
Socialist countries of Eastern Europe	6.59	5.31	3.50	3.50	3.5
Developing countries	5.88	5.63	6.44	6.99	4.2
<u>of which</u>					
Western Hemisphere	3.8	5.59	6.60	7.01	
North Africa and West Asia	8.68	6.06	5.88	7.00	
Other Africa	4.73	3.00	5.02	6.90	
Other Asia	4.89	5.97	7.02	7.01	
Socialist countries of Asia	6.82	5.51	6.01	7.00	

However, the UNCTAD report is not content merely to add a new set of scenarios to a list that is already long, for it also points out the desirability of:

(a) Showing on the basis of the most recent developments of the world economy that the trend scenario is purely and simply superimposing itself on the so-called "crisis" scenarios. The UNCTAD trend scenario is in fact more pessimistic than the Interfutures C scenario, which has been referred to as involving a rift between North and South;

(b) Drawing attention to the unacceptable nature of such a scenario, in so far as it would lead to an aggravation of unemployment, political problems that would be difficult to contain and would also entail unacceptable implications for the rest of the world;

(c) Emphasizing the necessity of implementing a normative scenario intended to place the developing countries on a path of growth that would, inter alia, make it possible to halt the aggravation of urban unemployment and to reverse the trend;

(d) Not concealing the contradiction between the inescapable necessity of implementing such a scenario and the difficulty of mobilizing the resources that it calls for. "The orders of magnitude involved would be beyond the capacity of existing financial mechanisms" (page 96). There is a contradiction whereby, while slower growth of the developing countries leads to a catastrophe, the acceleration of that growth seems to present intolerable demands on the rest of the world (developed countries). The problem of a way out of the crisis is thus raised in terms of the North-South relationship and the necessary but difficult initiatives to be taken by the North (normative); it is hard to see how such a way out could exist if it did not represent a joint effort.

3. The crisis of the iron and steel industry and the scenarios: trends and norms

3.1 The iron and steel industry is going through a crisis - that has become obvious today. There is a simple interpretation of the crisis in the iron and steel industry which seems to be self-explanatory. Iron and steel, an old industry, has completed its expansion phase in the industrialized countries. After two centuries, the iron and steel industry is running out of steam in those countries. The only new expansion to be expected in this industry is being and will be carried out in new areas: the developing countries are taking over and will continue to do so. That is the new deal. ^{14/}

- Reduction of capacity, restructuring: these are the watchwords which dominated the iron and steel industries of the market-economy industrialized countries at the end of the 1970s and the beginning of the 1980s.

In the European Economic Community, restructuring continues to affect the British, Belgian and French iron and steel industries severely. "220 million tonnes in 1980" (a headline in a French newspaper in 1976!) definitively constitutes a misleading target. Whether we are talking about the 1990 horizon or a more distant horizon, there is no longer any question of exceeding 200 million tonnes' capacity.

In the United States, a case has recently been put forward for restoring to the iron and steel industry the capacity to satisfy national demand in the future, seeing that 20 per cent of such demand is now being met by imports. ^{15/} It seems that this will be out of the question and that in the coming years there will be no significant expansion of the iron and steel industry in the United States. ^{16/}

^{14/} Steel recession changes traditional thinking - Switch to developing nations - Financial Times, 7 December 1978.

^{15/} For example at the AIME Congress in New Orleans, 1979.

^{16/} Cf. for example the conclusion of Crandall's book: The US Steel Industry in Recurrent Crisis - Policy options in a competitive world, The Brookings Institute.

- The Japanese iron and steel industry has considerable excess capacity (approximately 160 million tonnes). There is now no question of expanding its capacity or even of using it at a considerably improved production level, since forecasts for the increase of production to 125 million tonnes in 1985 (instead of approximately 110 million tonnes at present) have been revised downwards.

- The slow-down in the growth of iron and steel production in the USSR and the centrally-planned economy countries of Eastern Europe is consistent with the same long-term trend. For it seems, according to information available, that there is a disavowal of the policy of rapid expansion of capacity and a change-over to a policy of more productive and better use of existing installations.

- The result of these developments is that long-term forecasts are being made today which would have been inconceivable only five years ago, in so far as the output estimated for the year 2000 in the present industrialized countries could be obtained on the basis of slightly increased production capacity. ^{17/}

10 ⁶ tonnes of crude steel	1980		2000
	Production (estimate October 1980)	Capacity	Production
<u>Industrialized countries</u>			
Western Europe	158	200	180
United States + Canada	110	160	170
Japan	110	160	130
USSR + Eastern Europe	225	230	250
Australia + South Africa	15	20	20
Total	618	770	750
<u>Developing countries</u>	105	130	250
<u>Total, world</u>	723	900	1,000

^{17/} J.Astier: "Evolution de la sidérurgie dans le monde", COFRANSID, Report No. 77, December 1980. The author advances these figures "with considerable reservations".

In this context, the dynamism of expansion "is changing ends", it is obviously passing to the developing countries where most expansion projects in the world iron and steel industry have been carried out during the last eight years and where such projects are being planned.

Some years ago, in 1974-1975, this shift in the extensive dynamism of the industry seemed to represent a kind of "large-scale house-moving"; it sometimes aroused a sort of panic (real or sham) in the face of the new threat coming from the "South". In fact, that was the period in which large-scale projects were launched for countries well supplied with iron ore, energy or land - Australia, Brazil, Saudi Arabia and various petroleum-exporting countries of the Mediterranean and Middle East. That was also the time when a number of developing countries launched extremely ambitious plans for the development of their iron and steel industries:

Iran with more than 20 million tonnes from 1985;
India with 100 million tonnes in 2000;
Brazil with 40 million tonnes from 1985;
China with 10 gigantic projects of 6 million tonnes each;
Algeria with more than 10 million tonnes in 1990, etc.

The large-scale projects launched on the initiative of the major Japanese, European or American companies were rapidly abandoned from 1976-1977, except for one project which is now under construction (TUBARAO in Brazil); on the other hand, all the very ambitious plans, without exception, have either been abandoned or reduced to more modest proportions. The situation has now been clarified; the projects of the South, towards which it is known that there will be no "large-scale house-moving", have ceased to be regarded as a great threat, especially as the exports of iron and steel products from the industrialized to the developing countries tended rather to accelerate from the middle of the 1970s.

Development of exports of iron and steel
products to the developing countries from
selected industrialized countries 18/

	1970	1973	1978
<u>Japan</u>			
Exports to developing countries in 1,000 t	8,055	14,858	20,595
Expressed as a percentage of total exports	45.8	59.9	66.6
<u>Federal Republic of Germany</u>			
Exports to developing countries in 1,000 t	1,192	2,209	4,900
Expressed as a percentage of total exports	9.9	12.8	26.5
<u>France</u>			
Exports to developing countries in 1,000 t	1,091	1,376	2,732
Expressed as a percentage of total exports	14.8	16.6	26.1
<u>Italy</u>			
Exports to developing countries in 1,000 t	376	927	2,612
Expressed as a percentage of total exports	21.6	26.9	31.7

It is noteworthy that these exports involved not only pipes and flat products (which was anticipated) but also long products, in particular to the OPEC countries and China.

But the fact remains that in spite of some slackening and the rather spectacular recession in Latin America during 1981, it is in the developing countries that the projects for expanding the capacities of the world iron and steel industry are being implemented and studied. In this respect it is significant that the developing countries are claiming an increasingly

18/ Statistics: Chambre syndicale de la sidérurgie française.

substantial portion of the new investments in the iron and steel industry; in 1980, Latin America plus India and the Republic of Korea had a share of over 30 per cent in world investment, although they account for only 9.1 per cent of world iron and steel production.

Even though the new state of affairs represented by the expansion of the world iron and steel industry is not as dramatic as once feared, it is becoming a reality. The most powerful obstacle standing in the way of the development of the process is first and foremost (but not exclusively) financial. For this reason the use of a normative scenario in the context of interpreting the crisis aims to reduce the obstacles which are impeding the release of the new dynamic forces in industry. In other words, the financial obstacles should be given priority but the technical and organizational obstacles should not be overlooked either.

3.2 But less simple (simplistic!) interpretations of the crisis of the iron and steel industry must also be considered. For if the crisis revolved only on transferring the scope for an expansion of the industry and its production capacity from the (industrialized) North to the (developing) South, all the industries concerned would be affected both in their activities and in their results equally. Yet it seems that this is not the case and that what for several years has been termed "restructuring" does not have precisely the same content for the iron and steel industries in Japan, in Europe and in America. A phenomenon of differentiation and segmentation can be discerned.

In Europe (European Economic Community), the situation of the iron and steel industry continues to be gloomy; the German iron and steel industry, which had fared better since 1974, was also affected by the worsening situation in 1980 and then in 1981.

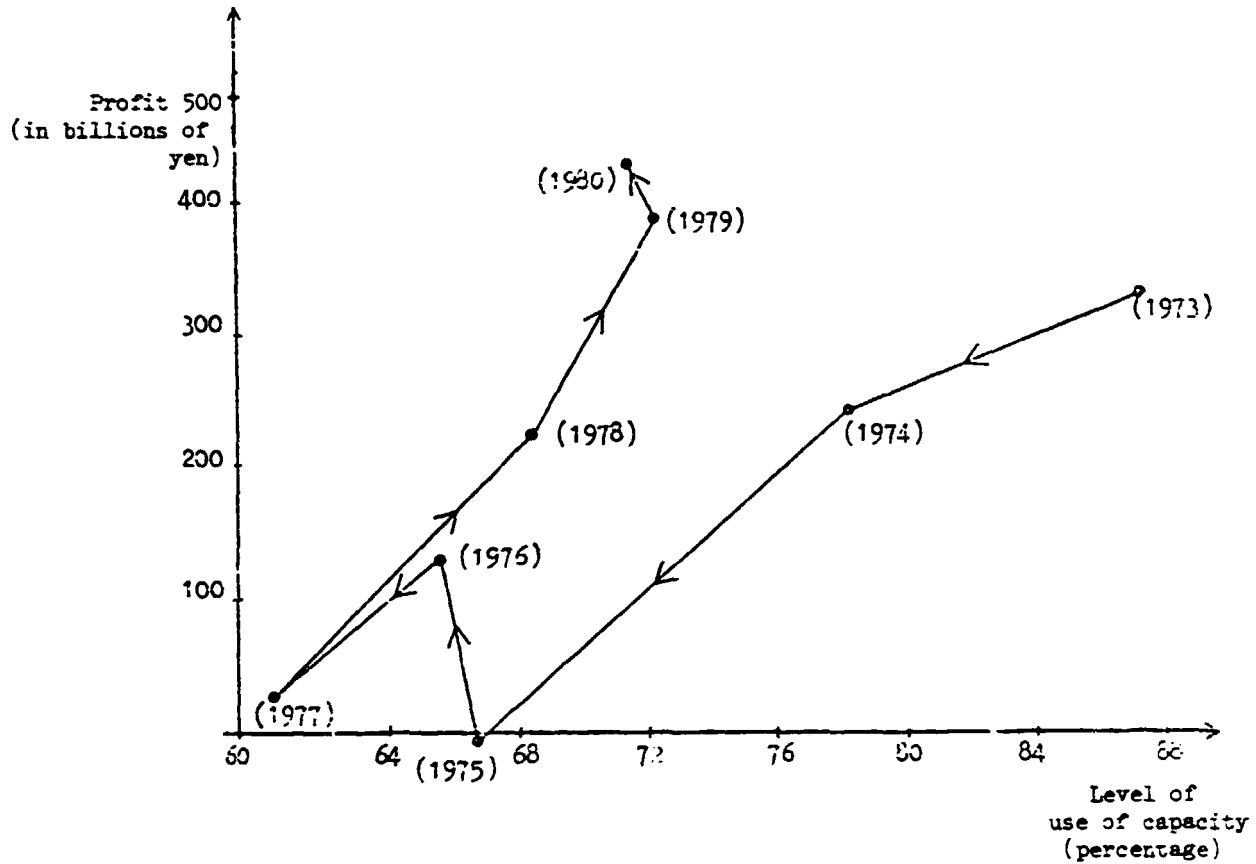
In the United States on the other hand the profits achieved by producers increased sharply in 1981, in relation to the increases in the sale prices, closures of plant and the efforts to reduce production costs. The seven leading United States steel producers achieved a cumulative net profit of 548 million dollars in the second quarter of 1981 (+ 92 per cent as compared with the first quarter of 1980) and 1,031 million for the first half of 1981 (+ 54 per cent as compared with the first half of 1980). Furthermore, the situation of certain companies reflects the strength of their reactions to the new state of affairs: this is the case with National Steel whose Detroit plant continues to make a profit with a market rate below 60 per cent, thanks to a systematic modernization effort.

Differentiation is even more striking in respect of the iron and steel industry in Japan, as revealed by the following table.

	<u>Trading results</u>		<u>Net results</u>		
	1980		1978	1979	1980
	<u>Percentage of turnover</u>	<u>\$US per tonne of steel</u>	<u>Percentage of turnover</u>		
<u>Japan</u>					
Nippon Steel	7.9	36.5	1.9	3.7	2.3
Nippon Kokan	12.3	60.9	0.9	1.9	2.6
Sumitomo Metal	12.3	61.9	1.5	3.2	3.6
Kawasaki Steel	14.9	69.0	1.8	4.4	4.7
Kobe Steel	10.6	80.0	1.6	2.5	2.3
<u>United States</u>					
US Steel	0.7	2.8	2.2	-2.3	4.0
Bethlehem Steel	6.9	41.9	3.6	3.9	1.8
National Steel	3.6	20.6	3.0	2.9	0.8
Republic Steel	7.1	42.7	3.2	3.0	1.4
Inland Steel	5.2	32.3	4.9	3.6	0.9
Armco Steel	5.6	27.3	4.6	4.9	4.7
<u>Europe</u>					
Thyssen AG	0.7	2.5	1.6	1.7	1.3
British Steel	-22.6	-125.9	-8.0	-17.6	-23.4
Italsider	5.6	21.7	-13.4	-8.3	-19.5
Usinor (*)	-3.9	-17.0	-13.6	-8.6	-7.2
Sacilor (*)	-10.7	-40.6	-10.5	-12.6	-18.1
Krupp	2.9	41.1	-0.2	0.9	0.7
Arbed	4.3	14.5	-5.1	-0.5	-3.5
Salzgitter	1.8	19.3	-1.4	-0.1	-1.0
Mannesmann	3.1	51.9	2.0	1.2	1.4

(*) Unconsolidated.

It should be noted in particular that the results of the Japanese companies have improved very considerably, whereas the rates for their utilization of capacity have remained low.



The Japanese iron and steel industry's capacity for adaptation and adjustment has enabled it to overtake the profit level achieved prior to 1975, with much lower production rates. Before 1975, the production rate needed to exceed 80 per cent for there to be a profit; after 1978, higher profits were recorded with production rates approaching 60 per cent. Indeed it is the Japanese iron and steel industry which has a number of expansion projects in order purposely to concentrate efforts on modernization, intensification and the manufacture of quality products with high added value.

And it is in Japan and the United States that a strong revival of investments in the iron and steel industry is anticipated for 1981.

During the past year, the American iron and steel firms have publicized major investment projects of the order of 5.4 billion dollars. The size of these projects (whose implementation will be staggered over several years) contrasts sharply with earlier modest forecasts. The projects of the seven leading American steel producers represent 3.4 billion dollars, whereas their annual outgoings since 1978 have been 1.9 billion dollars on average.

Trends in total investment by American
iron and steel producers

(in 10⁶ dollars)

	1971	1975	1977	1978	1979	1980	<u>Forecasts</u>		
							1981	1982	1983
US Steel	452	787	865	668	979	753	900*	1000*	
Bethlehem Steel	306	688	552	412	418	506	450*	600*	750*
LTV			90	133	326	242	202		
Republic Steel	62	200	155	211	341	346	320*	310*	360*
National Steel	114	214	164	122	200	265	180*	220*	
Inland Steel	64	208	274	264	284	241	140*	190*	255*
Armco		247	146	210	162	271	400*	515*	
Total			2,268	1,939	2,717	2,624	2,592 + 3,000		

* Kidder, Peabody estimates.

The breakdown of the projects announced is as follows: 50 per cent devoted to modernization and high-quality product manufacture (coated sheet, high-tensile sheet); 20 per cent to the expansion of continuous casting, 30 per cent to the development of the production of seamless pipes on which very high profits are made.

The Japanese steel manufacturers, who had reduced their investments since 1977 (with the exception of Nippon Kokan) and devoted their efforts to reducing costs, in particular to energy saving, are also starting to reinvest and their investments will rise by 30 per cent from 1980/81 to 1981/82 - the increase being 42.5 per cent for the five leading producers.

Trends in total investment by Japanese iron and steel producers
(in billions of yen)

	1977	1980	1981	1982	<u>Forecasts</u>	
					1983	1984
Nippon Steel	283	170	165	210	200-250	200-250
Nippon Kokan		182	48	100		
Sumitomo Metal Ind.	206	63	101	136	150-160	150-160
Kawasaki Steel		51	72	125	130	
Kobe Steel		43	52	68		
Total		496	448	639		
Other producers			190	191		
Total, Japan			638	830		

As in the United States, these investments are mainly devoted to in-depth modernization programmes and the promotion of quality products of high added value, such as seamless pipes, the capacity for which should rise from 3.9 million tonnes in 1980 to 5.7 million tonnes in 1983, and coated sheet, the production capacity of which should grow by 1.5 million t/yr in 1983/84.

Such a resurgence of investment can only be interpreted as the harbinger of a recovery from the crisis, but of a recovery in the form not of a resumption of capacity expansion (except in a very specific way) but rather of systematic programmes of intensive modernization and pursuit of the added value bound up in the quality of increasingly sophisticated products.

This recent development clearly raises problems for the European iron and steel industry, which is likely to see the gap that separates it from the Japanese industry, and also from the American industry, widen rapidly before its own restructuring has been completed. That raises an even more serious problem for the future of the iron and steel industry in the developing countries in the face of a totally modernized industry in the most advanced industrialized countries, as it is taking shape in Japan and in the United States. This raises questions as to the very meaning of a normative scenario.

3.3 Intensive modernization, recovery from the crisis and the normative scenario

Everything was relatively simple, conceptually at least, so long as it was possible to take an "extensive" view of the crisis and recovery from it. Once it had been accepted that the expansion of the iron and steel industry was henceforth a matter for the South, all that was required was to facilitate this development by overcoming the main difficulty, that of financing, though no-one underestimated the dimensions of this problem.

However, it turns out that it is in reality not that simple, if a view of the crisis is adopted that is not solely extensive but is both extensive and intensive simultaneously. This assumption entails a southward transfer of dynamic capacity expansion simultaneously with an intensive resumption of modernization in the iron and steel industries - or some industries - of the industrialized countries. It follows that it is not enough to add up and compare quantities in terms of crude steel, but reference must also be made to developments regarding yield (on a zero basis), quality and improved market value of the products. Accordingly the extension of the iron and steel industry

into new areas in the South or the developing countries is only feasible with reference to the new shapes of the powerful steel industries of Japan and America, which are beginning to speed up their transformation, for this rapid modernization process will lead to the appearance of new standards for the iron and steel industry which will be specially coercive on all concerned because they will be determined in relation to the production of goods down the line, such as motor vehicles and domestic appliances, in the design of which the developing countries will not be involved for a long time yet.

The problem is further complicated by the fact that the modernization of the iron and steel industry calls for large and ever-increasing amounts of capital. Having maintained a low profile for a number of years, the iron and steel industries of the industrialized countries are now preparing to enter into competition with the industries of the developing countries. This competition is likely to be particularly strongly resented by the industries of the developing countries because the "North" has the advantage of being able to guarantee high levels of reliability and profitability.

A normative scenario can only be implemented in this context, therefore, if not only the financial problems, which have become even more difficult through the renewed competition for capital, can be overcome, but also the problems arising from the low availability of technical skills, the increasing rate of technical progress and the ever more complex nature of the new standards being wholly or partly forced on world industry.

Recent developments in the Japanese and American steel industries confirm, therefore, that the crisis is expressed simultaneously in the opening up of a new area of expansion of the industry (the extensive aspect) and in the establishment of new standards for an industry which had been wrongly regarded as out of date (the intensive aspect). The two aspects are inseparable and there can be no solution to the crisis, and consequently no scenarios for emerging from the crisis, that do not take this into account. Clearly this raises a number of questions, including the following:

How can the developing countries be brought, in time for it to be still useful, into a process which is not only extensive but also intensive?

Does the impending restructuring of Western steel industries encourage co-operation or not, and in particular does it create conditions favourable to:

The financing of projects in developing countries?

A general attempt to transfer know-how?

A mobilization of research and development capacities
in order to find the most suitable means of speeding
up the acquisition of technical skills?

Would not the discussion in this area benefit by expansion beyond the
dialogue among iron and steel experts to include, in particular,
producers of capital goods and those who will be increasingly concerned
with the efficient transfer of know-how?

