PHILIPS

International reorganisations and workers' resistance

Edited by Teo Bouwman

SOBE, Eindhoven, the Netherlands

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Foreword

During the last decade Philips has carried out increasing numbers of large scale international reorganisations. In some parts of the world, and especially Europe, production activities have been cut; in other parts production activities have been expanded. In the United States especially, Philips has entered into a number of competitive markets. Philips gain access to the large American government markets and advanced technologies mainly by takeovers.

Philips involvements in the Third World and the underdeveloped countries especially grew during the early seventies. This development came to a standstill in the middle years of the decade.

In the meantime, production in the 'runaway' countries such as Taiwan, Singapore, and South Korea grew. This development too appears to have stopped, mainly due to increasing levels of production automation: that is to say, the expansion towards these countries. Philips is most likely trying to transfer its labour intensive production processes to countries with even lower wages such as the Philippines.

In the first two articles of this book, 'A Profile of the Philips Concern', and 'Backgrounds of Philips Internationalisation' a closer look is taken at Philips internationalisation. At the same time, the devastating consequences for the employment situation are exposed in broad lines. The consequences for the employment situation, technology transfer, balance of payment effects, reinvestments of profit, improvements in the social climate, especially in Third World countries are

described in the article 'Philips' Role in the Development of Brazil'. Philips optimism about its positive contribution towards the development of developing countries is proved totally ungrounded in this and other studies.

The next five articles go into a number of important production activities in the professional and consumer branches.

On the one hand the automation industry is discussed, which involves in any event the following Philips Product Divisions: Data Systems, Science and Industry, Telecommunication and Defence Systems, Elcoma (semiconductors). The outlines of these Philips activities are described in 'The Automation Industry, and 'Philips and Military Production in the Netherlands'. 'Philips and Automation' is an article which discusses the consequences of automation at Philips itself; the negative influence on employment and quality of labour are also considered. It is a summary of a number of research results carried out at various Philips plants in the Netherlands (PTI in Hoorn, Elcoma in Nijmegen, Machine Factories in Eindhoven, and Elcoma and Video in Eindhoven).

'Philips: Armament or Employment: a case study' discusses the need for reconversion from military to civil production.

On the other hand, the Video sector is investigated in the article 'Backgrounds in the Restructuring in the Video Sector'. Tales of reorganisations under pressure of Japanese competition are squashed. The strategic importance of the successor of the colour tv production, on which large parts of the concern were dependent, such as VCR, VLP or the flat screen of the future, are mentioned.

The choice of these two sectors, which are of strategical importance to Philips, for discussions was strongly

influenced by the same reason that caused this book, namely: a schooling conference for European Philips employees to be held in June of this year. After consultations abroad it appeared that the developments in these two sectors were estimated to be of great importance. International information exchanges seem urgently necessary, as nationally operating trade unions and shop steward committees are played off against each other all too easily by Philips international strategies.

Three articles therefore look into international trade union activities and the experiences gained with these activities. First of all some events which took place in the middle of the seventies are described in: 'International Trade Union Activities: The Strike at Philips Barcelona (Miniwatt); The Actions of Solidarity with the Strikes at Philips Colombia'. It is important to know that before this time the European Metalworkers Federation had managed to move Philips into having regular top talks with the Board of Management about international developments and possibly even international Collective Labour Contracts. This EMF strategy has however been shipwrecked by the unwilling attitude of the Board of Management. Even today Philips will not hear of these proposals.

The contribution from the chairman of the shop stewards committee Glass shows us in 'Philips Glass International: Experiences' how difficult international trade union work can be. In preparation for the above mentioned European conference English and Dutch union members held a meeting and have already exchanged some information. Our report of this meeting can be found in: 'English Philips Workers in the Netherlands'.

The penultimate article shows us the state of affairs at Philips in the Netherlands in whose threatened plants workers are developing alternative production and employment plans.

The final article 'The Strategy of Job Destruction'

goes into Philips job destroying strategy as well as problems concerning the structure and strategies of the FNV industry union. A number of suggestions on improvements form the conclusion of the book.

Without the subsidies from the NCO and The World Council of Churches, as well as the great efforts by Gay Wylie (translation and typing) and Adrian Steketee (translation), this book would never have appeared. Hopefully this SOBE publication will be a stimulant for the resistance against Philips international demolition policy.

Theo Bouwman

April 1982

A profile of the Philips Concern

Maarten van Klaveren

Philips has left the stage of being the 'electric light bulb factory in the South of the country (the Netherlands)' far behind. The Philips trademark can be found on a huge range of products, ranging from shavers to 'packages' such as complete telephone systems, from mixers to radar installations. From this, one cannot fail to notice how far reaching the internationalisation of the Philips production has become: 'made in Austria' can be found on video and hifi systems, and for example, when you open up a small Philips television for repair, you can often see the words 'made in Taiwan'. The sales of the concern are equally gigantic: in 1980 a good 36.5 billion guilders. For 1979, when the Philips sales were 33.2 billion guilders, it was given 21st place on the 'Fortune' list. Only IBM, General Electric and ITT had a larger turnover in the electro-technical field.

In this profile, we will take a short look at the growth and internationalisation of production of the 'electric light bulb factory'. Before looking into the effect of the worldwide spread of Philips activities on employment, we will take a closer look at the organisational structure. Finally, after going into Philips position as a competitor on the international market, we will deal with the consequences on employment in the Netherlands.

DEVELOPMENT OF PHILIPS INTERNATIONALISATION

Nearly 30 years after its foundation in 1891, Philips first started production abroad. This was rather late

compared to its main foreign competitors: General Electric, AEG and Siemens. Philips was also slow in getting a foothold on the international sales market. The firm had concentrated its efforts on cheap 'bulbs' for a very long time for which they could use unskilled and cheap labour, which was plentiful in Eindhoven (Teulings, 1976, p. 14). From 1919 to 1921, Philips bought light bulb factories in Belfium, Spain Italy and France, using the enormous profits made during the First World War. During the twenties, takeovers and participations follow in another 11 European countries and in Brazil and Australia (Teulings, 1976, p.72-74; Bouman, 1956, pp.141-148 and 166). The resulting production was for local markets. This production gained importance during the thirties by avoiding import restrictions. Under new management, Philips pushed through its diversification policy and the production of radios became more important than that of light bulbs. This success was reached at the cost of especially Dutch workers who, in the crisis, suffered from rationalisation and mass-dismissals at Philips. The company transferred employment abroad: in 1929 two-thirds of Philips employees were in the Netherlands, 10 years later this figure was two-fifths. This means a total of 8000 less Philips workers in the Netherlands (Teulings, 1976, p.82; Gruisen et al. 1976, p.43).

During the Second World War the spread of interests was continued and accelerated shortly thereafter. Steps towards integration were amongst others the acquisition of own glass, cardboard and other supply factories, and producers of military articles (HSA), but most important is the push that Philips got by exploiting the TV market (Teulings, 1976, p.140-151). Between 1945-1965 the concern expanded enormously (the number of employees was quadrupled). There were no real developments in the internationalisation of production. In the second half of the sixties, the runaway movement set in. Philips invested in perifery countries with 'reliable'regimes thereby continuing their strategy, begun early in the 20th century, by exploiting low wages and avoiding trade unions. In 1967 Philips started a factory in Taiwan

(F. Philips, 1976, p.292), followed by similar factories in other Asiatic countries, Brazil and Mexico. In 1975, Philips took over the American firm Signetics which already had a network of runaway firms. This takeover, as with the earlier takeover of another American firm - Magnavox - is also an expression of a second new tendency: takeovers and investments are aimed at entry into the largest state markets (with lucrative government contracts) and of acquisition of advanced technologies. Philips hereby concentrates mainly on the USA and in a lesser way on West Germany.

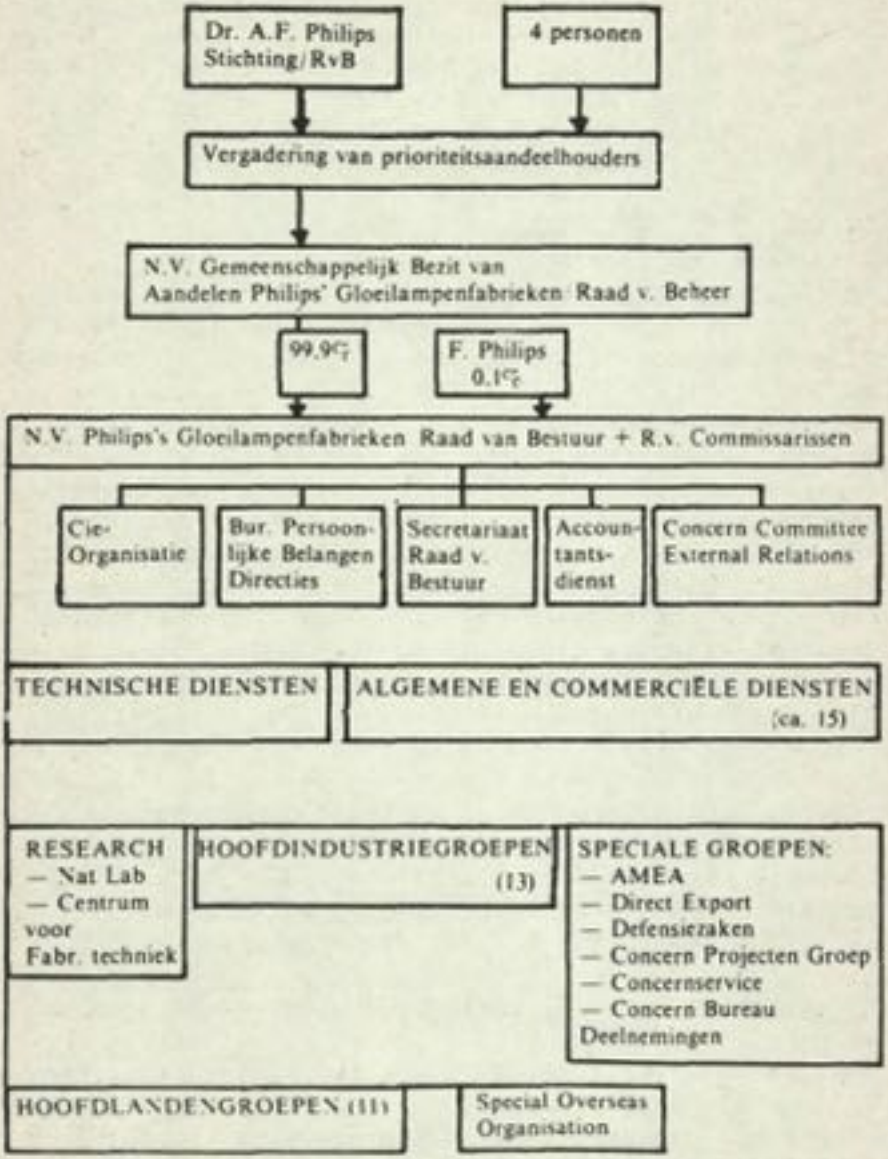
PHILIPS ORGANISATIONAL STRUCTURE

In these countries, but in fact throughout the world, Philips presents itself as being a local business, part of a federation of companies. In short, as a 'reliable subject' sticking to the laws of the country - even if that is a dictatorship. International actions of solidarity by trade unions are opposed by the Eindhoven top with the claim that the Philips National Organisations are autonomous (one example: Philips Miniwatt, Barcelona, Spain, suspension of 900 workers in 1975). There are plenty of examples where it can be shown clearly that Eindhoven has stepped into negotiations (another example: Monza, Italy, 1970, see Piehl, 1974, p.163). In other fields the image of being a decentralised concern creates many possibilities.

For example, when West European governments decided to support 'chips' production in their own countries, Philips managed to collect subsidies via its daughter companies in West Germany, France and Britain without opposition (sources, respectively, Business Week, 14.11. 1977; The Economist, 5.8.78; Electronics, 1.5.78).

Up until the present, Philips has somehow managed to keep up its above mentioned image, especially in the management literature. Even so, the picture that emerges is deceptive. It is founded on a superficial impression of Philips organisational structure with its double division, namely geographical and functional.

Beheers- en organisatiestruktuur Philips.



Geographically the concern is structure in Main Country groups, complemented by the special groups: the Special Organisation and the Direct Export Division. The 11 Main Country groups consist of 68 National Organisations.
Functionally, the Philips organisation is divided into:
1. The Product Divisions ('divisions'), 13 in total. Audio, Video, Elcoma, Glass, Small Household Articles (KHA), Large Household Articles (GHA), Telecommunication and Defence Systems (TDS), Light, Medical Systems, Data Systems, Electro Acoustics (Ela), Scientific and Industrial Equipment (S&I), and finally Related Firms; and also the Nederlandse Kabelfabrieken (NKF). Important participation: Polygram (50% with Siemens), MEC (35% with Matsushita Electronic Industries) and so on.
2. The Research (the Physics Laboratories).
3. The Special Groups including Direct Export, Defence, Concern-Service.
4. The Technical Services including the Algemeen Bedrijfsbureau (general business office), the Central Development Office, Technical Efficiency and Organisation (TEO), Machine Workshops and Philite Metalwords Factory (PMF).

Even so, this complicated matrix structure (a factory comes under both Product Divisions (PD) and the National Organisation) does not mean that the management and decision structure is organised decentrally. We will start at the bottom of the 'real top'. The managements of the PDs are responsible for the day to day investment and production policy. The PD managements' 4-year plans are presented to the Board of Management of the NV Philips Gloeilampenfabrieken who check economic feasibility. In the seventies, the Board of Management started fulfilling the role of bankers: on the basis of international costs and efficiency comparisons, they decide on the investment and financing possibilities for the PDs. At this intermediate level of management, there is in fact a specialised industrial banker (Teulings, 1979, p.133,135). However, the Board of Management is not the highest management organ. The management structure is

extremely concentrated: power is in the hands of a very few. The holding company, NV Gemeenschappelijk Bezit van Aandelen Philips' Gloeilampenfabrieken, which controls 99.9% of Philips' Gloeilampenfabrieken shares, is the central pivot. The Board of Management of the holding company, consisting of 5 persons, controls it. These 5 persons are appointed (not elected) by the shareholders of the 'NV', but their appointment is in fact dictated by the priority shareholders. Therefore, the holders of priority shares in fact control the whole concern. There are 10 priority shares, of which 4 are held by persons and 6 are owned by the Dr. A.F. Philips Foundation in the Antilles. The Directors of this Foundation are chosen internally. Five Dutchmen have the most powerful positions: they control both the priority shares and the holding company through their membership of the Board of Management thereof. In the same way as the 4 others who are involved in the decision making of the Foundation and the holding company, these 5 are members of the Philips family or are closely related. Rodenburg, the Managing Director, is President of the Board of Management of the 'NV'. He claims that the influence of the (ordinary) shareholders and the 'Supervisory Board' (RvC) should not be underestimated (NRC, 22.11.1978); this is however in contradiction to the facts. These show that the statutory power of the RvC is minimal and cannot appoint or dismiss members of the Board of Management. Workers' influence via the Dutch 'structure law' is evaded. This influence is threatened with further repressal when the plan presented by the Board of Management in May 1981 becomes reality: the founding of two new daughter companies, namely Philips International BV for the international direction of the concern and a National Organisation Netherlands, responsible for the commercial and social policy in the Netherlands. In this way, the Board of Management would become even more protected from the trade unions.

EMPLOYMENT AND INTERNATIONALISATION

As pointed out, Philips has undergone an enormous expansion since the Second World War. At the end of 1974, the largest employment figures were reached: 411,600 employees. This growth has not been constant. Already in the fifties, Philips had shown itself to be vulnerable to the accumulation problems which confront the international electro-technical industry every 4 to 5 years. The 'rate of profit' collapses (1951/52 and 1956), even though on average this period was very lucrative. The extensive growth of the concern reached its limit around 1964. The next item on the agenda is mechanisation and automation and internationalisation towards state markets and low wage countries. The 'rate of profit' now structurally reachers a lower and further declining level. On the whole, Philips turns out to be able to offer less resistance to the international 'over-production' crises than before (1966/67, 1970 and 1974). Philips reacts by cuts in existing firms and by buying new firms (centralisation and concentration also persist when crises symptoms manifest themselves). The results of the cuts are masked by the buyings. In this way, 24,000 jobs are added during 1968 worldwide, but this is purely the effect of adding the 45,000 employees of Pye Holdings, North American Philip Corporation and Conelco to the Philips statistics. The same happens in 1971: 8000 jobs added, but in fact, 34,000 through consolidation (including NKF) so that in fact 26,000 employees were dismissed, of which in the Netherlands a good 8,000, and in the USA 5,700 (sources: own research: Bouwman, 1974; Teulings, 1976).

After 1974, the total Philips employment figure decreases (see Table 1). Of course there are various tendencies behind these developments. We will discuss them per geopolitical region, which indicates the functions which the concern allots to these regions. A number of important figures can be found in Table 2. We have been forced to use the territorial divisions which Philips itself uses. The figures about company results should be handled with utmost care: they are

strongly influenced by the internal calculation methods used at Philips.

Table 1. Development of personnel at Philips, 1974-1980 (as of 31-12)

1974	441,600	1978	387,900	(1-1-79: 379,200)
1975	397,000	1979	378,600	
1976	391,500	1980	372,600	
1977	383,900			

The employment at Philips Netherlands has been crumbling since 1970. If we take into account that the NKF has been included in the figures, there has been a drop in employment of 28,500 from 1970 to 1980. The total share of the Dutch employment has dropped from more than one-third in 1964 via a quarter in 1973 down to 21% at the end of 1980. We will go into this crumbling again later on.

Elsewhere in Western Europe - traditionally the focal point of Philips interests - cuts dominate the picture. During the last eight years the number of Philips employees in the other EC-countries dropped by nearly 30,000. Especially the British and Italian plants were often subject to cuts or closing downs. They have become victims of the concentration of production in large numbers; a policy which Philips is following to be able to automate efficiently. Relatively cheap labour apparently does not weigh up to this. In the other European countries too the growth seems to have stopped after the expansions particularly in Austria (Video). The employment in the European perifery has also been declining for the last few years with closures in Portugal and Finland.

The greatest expansion is taking place in the US. The access to the state markets, and advanced technology, and the changes in exchange rates (US labour is rela-

tively cheap), play the most important part. The number of Philips employees in the US has grown by more than 30,000 during the last 8 years, mainly through take-overs (such as for instance the recent takeover of GTE's TV activities: Sylvania and Philco). It can be expected that Philips will 'harmonise' North American investment with the sales percentage (that means 16-17% of the total investments). The Dutch employees are especially threatened to become the victims of this.

The Philips interests in the third world have been moved from the subcentres with large sales markets to low wage countries. The number of Philips employees in this first category dropped by nearly 2,000 during the period 1973-1980, while employment rose by nearly 14,000 in the so-called 'runaway countries'. We must however take a closer look at this development. The focal point of Philips interests in developing countries is still in Latin America, and in Brazil in particular. Parts of Brazilian production for that matter also bear a 'runaway' character. (Gruisen C.S., 1978, p. 141 onwards). On the whole, Philips activities in Latin America and Africa prove extremely profitable, in spite of the 'high local interest burdens'. At the end of 1980, Philips had around 24,000 employees in the 'runaway' countries. The period of strong growth in these countries, which was from 1973 until 1976, now lies far behind. Since 1976 there have been only 3,000 new jobs in this sector, while at this moment the number of employees might even be dropping again. This can be explained in particular by the investments in automated equipment made by Philips in Taiwan and the Philippines (source: own research).

The other subcentre countries (Australia, New Zealand, South Africa and Japan) are apparently loosing in Philips interest. If looking at the number of employees only: a drop of 3,000 over 1973-1980, this is undoubtedly true. The other aspects however give us no indications. One can for example think of specific interest such as Philips particular involvement in the arming of the South African 'apartheids' regime (AABN 1979), or

Table 2. Key figures Philips: Sales, supplies (a), company results (b), invested capital, number of employees, 1979/1980

	Sales 1980 x million guilders	%	Deliveries 1980 x million guilders	%	Company result (% of supplies)	Invested capital (%)	Employees 1980 x 1000	%
Netherlands	3,008	8	13,061	26	-1.8	27	79.5	21
EC excl. Netherlands	15,885	44	20,089	40	3.4	37	142.9	38
Rest Europe	4,226	12	5,014	10	2.6	10	29.8	8
US and Canada	6,144	17	6,379	12	5.8	11	49.3	13
Latin America	2,713	7	2,553	5	11.6	7	30.3	8
Africa	1,147	3	623	1	15.4	1	4.1	1
Asia	2,307	6	1,852	4	8.6	5	29.4	8
Australia and New Zealand	1,106	3	1,094	2	3.2	2	7.3	2
Total	36,536	100	50,665	100	4.3	100	372.6	100
Interregional deliveries			-14,129					
Turnover			36,536					

(a) 'The total sales of plants within the geographical area to third parties both within and outside the geographical area and deliveries to consolidated companies outside the geographical area (interregional deliveries).'
(b) 'The result of the deliveries minus costs. Financing charges are not included in these costs. Subtraction of taxes and the extraordinary profit and losses are not included in the company result.' (descriptions by Philips).

the interest which the Eindhoven concern has in the Japanese electronics industry. In this way, Philips is involved in a joint venture with Matsushita via MEC, whose sales over 1976 already exceeded the 1 billion guilder mark and whose employees in Japan number 10,000. Via this company, Philips is accumulating important process and product technology in the field of electronic components. Perhaps this is why 'President Rodenburg' claimed not to be afraid of Japanese competition (Het Parool, 17-4-1979)....

PHILIPS AS A COMPETITOR

It is in no way easy to give a short outline of Philips competition position, considering the vast range of products and all the various branches. The following Table is useful as a starting point for such an outline.

Table 3. Philips sales development per product sector, 1970-1980 (source: Teulings, 1976, p. 176: Philips Annual Accounts)

	1970	1975	1980	growth in %	
	in billion guilders			1970-1975	1975-1980
Consumer articles (excl. Polygram)	6.1	12.6	17.7	+106	+ 40
Professional applications	3.8	6.4	11.1	+ 68	+ 73
Industrial supplies	3.0	3.6	4.8	+ 20	+ 33
Various activities	1.4	2.8	2.9	+100	+ 4
Polygram	0.7	1.7	-	+143	-
Total	15.0	27.1	36.5	+ 80	+ 35

From the figures over 1980 one can see that Philips interests still lie mainly in the field of consumer articles. These represent nearly half (40%) of the sales and more than half (55%) of the net result. The products and systems for professional use follow with 30% of the sales, industrial supplies with 13% and various activities with 8%. This does not mean, however, that nothing is changing. If we look at the sales development over 1975-1980 it would appear that the target, formulated by 'vice president' Tromp ten years earlier: 50% of sales must be in the professional field, is nearly reached. The forced drive towards this target has led to various expensive failures; the adventure on the large-computer market being the most prominent. Philips embarked upon this in 1967-1970, which was rather late, at a time when IBM already had a market share of 55-60% of the capitalist world. Unidata, a cooperation between Philips, CII and Siemens, was terminated in 1975 which meant that Philips stepped out of the market for medium and large sized computers (Teulings, 1976, p. 198-206). Following this, Philips restructured its computer division and named it Data Systems, which would concentrate on smaller systems and office automation in particular. The latest figures indicate that Philips share in the Dutch computer market comes to 14%, while in the European market this share is not even 7% (Computable, among others, 7-10-1978). This share is probably too small to be able to produce efficiently, especially when compared to the production figures of IBM, Honeywell-Bull, Sperry, Burroughs, ICL, Siemens and DEC. These companies all have a larger share in the European market. It is generally assumed that Philips computer group is producing with losses. Even the sales dropped in 1980 'because the concern had temporarily gotten behind in its programme', according to the Philips Annual Report. In spite of this, the sales of the Philips professional sector grew considerably.

What we are talking about are those new markets in which Philips has managed to obtain (large) orders. In the first place this involved the telecommunications

division which is carrying out a telephone order in Saudi Arabia together with L.M. Ericsson. On various submarkets Philips holds a strong position (no monopolies however). On the telecommunications market as a whole, the concern with a market share of 3-5%, which is considerably less than that of ITT, AT&T and Siemens, can only be called 'medium sized' (The Economist, 28-10-1978).

Table 4. Sales development and company results for Philips per product group, 1977-1980

	Sales growth				Company results in % of sales			
	1977	1978	1979	1980	1977	1978	1979	1980
Lighting/ batteries	+ 3	+ 5	+10	+ 4	9.5	-9.6	9.8	7.8
Screen/sound for consumer use (incl. Polygram until 1978)	+ 1	+ 5	+ 2	+ 4	8.1	8.4	4.4	3.1
Domestic appliances/ products for personal care	+ 1	+ 5	+ 9	+14	9.7	9.2	8.4	9.0
Products/systems for professional use	+ 4	+ 8	+15	+18	4.8	6.4	7.3	5.8
Industrial supplies	+ 4	+ 1	- 1	+22	6.3	3.4	-0.3	-0.7
Various activities	+ 4	- 7	+ 1	- 9	5.9	7.4	7.9	7.5
Total	+ 2	+ 5	+ 7	+10	7.1	6.9	5.4	4.3

Similar developments have taken place in the process-control technology field and the medical and (audio visual) teaching technology. As with the telecommunications market these last two submarkets can offer lucrative government orders. Philips must therefore gain access to these protected state markets of the Western powers. This is done by seeking connections with the governments concerned. When running for military orders this is, of course, practically the only way. Philips has been extremely successful in 'fighting itself in'; especially in the US but in other countries as well. Through its many military companies, Philips holds a strong position on various submarkets and even some monopolies in specialised applications: various electro-optical systems, firing control systems, command equipment and military ICs (Faltas, Z.J., p. 36 onwards).

Restructuring the capital transfers towards the professional sector have become more urgent for Philips as the pressure on consumer products profits have increased. This is apparent especially in the (consumer oriented) Video/Audio group. These developments do however not concern Lighting and Domestic Applicances etc. These groups are in a relatively stable market where the competition is not particularly fierce for Philips. In the Netherlands Philips hold from 25% (washing machines) to more than 60% (small domestic appliances) of the market. Further expansion cannot be realised without great advertising and other costs; the total sales would even so remain smaller than that of Video/Audio alone (turnover in 1980 was 9.6 billion guilders).

The sales of colour television receivers (CTV) remained the sole source of expansion for Philips until the late seventies. Especially on the market for tubes (which were produced at PD-Elcoma and supplied to many other TV manufacturers) Philips held a strong position. Philips European market share for TV tubes could be estimated at 50% and for TV sets at 30% in 1979. In 1979 it appeared that the Board of Management and the PD Directors had estimated growth of European CTV sales too high. On top of this the new 30-AX tube was marketed too early, which

rendered heavy losses. Although it is officially denied, Philips seemed scared of Japanese competition: Philips took the lead of the European TV products lobby (Research Group HAGA, 1981, chapter 4). At this time the Japanese were increasing their, by no means small, share of the audio market. It is generally acknowledged that Philips is the only company with the same possibilities to develop new consumer electronics as the Japanese giants (Matsushita, Toshiba, Hitachi, Sony, etc.). Philips however never managed to market these innovations elegantly (Fox, 1980, p.520). In particular these new products are:

- the new video cassette recorder (VCR)
- the new video long player (VLP); and in the near future
- the digital 'compact-disc' record player.

Important research done elsewhere in the concern would have been neglected during the development of the last mentioned record player. This is a symptom of a typical Philips problem (Hope, 1979, p.949): bureaucracy and lacking of the necessary contacts.

This same problem occurs in the Industrial Supplies sector of which PD-Elcoma represents the largest part. Here the 'chips' technology is the key to a strong position on numerous markets, especially the computer market. In 1975 Philips was threatened by a decisive blow in the production of integrated circuits (ICs) and microprocessors (MPUs), but managed to stay in the race by taking over Signetics. Philips top people like to stress the fact that Philips can get a lead on the competition by applying microprocessors in its own products (and production processes) on a large scale: the 'synergy' between manufacturer and user (e.g. in Electronics, 1980, Special Issue, 50th Ann., p.602). Obviously, these effects do occur but usually the results are disappointing (e.g. FEM, 1980, No.12). The technical know-how, obtained via Signetics, does not appear in applications elsewhere in the concern. After the takeover of Signetics, Philips was forced to conclude 'exchange' contracts with Intel and Motorola. Philips has not managed to make a breakthrough in the applications of ICs

and MPUs (not even in consumer articles). Fundamental innovations failed to materialise with the exception of I^2L -technology, which is primarily used in military applications by Philips.

In the 'top ten' IC manufacturers, Philips (including Signetics) ranks third with a 9% market share. Texas Instruments is number one (13% and many innovations) followed by IBM. This computer giant however does not sell ICs to third parties, so that Philips ranks second on the 'turnover' list (Van Vessem, 1981, p.27-28). Philips holds first place for IC consumer applications (analogue circuits in particular). The competition position of the Eindhoven concern is however far less strong in the field of MPUs, memory 'chips', and digital circuits. Both in innovations and size of production it is superceded by IBM, Texas Instruments and Intel, and the Japanese NEC, Fujitsu and Hitachi (amongst others: De Ingenieur, 31.5.1979; MacIntosh 1979). Thanks to Philips great financing potential and its widespread production network, Philips position on the microelectronics market is still reasonably strong. Both of these 'credit points' however do need some explanation. Philips is forced into sizeable investments. The investments in the Industrial Supply sector came to 31% of the concern total in 1980, while this sector supplied only 13% of the sales (and 17% of all supplies). The costs of purchase and the buying of know-how come on top of this. Together these costs will rise rapidly, especially if the concern wants to become less dependent on price competition. For the time being micro electronics will remain dependent on this; this is illustrated by the emphasis on 'runaway' production which can keep the cost prices down.

PHILIPS AND THE DUTCH EMPLOYMENT SITUATION

During the last ten years Philips has liquidated more than 28,000 employment positions. Shortly after 1945 the concern top started executing a 'spreading' policy of plants in the Netherlands. This policy, which resulted in plants at seventy different locations, was aimed

at young, low skilled workers and 'plant-settle' subsidies in the peripheral 'problem areas' (Teulings, 1976, p.152-154; Van Klaveren, 1978, p.47-48). During the sixties the actual expansion stopped. The growth of Philips employment in the Netherlands from 1966 to 1970 (12,000 jobs) was brought about exclusively by take-overs (source: SOBE). The turning point was during 1970. After this, the personnel departments of many plants acted as 'silent reorganisers' by hardly replenishing or even stimulating the labour turnover (SOBE, 1978; Van Klaveren and Ronner, 1980). The change in this strategy came in 1980 when the Board of Management announced the liquidation of 1,600 jobs (at Elcoma and Glass) and not excluding the possibility of forced redundancy. This created a lot of excitement. This reaction was remarkably late in appearing if we take a closer look at the decline that had been in effect from December 1970 onwards: 32% at PD-Elcoma (from 22,000 to less than 15,000 jobs), 27% at Glass etc. New cuts were announced in 1980 at PD Video, the Physics Laboratory, and even at the apparently strong PD Medical Systems. In 1981 a further cut of 1,600 employees was announced for Elcoma. Table 5 shows us that not only the relatively simple production processes are loosing in jobs.

The first category is influenced by the suction of capital transfers towards low wage countries, the second by the movement towards countries with (large) state markets. This is the double capital movement which occurs at Philips and which, as Teulings (1979, in particular, pages 146-151) writes, is mangling Dutch employment. At this moment, there is apparently not one industrial, administrative or developmental process safeguarded against demolition at Philips Nederland. In April 1981 it was announced that 1,000 administrative employees were superfluous. Over the period 1972-1979 the decline per province in percentages was greatest in Limburg (-22%). North Brabant followed with minus 12%, and the largest absolute decline. The hardest blow was dealt especially in the Eindhoven region, where Philips is still a very important employer: more than 6,000 jobs which comes to minus 14% from 1972-1979. Further blows

Table 5. Development of employment figures at Philips, the Netherlands, according to Product Divisions 1970-1980 (NFK, Polygram and concern offices are excluded)

1. Relatively simple production process		
Audio Video	- 700	
Glass	- 600	
KHA	-1,200	-10,600
Light	-1,900	
Elcoma	-6,200	
2. Relatively high quality production processes		
Medical Systems	+ 700	
S&I	- 600	
Ela	- 650	- 5,800
Physics Lab.	- 450	
Elcoma	-1,400	
TDS (telecommunication and defence systems)	-1,300	
Data Systems	-2,100	
3. Supporting production processes		
Related companies. Machine Factories	-1,500	

will be dealt in the Eindhoven region, South Limburg, the Nijmegen region, and Eastern Groningen when the 1980/81 reorganisation plans are executed. The employment situation is disasterous as it is now in these regions. The 'spread plants' which were established between 20 and 25 years ago are now, according to Philips standards, too small to be effective in the competition battle. Reallocation of capital and concentration in large units are the passwords. We must however mention that Philips has consciously kept these plants too small as part of a calculated 'long term demolition' plan (this plan does not only concern the smaller plants: Stadskanaal for example: see Van Dijck C.S., 1980).

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The NV Philips

1800 plants in nearly 80 countries ! How are these plants divided over the globe ? Is there a system or a structure behind it ?

Boudewijn Taminiau

The NV Philips is one of the largest private companies in the world. In the top-turnover list it ranks in 21st place*. If ranked by number of employees it would attain a higher placing: 3rd place. It one would compile a list of companies according to the degree of spreading, Philips would surely rank number one.

Why is this? Why has Philips spread its production so far over the globe? Why does Philips not produce in a few large plants in the Netherlands or Europe to supply the whole world? Why are there so many Philips radio and lightbulb factories? Why are refrigerations and washing machines especially produced in Italy? Why are small Philips TV tubes and components produced in Taiwan and other Far East countries? Why is the military branch in Holland the only growing one, while all the other branches are being cut down? Why has Philips interest in the US only been aroused in the last few years? This article is in connection with these questions.

THE THEORETICAL SIDE OF NV PHILIPS PLANT ALLOCATION POLICY

The allocation policy answers the question of: where in the world,in which country and region shall we produce what and how?

*According to the Fortune List 1979

Starting point for this question:

1. For Philips there are a number of essential distinctions between the various countries: some countries have relatively high wages and social costs, others do not; some have a higher labour productivity than others; some countries have a large surplus of unskilled labour and a shortage of skilled workers, while in other countries the situation is the other way round; some governments offer sizeable investment subsidies or have low profit taxes; some countries have a 48-hour working week, prohibited free trade unions and sentence strikers to death, while other countries have a less dictatorial regime; some countries are politically stable while others are on the verge of revolution; some countries are very important to Philips as sales markets while others are less interesting; etc.

2. In the same way as the countries differ, the various production processes etc. differ as well. For example: Some production processes demand large numbers of skilled workers, while others need unskilled workers; the costprice of some products are fixed by wages and social burdens while other prices are nearly independent of wage levels; the speed of production is sometimes governed by the machine and sometimes by the worker, in which case labour productivity plays a more important part; some products are very profitable (profit taxes!) while others are not; some processes demand a highly developed infrastructure (communication, energy) while others do not; some products have high transportation costs, others are much cheaper in transport and thus need not be produced near the sales market; some products and processes are of strategic importance and therefore must take place near the administrative centres, etc.

If one gathers all this type of data per country and per product/production process one obtains a list of characteristics. The allocation policy aims at an optimal combination of product/production process - and countries-characteristics, i.e., through the global spread maximising and minimising total costs. This, as

one can imagine, is no simple task.

1. This maximising of returns and minimising of costs concerns the company as a whole, i.e. it is possible that the optimal site of assembly of large colour tv sets is somewhere in South Korea, while the optimal site of components manufacturing is on the other side of the world. This would of course involve astronomical transportation costs. This means that a particular site can be less profitable for a subprocess, but that the production process as a whole is optimal.

2. The allocation policy aims at an optimal worldwide distribution of activities. This is the aim, but a worldwide optimum does not exist of course:
- there are too many variables involved,
- some of the aspects can only be taxed by feeling (political stability for instance),
- and when one finally believes one has reached an optimal distribution, there can of course be an ayatollah or colonel who, within a day, upsets the scheme. Not only countries' characteristics are changing continually, however; product/production processes characteristics also change everlastingly through technological progress.

3. In contrast to this, Philips has the power of influencing one or other characteristic. When, for example, the Chilean people supported Allende and Philips saw part of its allocation policy going down the drain, Philips realised that Pinochet could possibly change the country's characteristics in Philips favour. This is why Philips supported Pinochet.

Also as far as the production characteristics are concerned Philips can 'lend a hand'. For example: many production processes demand skilled workers besides a fair amount of unskilled workers; as a consequence, production is often allocated in places with large amounts of skilled workers; Europe for example. The fact that unskilled work there is more expensive than, say, in the Third World is no more than an annoying circumstance; one solution is to import cheap labour from

European periphery countries. Another solution is the splitting up of the production process so that certain subprocesses can be delegated to unskilled workers in low wage countries.

4. Suppose that the Philips management had done its homework properly and fed all possible data about changing situations and production processes into a computer and the answer would turn out to be that the plant allocation situation is far from optimal, then Philips could not turn around and say: 'Right, we'll cose down those plants and get out of that country and start new plants there and there.' The governments, trade unions and workers would see to it that this could not happen. And so again, Philips optimal policy would disappear into the wastebin.

5. There is also a thing called competition, at least...
- one does wonder why Philips only became active in the US in 1970 for the market there was undoubtedly interesting before that time. The answer can be found in agreements made by General Electric and Westinghouse on the one hand and Philips and other European companies on the other. The world had been divided into 'private' sectors, whereby Philips had no business in the US (undoubtedly in exchange for numerous other markets). In 1970 some parts of this agreement were changed. What the agreement now says is unknown, but Philips has certainly become extremely active since then.
- The fact that Philips has gained large profits in the Far East lately is not only because of Philips' fabulous accountants; it is more a question of 'keeping up with the Jones's' (i.e. other European and Japanese companies who have been active in the Far East since the sixties).

Resuming: the competition, in the sense of agreement, and in the sense of actual physical competition also plays a part in the current production structure.

6. If we compare the employment shifts at Philips *now* with those during the years of crisis prior to World War II, we can discover an uncanny similarity. During the

crisis employment in the Netherlands was cut down drastically and transferred abroad (even to Brazil). A similar development, Europe as a whole taking the place of the Netherlands, is taking place now. As far as the plant allocation policy is concerned, there are a number of differences however. One of these is simply: what could not be done then can be done now. Or, one can ask oneself: why didn't Philips start large scale production in underdeveloped countries (wage-cost advantages!) sooner?

a) As we have already mentioned: the production processes were not easily divisible yet. There were still many specialists involved at the plants. One was dependent on highly skilled workers, which were scarce and expensive in the Third World. The startling technological developments of the last decades have led to a further division of production (de-qualification of labour) so that the gigantic army of cheap unskilled labour of the Third World has come within reach of Philips.

b) The progress in the fields of transport and communication also aided Philips worldwide organisation.

c) What could not be decided then has become much easier now (e.g. experience, sciences, computer technology, etc.).

7. The plant allocation policy aims at optimalisation, which should however be seen in a wider perspective.

- The spreading of risks: Taiwan, South Korea and the Philippines may be very interesting countries for production, but if Philips were to commit all production to these countries and there would be a number of coups d'état, Philips would be done for. Therefore: spread the risks.
- 'Be prepared': Black Africa is hardly interesting to Philips at this moment, but in case it does become important in the future, it is worth having a few small plants there as a 'bridgehead'.
- 'Divide and rule': By having various (more or less identical) plants in different countries it becomes possible to play governments, trade unions and employees off against each other. By continually threatening with reorganisations and transfers of

production, Philips can force governments into the giving of large subsidies and premiums; the avoiding of unattractive laws and particularly the buying of Philips products. The fabulous worker discipline in other countries is continually pointed out to the labourers, in order to keep them under control.

In this sort of activity Philips is all powerful. Its international organisation is far tighter than that of governments and trade unions.

RESUMING: A GENERAL SCHEME AS CLARIFICATION FOR THE GLOBAL DISTRIBUTION OF PHILIPS ACTIVITIES

A researcher, who is not part of the Board of Management of the NV Philips, needs super human gifts to explain the global distribution of activities of this company. If one hears the marvellous fairy tales sometimes proclaimed by the members of the Board of Management this is hardly surprising. The reasoning behind the having of a plant in A and not in B is not always equally logical. This is why we will try to keep a general clarification of the plant allocation policy. We will go into:

I. The historic growth of Philips; the fact that currently 20% of Philips employees are Dutch is a far from optimal situation which was brought about by Philips' choice to expand in the Netherlands during the first postwar years.

II. The competition relations; what is the influence of competition relations on the current distribution of activities.

III. Optimalisation, viewed as
- a costs advantage problem,
- a technological problem,
- a combination of these.

I. THE HISTORY OF PHILIPS WORLDWIDE; THE DEVELOPMENT OF A PLANT ALLOCATION POLICY

The reasons for Philips keeping a plant in a particular country or city are obviously not always the same as why the particular plant was even started there. The fact that the choice for starting the company in 1981 in Eindhoven was a good one, largely explains why Philips 90 years later still has its headquarters there.

1891: Eindhoven

1. The position towards the German market. The Dutch lightbulb market was small in those days, and held many competitors.
2. The social-economic environment. While annoying trade unions were growing throughout Germany, the northern part of the Netherlands and other parts of Europe, the labour situation in the southern Netherlands was peaceful.
3. The final choice was Eindhoven because there were plenty of workers and plenty of children, the population was poor, Roman Catholic, reliable and content with low wages, there were no social problems, and the possibilities for child labour were great.

These facts helped Philips to its first successes.

1891-1920: Further growth in Eindhoven

By the grace of many circumstances (for example, Dutch neutrality during World War I), Philips prospered. The Eindhoven factory grew: 5000 employees in 1918. The new factories (the glass, argon gas, hydrogen gas and cardboard factory) supporting lightbulb production were all established in Eindhoven (close to the consumer!).

The first steps outside Eindhoven

First Philips production outside Eindhoven came about by taking over competitors (and their markets): Volt in Tilburg, Splendor in Nijmegen and Pope in Venlo. These plants are still under Philips management.

The first steps abroad

The first internationalisation was in 1919. The 'SA Lumière Economique' was established in Belgium for the benefit of the Belgian market.

Internationalisation progressed rapidly from 1919 onwards. During the next decade plants were established in France, Poland, Norway, Sweden, Italy, Brazil, Czechoslovakia, England, Denmark, Austria, Spain, Hungary, Germany, Australia, New Zealand, Roumania, Algeria, South Africa, Ireland and India.

A First International Production Structure

Together with the newly acquired establishments abroad (sales offices, takeovers and new plants) a first international production structure developed:
- Eindhoven: the centre with an export function
- others: aimed at acquisition, maintaining or expanding of market shares: local production for the local market.

The 1930 Crisis: a Second International Production Structure

As a result of the general overproduction, governments laid down import restrictions in order to strengthen their own industries. As a result of this, Philips in the Netherlands lost large parts of its export market. Production was transferred from the Netherlands abroad on a large scale. Expressed in employment figures:
- Dutch Philips employment is reduced from 27,000 to 15,000
- Foreign Philips employment grew from 13,000 to 27,000.

The Postwar Years: A Third International Production Structure

Up until the Second World War, most of the world market was supplied by Eindhoven, while the plants abroad mostly bore the 'local for local' label.

After the Second World War, this situation changed. Philips appeared from the War as a victor and bagan an incredible period of expansion.

It soon became clear that Eindhoven could not bear this growth by itself (shortage of labour and factory space). Activities were thus spread to other cities not too far afield (the Netherlands and Belgium). This expansion could hardly be called a systematic one. All in all:
- new Philips plants were established in 30 different cities throughout Holland and Belgium and especially in their regionally underdeveloped areas (Holland and Belgium had relatively low wages in those days, anyway),
- especially the labour intensive and well-proved production processes were transferred to these new plants.

Through this new structure (the spreading of export functions from Eindhoven to regionally underdeveloped areas) Philips plant allocation policy gained a new dimension. Before these postwar years, the policy was primarily aimed at harmonising the geographical distribution of Philips activities with the product markets, while after World War II a new dimension is added: the harmonising of the geographical distribution with the labour market. The strong development of this policy is currently causing the large problem of unemployment in Europe. The transfer of export production to the regionally underdeveloped areas in Holland and Belgium was followed by transfers to the European periphery countries and later to the current 'low wage countries'.

From now on it became difficult to distinguish the various phases in the development of the production structure. Around 1960, the European periphery countries started to become attractive as new places of establishment (a Fourth International Production Structure).

At the end of the sixties, new plants were established in rapid succession in the Far East (a Fifth Phase), but then around 1970 the whole Philips production structure started moving. Worldwide reorganisations took place and

production activities were transferred. Immediately prior to these reorganisations, numbers of Philips employees were (1967):

a total of 250,000 of which	82,000	in the Netherlands
	110,000	in the Common Market (excl. NL)
	22,000	in Europe (excl. CM)
	4,000	in the US and Canada
	16,000	in Latin America
	4,000	in Africa
	5,000	in Asia
	6,000	in Australia and New Zealand

The transfer of production towards Asia and North and South America was hardly noticeable in 1967. Compared to Europe these continents are of minor importance. Dutch Philips employment figures reached their maximum in 1970: 106,000. The employment figures however reached 20,000 in North America, 15,000 in Asia and 20,000 in Latin America (compare with 1967!). These figures will undoubtedly increase at the cost of Holland and the Common Market.

II. THE COMPETITION RELATIONS

One of the most mystical matters in this branch is the competition relations. It is suggested frequently that the large companies are entangled in a true competition war. If however one takes a closer look at the financial tangle amongst these companies and their joint ventures, knowhow transfers and their numerous cooperations, one gets the impression of peace and harmony.

The following is quite remarkable: before the Second World War hardly any restrictions on cartel development, price agreements and division of the world market existed; extensive use was of course made of this situation. In his memoires, Anton Philips names one cartel after the other. These seem to be a close co-operation between the largest of companies. Occasionally the balance got disturbed (during the Crisis for example)

but the great companies always came back to join hands again. Cartel developing was outlawed immediately after World War II and all traces of cartels disappeared obediently. Do you however believe that they have disappeared? There is very little proof, except of course the rare negative judgement by an anti-trust or anti-monopoly committee and the various very suspicious practices (for example, the way in which Philips managed to obtain the 'order of the century' - the Saudi Arabian telephone order). It is an established fact however that numerous reports (amongst others from the United Nations) indicate that large concerns secretly conspire together, especially where deliveries to Third World countries are involved.

What we are talking about is the relation between competition positions and the plant allocation policy. An important question in this context is: are there any secret agreements between large companies which could explain the NV Philips international production structure? Alas, we can neither confirm nor deny this question. We can however say that:

- the prewar production structure is a perfect image of agreements; Philips prewar establishments only occur in those countries which were allotted to it,
- the fact that up until recently Philips deployed little or no activities in the US points to the existence of agreements,
- possibly the somewhat unbalanced situation between Philips Asia and Philips Latin America also points to agreements of one sort or another.

However, these arguments do not get us anywhere.

In the electrotechnical field these things are not particularly obvious. In general this field consists of two sectors: the heavy sector which produces large electric motors, transformers and power stations, and the light sector which produces consumer articles and light professional equipment. Philips activities are concentrated largely in this second field, in which it is the largest company. The heavy sector presents us with a clear picture: the manufacturers are all

concentrated in the West and supply the whole world via export cartels. This sector is hermetically sealed off by patents; a lot of knowhow is required and the possibility of entry by newcomers into the market is practically excluded. As a protection of this sector, the West has imposed high import barriers, while the Third World countries, completely lacking in this sector, impose negligible import duties.

The consumer sector presents us with a completely opposite picture: this sector can hardly be protected; little technology and knowhow is required for the manufacture of, say, a lightbulb or a radio. It is easy to penetrate into this sector. In order to get production of these articles into their own countries, Third World governments impose high import duties on these products; the West in contrast usually imposes lower duties.

Here an answer to the question of why Philips is possibly the most spread-out company in the world can be found. The development was often the following: someone would start a small radio factory in some Third World country; supported by import restrictions on foreign (Philips) radios, the little factory would actually threaten to take part of the market; this of course could not be tolerated by the Western companies who were forced either to establish a small radio factory of their own in this country or simply takeover this imitating company. This policy has been used by Philips in numerous countries in order to control the local market.

This happened not only in small countries but also in large countries such as Brazil and India, whose government policies are aimed at the production of these articles in their own factories insteads of importing them. These practices can explain why Philips is so incredibly large.

Why is the Product Division Large Domestic Appliances situated in Italy? The answer to this question presents

us with a similar picture: the low wage level in (Southern) Italy amongst others made the development of a flourishing refrigerator and washing machine industry (equally simple production processes) during the post-war period possible. With the unification of Europe these industries started to form a threat to the European market. Severe competition broke out but the result needs no further explanation: AEG takes a 50% share of Zanussi and Philips takes over the largest Italian manufacturer, Ignis.

If one asks Philips to explain its presence in the Far East, the European periphery, the US, etc. the answer is without fail: 'we have to in view of competition'. And, indeed, one can notice that, in order to stay ahead of Japanese competition on the European market, Philips has had to transfer production to the Far East and the European periphery. It still however remains a foggy business. Take a look at the imposing Japanese competitors. We know that:

- around 1970 General Electric had 65 licence agreements with various Japanese companies (amongst others, Hitachi and Toshiba);
- ITT has a 12% share in Nippon Electric;
- Philips, General Electric and Brown Boveri cooperate closely with Matsushita;
- Fuji Electric is a joint venture between Siemens and Furukawa Electric, amongst others;
- The American company Zenith manufactures and sells Sony video recorders;
- General Electric and Hitachi have a joint venture for the production of black and white and colour tv sets;
- etc., etc.

All in all, one must not over estimate the competition 'problem. This 'problem' could possibly be one of the causes of the current reorganisations, but the argument 'we have to' does not always sound convincing. A number of decisions to production transfers seem purely aimed at increases of profit, whereby the social consequences are completely disregarded.

III. OPTIMALISATION: WORLDWIDE SHIFTS

At the end of the sixties, 88% of Philips employment was concentrated in Europe (34% in the Netherlands). This picture has changed drastically when looking at the 1980 figures: only 68% of employment is still in Europe (21% in the Netherlands). The North American share of employment has risen to 13% and the Third World takes care of 19%.

1. The export function as world market suppliers of the Netherlands (and Europe) has been cut back drastically. The export function has partially been taken over by others (specifically the low wage countries), while the local for local production has been stimulated.
During the period 1970-1974, Philips employment in the Netherlands was reduced by 10,000 while the total worldwide employment rose by 45,000 to 412,000 Philips jobs.

2. The increase of local for local production.
Typical for Philips Worldwide: Philips has a factory in nearly all Philips markets.
The Philips organisations in the relatively large markets, such as Brazil and India are 'full grown'. They are, to a large extent, self-supporting although development activities and complicated processes with high technology and large amounts of skilled labour cannot be found there. For these activities they remain dependent on Europe. An accompanying advantage: via the calculation of high technical assistance costs from Europe, of development, patents and other knowhow costs, the profits can be transferred to the Centre. The production activities concern especially the consumer articles Audio, Video and Domestic Appliances.

This conduct also appears on the smaller markets of South America and Asia, where Philips has numerous small plants which produce a wide range of consumer articles. We have mentioned a number of reasons already: the controlling of the local markets. The fact that Philips is not burdened by high wages or social payments and that there is often a helpful military dictatorship in the neighbourhood, is of course more than a pleasant

coincidence. This does mean however that the political situation is potentially unstable. Therefore, Philips must limit its risks and not invest too much in these countries.

An exception to this rule of local for local production still remains in Africa. For many years, there have been about 5,000 Philips employees in Africa. Most of these jobs are in South Africa and Rhodesia. Philips is hardly active in the other African countries (North Africa included). The fact that an inhabitant of the Sahel zone can hardly be counted as a potential Philips customer surely plays a part in this. Even so, that area, which is a real Philips market, is often supplied from abroad. In this connection, in some African countries, people have small beautiful radio factories as an advertisement 'with an eye to the future'.

3. The export factories

The Netherlands as well as Belgium have lost their export function in numerous fields. The traditional 'spread plants' of the postwar period have been threatened by closures and transfers of production for many years. These threatened jobs are being transferred to:

a) Underdeveloped countries with an export-oriented development model, the free export zones and especially the Far East, Taiwan, South Korea, Singapore and Hong Hong.
b) The European periphery and the non Common Market European countries.

These job transfers involve a particular type of activity and the only plausible reason for this development is cost minimalisation. The remainder is a question of calculation:
Suppose: Europe is the sales market. Wherever production takes place, the products must be transported to Europe again. There is a choice of Europe, a European periphery country or the Far East for the manufacture of these goods. We will assume four parametres: the level of wages, and social burdens, the labour productivity, transport costs and the quality of workmanship.
The value of the parametres in the various areas:

Europe: high wages (relatively), high labour productivity, low transport costs, high quality of workmanship.
Far East: (a mirror image) low wages, low productivity, high transport costs, low quality workmanship.
the European periphery: takes a middle place between these two extremes.

Conclusions:

- A number of production processes involving high quality workmanship can be excluded from taking place in the Far East (flying an army of skilled workers out to the Far East is completely infeasible); production for Data Systems, Medical Systems, S&I, etc. can therefore not be found in the Far East. Some countries might just be able to pass the test.
- Production processes which are largely automated can also not be found in the Far East. Examples: assembly of products for Audio, Video, Domestic Appliances and, rarely, Elcoma.
- There are however a number of problems such as labour productivity for example. When the working speed is laid down by a human, as in most assembly processes, the productivity in the Third World turns out many times lower than that in Europe. The wonderful wage cost advantage is therefore eliminated: you now have 10 'cheap' labourers instead of one 'expensive'. When however the speed is laid down by a machine, the difference in labour productivity suddenly turns out much smaller. The snag with this is that this especially occurs in automated processes which demand less labour anyway.
- Another problem is the transport costs: the product must be nice and small yet dear, so that a shipload either consists of a hugh amount of products or it represents a phenominal sum of money. In this way, the influence of transport on the cost price is minimalised.
- So then: are there any production processes which involve large amounts of labour, some automation, low quality workmanship and turn out small yet expensive products? 'Alas' there are; and they can be found in the Far East: a large amount of components manufacture

for Elcoma and a number of small domestic appliances.
- In the periphery countries one can find those production processes which involve too high a labour productivity and too high transport costs to be competitive if production took place in the Far East, such as the assembly of larger consumer articles for Audio, Video and Domestic Appliances.
- And indeed: Elcoma is the most reduced branch of Philips in the Netherlands; and Belgium too, a traditional Audio country, has had to witness the departure of its 'native' production.

Obviously there are other aspects which play a part. The tex policy and other government facilities. The Far East for instance is trying to get exporting industries within its borders, no matter what. This is done by offering subsidies, tax freedom over a number of years or a low profit tax (which is attractive for Philips products with a high profit margin). Government subsidies play an important part too in the Common Market periphery countries. Through these facilities Austria has managed to obtain VCR and numerous Audio activities.

The existence of export plans offers Philips the possibility of, via over and under pricing (transfer pricing) and other calculation methods, booking its profits in those countries with the lowest taxes.

4. The United States

A new star in Philips' heavens is the United States. Philips has become extraordinarily active here since 1970. Currently, 50,000 employees as opposed to 4,000 in 1967. Two reasons:
- The US continues to be the largest market in the world and either it became high time for Philips to get involved or previous market agreements with General Electric were terminated or altered; Philips tried to gain a foothold in the US by taking over a number of large American companies (Conelectron, Magnavox, Signetics and parts of GTE/Sylvania).
- The US remains the technological pioneer. The government offers large subsidies towards development costs. In these times of numerous technological breakthroughs

one cannot blame Philips for wanting to stick close to the centre of these developments.

5. Europe

How much employment is left now for Europe? Numerous production processes have been transferred abroad and the activities of Philips in the US will have its consequences in the development departments as well.

The Common Market still takes care of the lions share of Philips employment (220,000 out of 370,000). Some years ago this figure for the Common Market was 300,000. At the moment, Philips is a very large supplier of unemployment and will remain so for the time being.
A few developments:

a) Automation is spreading rapidly. Labour productivity is rising by 10% annually. The labour contents per product are declining. The rise of sales has been lagging behind the rise of productivity for some time.
b) Philips answers (among others):
   1) Personnel costs.
   2) Concentration of production. This is especially happening in the European countries, or the larger markets, in the countries with a subsidising government. The Netherlands and Belgium are threatening to miss the boat.
   3) Dropping of production. Philips is buying supplies from third parties more and more instead of using its own supply factories (Glass, Wire and Cable, Cardboard, etc.).
   4) The taking over of competitors.
   5) Drastic worldwide reorganisations.

The employment situation in the Common Market looks grim. Philips activities will however remain concentrated in the EC, which still is 'the' Philips market, with its highly developed character, high quality work, wealthy governments and political stability, etc. These facts all influence the allocation policy. The Common Market is, for example, a concentration area for:
- administrative activities,

- development activities, 'mother' functions,
- products with government sales (defence, Post Offices, hospitals, etc.),
- highly automated production processes with little labour content,
- in short: the advanced and innovative work.

In this field there is still plenty of activity. Electrical engineering and electronics actually carry the current lightning fast developments. Neither the Third World nor the export plants in low wage countries form a particular threat in this field to the EC. Only well proven products are manufactured in these countries. The US however does form a formidable threat in this field, although numerous above mentioned EC activities are being concentrated in Germany and France at this moment.

The situation in the Netherlands looks hopeless at the moment, unless the Board of Management has something positive up its sleeve. It appears however that this is not the case. Every single plant has been reduced continually during the last decade (with one exception: the military branch, Holland Signaal Apparaten in Hengelo). The expectation that one or other of the above mentioned EC activities would be concentrated in the Netherlands has, as yet, not found any firm proof. Data Systems in the Hague is being closed and Apeldoorn is threatened with closure as well, in favour of Western Germany. Medical Systems, whose employment had remained stable for a long time, is being demolished as well.

Eindhoven however is still the administrative centre and will probably remain so.

THE FUTURE

In the same way as the person who declared in 1970 that 25,000 Dutch Philips employees would be without work at the end of the decade, was pronounced utterly mad, a reflection on the future seems like a science fiction story.

- the local for local production in underdeveloped

countries will keep or expand its production package: here too, automation, a rise in labour productivity and a need to concentrate production. Despite this however these countries will have to come a long way in order to become a serious threat to the European production. Political instability will limit investments in these countries.

- The low wage countries are beginning to loose their footing: increasing automation and miniaturisation will reduce the labour contents and thus the labour cost advantage; even now there are signs of production moving back to Europe and the US; the crisis in Europe and the threatening protective measures (as an answer to a shortage on the balance of payments) surely play a part in this; in opposition to this are the efforts by Singapore and Hong Kong to get more high quality producers within their borders; a remarkable shift which is taking place at the moment: the productions first to arrive in the Far East are now moving towards Malaysia and the Philippines, etc. while the more advanced Elcoma components are now being produced in Hong Kong and Singapore, etc.
- The EC periphery countries will also loose some territory; especially as a consequence of joining the EC a number of specific advantages will disappear.
- The United States will continue its growth for some years; Philips has a lot to catch up on in the US.
- All in all, the situation is not too bac for Philips Europe: there is certainly a movement back to Europe and the new concentration activities confirm the importance of Europe again; it is doubtful however if these developments will add to employment stability in the future. One thing is for sure however: the robot holds the trump card.

Up until now, however, Philips has been able to shift productions, etc. over the globe without any protests from employees, trade unions or governments. Perhaps it is today or tomorrow that the bomb will burst. If one looks at Philips Holland's policy, it seems that this is exactly what it is afraid of: a sneak dashing off into the shadows!

Philips' role in the development of Brazil

Tom Kooremans, Marjo Gruisen, Nick van Liere

The following are quotes from Philips in connection with production activities in underdeveloped countries (1):

- 'Production following necessity'
"In plants of international companies in developing countries, products necessary to the countries themselves are manufactured."

- 'Employment effect'
"employment is created for unskilled labour"; "from the production of the goods, incomes arise for employees, local capital financiers, suppliers, merchants and government";

- 'Reinvestment profit'
"an important part of the profit made is reinvested in new buildings, machines and techniques, so that the development process propels itself along";

- 'Technology-transfer'
"through and as a result of production work, knowledge is formed and experience transferred. Not only do our own firms profit from this, but also firms who work together with the local branches of international companies, such as e.g. supply industries."

- 'Balance of payments effect'
"according to how the productions are expanded, there is more chance of export to other countries, and the necessity to import products becomes less. This has a favourable influence on the balance of payments of developing countries";

- 'Improvements to the social environment'
- 'Promotion of the infrastructure'.

BRAZIL

ORIGIN OF DEPENDENCE

From the invasion by the Portuguese around 1500, the history of Brazil has been one of dependence. The country is immediately subordinated to the needs of the colonist. Starting with the wood 'pau brazil', to which Brazil gave her name, the most important raw materials are plundered and exported by Western business concerns. After wood comes sugar, then coffee, gold and diamonds one after the other as the most important export products. These days, besides coffee and sugar, it is particularly the goods produced under favourable conditions which leave the country. Besides, production of industrial goods is principally in the hands of a few large foreign multinationals. The American firms hold the largest share. Therefore, economic dependence has not lessened over the years.

GENERAL CONSEQUENCES OF DEPENDENCE

The development model of Brazil could be called, according to F.H. Cardoso (2) an 'excluding concentration model', springing from income concentration and a market which is kept limited.

This income concentration is becoming bigger: while the poorest half of the population's share of the national income between 1960 and 1971 dropped from 17.8% to 14.3%, the richest group (1% of the population) knew how to increase their share from 11.5% to 18.2%. This means that 1% of the population of Brazil has more to spend than 50% of the population (3). The non-rich population (80%) serves only as cheap labour - if there happens to be a need for it; now and then they get the chance of the consumer overflow - such goods as transistor radios and various medicines.

The home market is however (provisionally?) too limited to be able to take care of the desired production growth. It should be borne in mind that the management

of the government is chiefly directed towards foreign export; this is via enormous export subsidies on industrial products, for which the country itself has no buying powers. But this export also demands huge investments in infrastructure and increasingly expensive imports. These investments are drawn in from abroad through favourable establishment conditions. Moreover, huge sums of money are borrowed on the foreign capital market.

Now more than ever this policy is practised, in view of the dismissal of the Minister of Trade and Industry Severo Gomes, who wanted to take an independent course and was in favour of increasing Brazilian influence in the industry by extreme state influence.

The course now followed by the operating development model relies heavily on foreign support. The gross foreign debt in 1978 was already $28 billion! Twenty-five to thirty percent of export profits have to be put towards this debt.

Moreover, we have seen that the most important branches of industry (cars, pharmaceuticals, capital goods, electrotechnical products, etc.) are in foreign hands. Thus the ultimate power is concentrated over the borders of the country with a small number of concerns, who are leant on by the national firms (4).

You could look upon the role of the government as being to strengthen private concerns (particularly multinationals) and to protect their interests. Through its role of expenditure in infrastructural works and other investments, which demand a huge amount of capital with low short-term profit and/or long term capital yield, it takes responsibilities upon itself through which private capital is ensured of high mobility and profit ratios. This role is further supplemented by its position as guard of private profits, if a company is in serious difficulties (5).

In this way, Brazil remains dependent whereby the bur-

dens are shifted onto the population. To summarise it briefly again:

- the government maintains that it is striving towards the development of the country,
- this is translated by her as 'industrialisation',
- investments are necessary for this-
- this money is obtained through loans and attractive investment conditions from abroad: through this, foreign influence plays an important role in the country,
- this borrowed money has to be repaid:
- this is to be done with the currency obtained from exports,
- therefore these exports have to be stimulated,
- this happens through various export stimulations (which cost the government a great deal of money): moreover, export demands increasingly more expensive imports of capital goods, semi-manufactured products and sometimes even raw materials,
- money is again necessary for this,
- once more, this is borrowed from abroad,
- through this the foreign debt increases,
- therefore more exports,
- etc., etc.

This operating development model certainly does not lead to independent development of the country.

INDUSTRIALISATION - A FORM OF DEVELOPMENT?

A clear growth of the industry is certainly distinguishable. This is however the result of the growth of foreign investment in the industrial sector, so that this industrialisation leads the country to a greater economic dependence on imperialism.

This industrialisation, supported by foreign capital, cannot therefore lead to a real development of the country. There is no cumulative growth, no expansion of industrial techniques over still greater sectors of the economy, no important reduction of unemployment, etc.

According to Mandel, we should look for the cause of this in the context of international imperialism. With the help of foreign imperialist capital, the most hypermodern industries are set up, which help relatively few workers to find work. The few who do get a job are drawn from a huge reserve army of labourers by the concerns. This enormous suplus of labourers is mostly made up of farmers without land who are forced to move to the city to find a source of income.

Moreover, international companies can get cheap credit on the internal capital market, through which the accumulation of the 'national' capital is opposed. In this way, expansion of industrial techniques is slowed down even more as is the industrialisation process, based on small and middle sized capitalistic concerns.

PHILIPS IDEOLOGY

Even so, Philips maintains that it brings prosperity and welfare to Brazil. In the introduction to this chapter, these Philips pronouncements are listed. We would like to expose these here in the case of Brazil, to make it quite clear what the consequences of Philips activities are (as an example of a multinational).

'Production following necessity'

First of all, there is the 'production following necessity' argument. The products made by Philips in Brazil cover practically all activities which they can develop, therefore from insect exterminators through colour tvs to radar systems. You can now ask yourself whether most of the products which as a rule are luxury, are really necessary to the Brazilian population. It seems improbable to us that in a country where 80% of the population live close to the minimum existence level, there is a need for various electric and electronic equipment, while most people have no electricity and scarcely enough money to buy brown beans and rice. Moreover, it is well known that the majority of Philips products are designated for export!

'Employment effect'

The 'employment effect' argument is another of Philips hobbyhorses. It is indeed true that about 15,000 people work at Philips-Brazil (all Philips branches in Brazil therefore). In connection with this employment one should however be aware of the facts.

Firstly, many Brazilian companies came into Philips hands through (partial) takeover: these people had work therefore before Philips took over their company. Secondly, through the presence of Philips, other firms are outcompeted, among other ways by the brazen methods of the international electrotechnical cartel of which Philips is also a member. Through this, other employment is lost.
Thirdly, Philips is still planning to develop certain activities in developing countries - among other reasons because of the more favourable investment conditions there; so that in the Netherlands and other European countries employment disappears. We can neither deny nor disprove whether local capital financiers receive incomes from this production, as we have no knowledge of how Philips finances its investments. We can however impart that on the whole Philips does its own financing. Moreover, when money is borrowed on the local market, it is at such low interest rates (3-8%) that the local stock market hardly received any benefit.

With regard to the indirect employment effect (and thereby the provision of incomes) on suppliers and merchants, we can say that first of all Philips tries to do as much as possible itself, such as production of packing materials, glass and semi-manufactured articles. In this field, they offer less indirect incomes to external suppliers and merchants. If they do however make use of the services of other firms, then in the field of electrotechniques and raw materials Philips mainly uses foreign firms, who dominate the lion's share of production. Therefore, neither is this for the good of the country. The government does not profit either very much from Philips activities. Through the enormous

premiums and tax facilities, its income is relatively low. Sales tax and excise tax, from which exemption can be obtained, is in fact the only source of government income.

'Reinvestment profit'

The 'reinvestment of profit' motive of Philips is basically right. We must not forget however who actually made the profit, who makes the decisions about it, and who benefits the most from it. A few figures can clear this up: on a total deposited capital of $9.9 million between 1965-1975, Philips has been able to make a profit of $65.6 million of which they have reinvested $51.2 million. This figure shows that Philips contributes relatively little to the Brazilian economy in connection with deposit of capital: everything that is reinvested has been withdrawn from the country itself and moreover $14.4 million is syphoned back to the home country in the form of profits or technological payment.

'Technology-transfer'

The argument of technology-transfer is much used at Philips. It will certainly be true that Philips applies certain technological knowhow in the manufacture of its products. But it does not do this for nothing! As Van Riemsdijk says himself: 'Without compensation for this knowledge, for the acquisition of which hundreds of thousands of guilders are spent annually in the Netherlands, the company would not be able to survive.'

The total payment from Brazil for the technology used - usually under patent - and knowhow agreements amounted to $400 million in 1976 (6). For Philips in the period 1965-1975 this was $9.4 million. Even a non-national source such as the Bank of Boston admits that no developing country can permit itself to give away such sums in times of extreme pressure on balance of payments (7).

'Balance of payments' effect

Neither is the 'balance of payments effect' argument of the kind that the country benefits from it. If one looks at the balance of payments at this moment, then one sees that imports are far above exports. In that way, foreign debts keep rising. But, particularly in the manufacture of electrotechnical products, large imports are necessary, through certain capital goods, semi-manufactured products and raw materials not being available there.

'Improvements to the social environment'

The argument used for 'improvements to the social environment' goes as far as saying that radios and tvs are produced, which can be used as teaching instruments for schools. But here, Philips is still more interested in the agreeable (= profit) than in the useful (= education). Moreover, radios and tvs are important ways of spreading capitalistic ideology.

Through the concentration of production plants (in which Philips also has a share), migration to these built up areas is extensive in the South Eastern and Eastern areas of the country. Many people think that there will be work for them there too. A hugh housing problem is caused by this enormous population migration. Around such cites as Sao Paulo and Rio de Janeiro are hugh slum areas. People live here in the most unhygenic and impoverished conditions, which in their turn cause social problems.

Philips does do something on the social side for its workers, such as medical tests, social-cultural clubs, scholarships for foreign studies, etc. This is however more to build up a favourable image with the population so that it is safe from social unrest and people are pleased to buy Philips products.

'Promotion of the infrastructure'

The argument that the infrastructure is promoted through Philips is quite untrue. For the government,

the burdens of obtaining better infrastructural provision are huge. These are built up to serve export: all connecting routes lead to important places and transport harbours. Connecting routes between villages and towns in the country, which fall outside export routes, simply do not exist. Philips' contribution for other infrastructural provisions for the whole country, such as for street lighting and telephone exchanges, are only done by them in pursuit of profit.

And in fact that is where all Philips actions lead!

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The automation industry

Maarten van Klaveren

INTRODUCTION

The beginning of the development of the computer primarily involved those companies which directed themselves towards the production of calculators, typewriters and adding machines; in short, office equipment. In this sector, IBM had already gained a very strong position before 1940. Hollerith was the founder of International Business Machines Corporation. An engineer, he went to work for the American Patents Office in 1883 (1). While there, he invested many machines, particularly in the punching, sorting and adding fields. In 1890, Hollerith won a competition with the design for a machine which could deal with the results of the American population census for that year (63 million files!).

Hollerith was not only an inventor, but also turned out to be a real business man. He formed his own company and thought up useful methods for improving the sales of his office machines:
- self production of punch cards for his machines;
- rental instead of sale of apparatus;
- immediate replacement of faulty parts during maintenance, to be repaired later.

After various mergers, Hollerith's concern became IBM in 1924. Even though there are various competitors on the market now - for instance Remington Rand, which after a merger became Sperry Rand - IBM has held its monopoly position.

At the beginning of this century companies concentrating

on mechanical office equipment were set up in Europe as well. In England this was the British Tabulating Machine Company. After countless mergers, this has now become International Computer Limited (ICL). French capitalists founded Compagnie des Machines Bull, which eventually became Honeywell-Bull. This office machine industry has become one of the 'pillars' of the automation industry, which has grown to become one of the world's largest industries since the Second World War. Another 'pillar' consists of the producers from the electrotechnical industry, who, already before 1914, commanded a large sales area, from the 'light electrical engineering' in which Philips became strong (with light bulbs and later radios) to the 'heavy electrical engineering'. In the later field (electric motors, elecricity power stations, etc.) Siemens, AEG and the American concerns General Electric and Westinghouse (2) were the rulers. Later these were joined by: concerns with vast interest in the telecommunications industry (AT&T and ITT), and the companies which have grown up in the last 30 years in the semiconductor industry, with Texas Instruments in the lead. We will be going into how and why these huge companies compete so hard with each other. The automation industry is in fact know for its fierce fighting for a place on the market. On the other side, the monopoly position is still held by one giant: IBM.

The competition war and application of technological development within the automation industry decide what automation apparatus appear on the market. In other words: in this sector the automation in the other branches of the trade is decided in principle. Not only the applications that these 'automators' offer are of importance but also the power they have over their customers. This chapter has been written to reveal the driving forces behind automation. A short historic review, starting with the development of the first computers and semiconductors seems essential, and we will break down the market into its various submarkets. Then we will describe the situation in these submarkets. Thereafter, we will go into the vicious competition war which is being fought over these markets, the role of

government support in this battle, and the effect this has on Dutch industry.

THE DEVELOPMENT OF THE FIRST COMPUTER

The preparations for the Second World War, and the War itself, were important stimuli in the accelerated development of the genuine computer. Especially for the calculation of ballistic trajectories, the armed forces needed quick and trustworthy calculators. There were not available. However in 1937, in the United States Professor Aiken had succeeded in designing a calculator: the Automatic Sequence Controlled Calculator (ASCC). He managed to interest IBM in his design, who started work on the Mark I two years later. From 1944 to 1959, this machine was used primarily by the U.S. Navy. Also in the U.S. shortly before the war, two young scientists, Eckert and Mauchly, had come upon the idea of designing an electronic calculator. They received an order for this calculator from the Ministry of Defence in 1943. Three years after this, the ENIAC (Electronic Numerical Integrater And Calculator) was installed in the research laboratories of the American Army. Calculations for the 'Manhattan Project' were carried out on this huge machine; in other words, for the development of atom bombs with a far greater destructive power than those used at Hiroshima and Nagasaki (3).

In 1936 in Germany, Zuse designed a mechanical calculator. He was urged by the Nazis to improve on this design. In 1941, Zuse's Z3 was ready for use by the Deutsche Versuchsanstalt für Luftfahrt. As in the Mark I, use is made of electromechanical relay. Zuse's machines were never operational in the war, and were destroyed by Allied attack in the last year of the war.

The calculators from this period were colossal. The ENIAC for instance was 30 metres in length, by 3 in height. The machine contained 70,000 resistances, 10,000 capacitators, 6,000 switches and 18,000 vacuum valves. These valves were always breaking, and the machine

operator was looked upon primarily as a 'valve replacer'. One technical problem was also the very complex wiring, which had to be changed for each new programme. The small memory was another problem: the capacity being only 4,000 digits. The data input was via an IBM punch card reader, and the output through an IBM card puncher.

In 1946, Eckert and Mauchly started construction of the EDVAC, an electronic computer. In this context, electronic means that the input data are transformed into electrical signals. Von Neumann was their adviser. The company which Eckert and Mauchly had formed on the side was taken over by Sperry Rand in 1950 and became their Univac division. The first Univac commercial computer was brought on the market in 1951 in the U.S., at about the same time as Ferranti in England, where in 1947, Williams had already started the development of a computer.

COMPUTER GENERATIONS AND SEMICONDUCTORS

Since the first computers, various fundamental changes have taken place in their design. This is why one speaks of successive computer generations. This division into generations is especially based on essential changes in the central processing unit. In first generation computers, vacuum valves and semiconductors were used, in the second generation transistors, and integrated circuits (ICs) in the third. These days however the term 'generation' is no longer used because CPUs can appear in various forms. Furthermore, this term has been eroded: various producers have claimed to have developed the 'fourth generation': this however turned out to be a mere sales gimmick.

The disadvantage of first generation electronic computers was the replacement of valves. The application of the transistor instead of vacuum valve represented a big step forward. The transistor was invented in 1948 by three scientists, Bardeen, Brattain and Snocklev, working in the Bell Laboratories, a subsidiary of AT&T. They

discovered that a slice of silicone could be given positive and negative charge zones by gas deposits and thus could be used as a semiconductor. Such a semiconductor can take over the amplifying role of the vacuum valve, even though it is based on another principle. However, it was still quite some time before this invention would be used in computers. It was only in 1959 that IBM came on the market with its 1401: the first commercial computer using (10,000) transistors (4). These second generation computers switch faster, produce less heat and take up less space.

In the meantime, a further reduction of size and weight and an improvement of reliability of electronic parts was strongly stimulated in the interests of the armed forces and space travel. New advanced winged combat aircraft and, in particular, missiles rely on this technology. During the cold war, the Pentagon and NASA made large sums of money available to Westinghouse, Texas Instruments and other companies. The height of research and production costs were immaterial (5). The first big success in this race was attained by researchers working in the Texas Instruments and Fairchild semiconductor factories. They managed to bring together dozens of transistors, resistances and other electronic gadgets on one slice of silicone. It was now 1959. When, two years later, it was possible to mass produce these integrated circuits, the road to success seemed assured.

There were however problems. The designs needed a lot of improvement and the number of 'drop outs' during production of ICs was very high. Once again, military spending had great influence on the technological development of micro electronics. In 1962 the U.S. airforce started a programme to perfect the giant Minuteman II atom rocket. The development of new ICs played an important role: more than $100,000,000 was designated for this project between 1959 and 1965 (6). It is not surprising, therefore, that all ICs produced in the first years were used in military equipment (7). It was only in 1965 that the various industries started using

ICs in equipment for the commercial market such as TVs and pocket calculators. It took another few years before the first IC computers appeared on the market. The first of these were produced by Digital Equipment Corp. (DEC) with the PDP-minicomputers. In 1970, IBM appeared on the scene with ICs in its 370 series (8). These third generation computers made it possible to build complex yet compact computer systems. The speed of calculation was dramatically increased, because of the extremely short IC switch time.

THE AUTOMATION INDUSTRY

In the course of about 25 years, the computer has developed from a cumbersome and 'slow thinking monster' into a relatively small, quick and immaculately accurate calculator. Due to this development, the office machinery industry has grown to become a powerful industry. At the same time, the semiconductor industry has sprung up; not only with transistors and ICs, but also with micro processors (see hereafter), microcomputers and still more complex apparatus. The application of these microelectronics is much wider than only computers. They are also applied, as mentioned earlier, in TVs, calculators and in the industry, monitoring and control equipment, in process guidance, in telephone sets and exchanges, automatic cash registers, car, etc. The telecommunication industry plays another important part in automation. These concerns have an interest in the exploitation of the link between automatic data processing and telecommunication (data communication). These industries together are what we call the 'automation industry'. We can therefore split this industry into three parts: the computer, semiconductor, and telecommunication industries.

In spite of very different origins, these parts have encroached on each other's territorial waters. At first, semiconductor factories only produced transistors, ICs and other electronic components as semi manufactured articles to the manufacturers of the end product (e.g. pocket calculators). This situation changed in 1972 when

big semiconductor producers, such as Texas Instruments and Rockwell, started producing these end products themselves (9). These firms have now gained an independent position on the market (forwards integration). The large firms have expanded to take in the production of microprocessors and microcomputers, and in a few cases even large computers. The large computer firms sometimes do it the other way round: producing their own ICs etc. (backwards integration).

The same story applies to the large telecommunication firms such as AT&T. This firm entered the semiconductor field from the start by the invention of the transistor in its laboratories. AT&T, however, had to hand over its transistor patents to other firms after a clash with the Pentagon. (Important argument: in this way, the costs of military production could be reduced.) (10) More important, however, is the fact that the telecommunication firms have become involved with data communication. The reverse sometimes occurs when a number of computer giants enter the telecommunications market.

Automation is a fast growing industry. At the moment, it is in third place in the American 'top ten' business sector, behind oil and the automobile industry. Automation is gaining on the automobile industry and will have overtaken it within a very short time. As stated in 'Business Week', the automation industry has developed into a 'mature industry'. Hand in hand with this development, is the domination of this industry by a few large firms who can invest large sums of money. Compared to the fifties, the situation has changed drastically. In those days, it was possible for researchers to form their own company, sometimes even in their own back yard. A number of these companies collapsed, others flourished. Examples of these successes are the rise of Intel and DEC.

Although this is not easy, we have divided the market into the following subsections with their specific products:

computer industry	: large systems middle sized computers small computers (minis) microcomputers terminals and hard ware software and service
semiconductor industry	: discrete elements (transistors, diodes, etc.) integrated circuits (ICs) microprocessors (programmed ICs) sensors and speech recognition systems
telecommunication industry	: telephone systems and exchanges modems (transmitters) data networks cables (including glass-fibre cables) satellite systems

Besides the listed products, others are also brought on to the market which do not fall into one of the above categories, either because the products are too specialised and the market too small, or because they are brought onto the market from other sectors. Numerically controlled lathes and industrial robots - more about this later - are produced by the machine industry for instance. Under specialist apparatus, one could think of graphic printing systems, automised design equipment and medical apparatus. Semi-manufacturer articles from the semiconductor industry are, however, used in these products.

THE COMPUTER INDUSTRY

In 1951 the Sperry Rand Univac division installed its first computer in the American Office for Population Statistics. IBM, however, was at this time not interested in this type of application: 'Mother Blue' only appeared on the market in 1953 with her 701-type. Within

the next two years, Sperry was surpassed, and from that moment on IBM has remained the most important concern in the computer industry (11). IBM was already the largest manufacturer of mechanical equipment, which could now easily be replaced by IBM computers. The sales policy used by IBM is also far more aggressive than that of its competitors. The giant remains faithful to its old methods: rental instead of sale. Experience has shown that this method binds customers, even if they are dissatisfied. In most cases, these customers are hardly aware of their rights, and on top of this are usually caught up in competition amongst themselves. Conflicts with computer manufacturers arise regularly but seldom reach Court (12). Finally, IBM has the advantage that they marketed the first problem-oriented programming language (FORTRAN) (13).

The IBM policy continues its success, at least according to Wall Street. The turnover of this giant company rose by 15% to the astronomical figure of 53 billion guilders in 1980. Three-fifths of that amount was derived from rentals and the software services. The sale of IBM computers is becoming more important. During 1980, these sales contributed to the increase in profits by 18% to 7.2 billion guilders (14). In particular, IBM has a powerful position in the market for large computers. In the western world, it dominates 65% of the market (1978). Honeywell-Bull takes second place with 11%, Burroughs is third with 7½%, followed closely by Sperry Univac (15). IBM also holds a strong position in a number of other smaller submarkets. For example, in the word processor apparatus, Mother Blue's share is 70% (16). We can presume that the whole western computer market was worth around 120 billion guilders in 1980. IBM claims about 40% of this.

IBM also has a powerful position on the Dutch computer market. This is clearly illustrated by the latest figures dating from 1 January 1978. (By mutual agreement, neither the manufacturers nor the importers publish these figures any more). Thirty percent of (the rental value of) all computers installed in the Netherlands, including minis,

and the IBM label. Honeywell-Bull and Philips had a 14% share each. Then came Sperry Univac and Burroughs each with 7%. In 1979 IBM was still clearly the leader, while Sperry, Burroughs and also Siemens seems to have overtaken the former number twos, Honeywell and Philips (17). One fact remains unchanged however, a good tw-thirds of all computer sales and rentals in the Netherlands remained in the hands of five large concerns. Here too a high level of concentration!

Besides the markets for large and middle sized computers, the market for mini computers has become very important. In 1978, DEC became a clear leader in this submarket, with a turnover of 3.4 billion guilders; this represented 40% of the market. Number 2, Hewlett Packard followed at a respectable distance with a turnover of a good 1 billion guilders. In 1979, the competition war intensified. Not only have Texas Instruments' micro computers become more capable, but they have also started selling mini computers. This is becoming a problem for existing mini-manufacturers. This problem should, however, be taken with a pinch of salt. The profits anticipated by shareholders in the automation industry are extremely high, but can sometimes lead to disappointment. For example, the price of DEC shares fell drastically on Wall Street when it became known that their turnover in 1978 rose by 42% and its profits by only 36%. Such figures are looked upon as disappointing by the American business press (18).

THE SOFTWARE MARKET

After IBM's marketing of FORTRAN, other computer manufacturers started developing their own programming languages and system programmes. During the fifties, military and space interests played the most important role. This is especially true of the USA. According to the European Community, the fast growth of complicated software can be attributed to the systematic use by government offices (NASA, Pentagon). Especially, expenditure by the Pentagon on development and acquisition of programmes are gigantic. For 1979, this expenditure was

estimated at 13 billion guilders (20). Much of this software is developed at universities, just as in the Netherlands. The computer languages and programmes thus developed are handed over to computer manufacturers for a song. In this way, development costs are in fact subsidised by the government.

During the sixties, simpler programme languages were being developed, such as COBOL. Due to this, the programmers do not need to be so specialised any more. They only needed to change a solution into a series of instructions. After a while the (unused) technical know-how lost its value. The distinction between operators, programmers and other workers became increasingly clear. These were good enough reasons for computer manufacturers to continue in this field. Various languages appear on the market for numerous applications: BASIC, LISP, SIMULA, APL, etc. Around 1970, about 1500 languages had appeared on the scene. The customers complained bitterly about this 'outburst'. The Pentagon, for example, felt it was spending too much on the various programme languages. It was of the opinion that there should be one standardised language to be used by all manufacturers. The department's favourite language was ADA, a derivation of PASCAL. A whole chain of semiconductor manufacturers such as Texas Instruments, National Semiconductor and Motorola, gambled on PASCAL. Philips also had a preference for it. Nevertheless, the computer sector is still very much dependant on IBM who were only prepared to admit that they had 'considered' PASCAL (21). All in all, the hope of standardisation of programme languages has yet to be realised. However, more and more standard programmes are appearing on the market. This 'standard software' is aimed at various regularly recurring applications.

The market for software and computer service offices has grown swiftly over the last few years. The sales increase repeatedly by more than 20% yearly. The American market was worth nearly 7 billion guilders in 1979. The large offices specialising in standard software are growing particularly quickly (22). The age of new soft-

ware and service offices springing out of the ground like mushrooms seems to be over. Concentration also occurs in this submarket. American firms control the market. A few names: Automatic Data Processing ADP, Computer Sciences and Electronic Data Systems. These are 'independent' firms. Besides these, the large computer manufacturers and software consumers have started developing and marketing their own computer service and software. IBM and other large automisers controlled more than half the market for software and service in 1974 (23). Since then, IBM has not actively tried to increase its share of the market.

In Western Europe the situation is different. The computer companies, with IBM in the lead, are advancing further into the software and service market. In Europe, IBM is far the largest company with a turnover of more than 700 million guilders in 1977. The Dutch software market - good for a turnover of 1 billion guilders in 1979 (24) - is the exception here, IBM taking third place. The other three of the 'big four' in this field are CVI (owned by the state railways), Volmac and CEA owned by Centraal Beheer. The concentration tendency is also present on the Dutch market. Small offices get taken over. This is something in which banks are extremely active (25).

THE SEMICONDUCTOR INDUSTRY

We concluded our story about semiconductor application at the beginning of the 70s. The first computers with ICs then appeared on the market. In the meantime, the semiconductor industry has brought a new 'generation' of ICs into production: the LSI (Large Scale Integration). It proved possible not only to put transistors and other functions next to each other but also on top of each other on one chip. Shortly thereafter, in 1971, it became possible to programme the chip. This led to the microprocessor (MPU). This fulfils the same functions as the CPU of a computer. Shortly afterwards, the microcomputer was constructed out of this.

The American company Intel initially led the market with LSI-ICs and MPUs (26). Intel was quickly overtaken by Texas Instruments. This concern knew exactly how to make use of American government funds. Early on, it also placed a large proportion of the production of ICs and MPUs in countries where salaries were extremely low and where dictators gloried under American protection, such as Taiwan and South Korea. Free trading zones were set up by these regimes for these export companies. The employees, mostly women, found themselves behind barbed wire. In the meantime, all big semiconductor manufacturers have stablished themselves in these zones (27).

The development of new chips was extremely expensive. But once they could be mass produced (especially in the low wage countries) the cost price per item dropped dramatically. The semiconductor manufacturers also tried to squeeze the sales price of chips down as far as possible. Their reasoning being that this would bring equipment, with built-in chips, within reach of many people. Mass sales, and therefore mass production, meant cost prices which undercut sales prices and brought large profits. Texas Instruments and a number of other manufacturers reached this stage in 1972 with pocket calculators. The consumers market for semiconductors was now open. Next came the digital watch. However, there have been no further 'break throughs' since. This chip is in fact still used in very few consumer articles. The best known applications are the TV games. Microprocessors and microcomputers are also built into modern refrigerators, hairdryers, (microwave) ovens, washing machines, and sewing machines (28). These articles are still very expensive - and that at a time when the buying power of the mass consumer in Western Europe is under pressure. It is therefore difficult for these articles and the chips inside them to be mass produced.

The policy of the chip producers, which we have just covered, makes the risk of overinvestment even larger than it usually is in the capitalist system. The first shock came in 1970. The semiconductor manufacturers grossly overestimated the growth of American government

spending - particularly NASA - and the worldwide sales of colour TVs. The workers bear the brunt of this shock. In the Philips semiconductor factories in Nijmegen and Stadskanaal at least 900 people are disposed of in the period 1970-72 (29). Four years later the same thing happens again: more overinvestment and overproduction - new cuts. The largest and financially strongest semiconductor producers have used this crisis to keep up production under the cost price and so to outcompete the 'weaker brothers'. This was also according to capitalist logic. In the meantime, concentration in the semiconductor industry has progressed a long way. A number of smaller manufacturers can only still exist through orders for production of special series.

The necessary investments are increasing rapidly. This is acknowledged by Philips' executive Huart: to gain an additional turnover of 100 million guilders in 1970, a 20 million guilder investment was necessary. In 1978, these necessary investments had risen to 40 million guilders and the expectations are that these will rise to 70 million....during the 80s!....This means that if an IC company wants a reasonable chance of survival it has to be firmly settled (30).

These gigantic investments are a necessity because in producing the increasingly smaller and more complicated IC, various branches of technology are stretched to the limit. Normal lighting, for example, is insufficient to print ICs by; electron beams are needed for this. The research on and development of these 'technologies' is extremely expensive. On top of this, it is common practice for the large semiconductor manufacturers to do their own research and development so that the latest applications tend to become 'company secrets' (31). These gigantic investments however are not always done by firms who already have an interest in this field. 'They are not alone'. The Franco-American firm Schlymberger, for example, took over the well known firm of Fairchild in 1979.

The interest of the oil-multinationals could prove to be of even greater influence. The oil giant EXXON, for example, is rapidly expanding its semiconductor producing daughter company Zilog (32).

And how is Philips doing then? Philips is not exactly a dwarf in the semiconductor field. According to Huart, Philips is the world's number one in the IC market for consumer applications. He does add however that his firm is just a beginner in the production of microprocessors. About six years ago, it looked as if the Eindhoven behemoth had lost the battle in this field, even before it had properly started. Philips has, however, managed to stay in the race through three measures:

- the takover, in 1975, of Signetics: an American semiconductor manufacturer;
- the signing of an agreement with Intel in 1976 over the sharing of technological knowhow on MPUs (33) and the signing of a similar agreement with Motorola in 1981;
- making use of an already existing joint-venture together with the Japanese Matsushita Corp. for obtaining knowledge about the automation of semiconductor production (34).

On balance, Philips, including Signetics, takes second place on the world IC and MPU market, after Texas Instruments. This American firm sold a good 1.5 billion guilders' worth of ICs during 1979 - leaving Philips far behind with a mere 800 million. Next on the list were (the) National Semiconductor, NRC (Nippon Electric) as first Japanese company, and the US firms Motorola and Jutel. These six companies combined dominated more than half the world market (35). The age of success of the 'garage companies' is long passed. The semiconductor industry too is now being dominated by monopolies. Inherent to this is that the nature of the competition is changing. These 'monopolisers' would rather see their product-range cut down so that they can increase their prices. Or, as the American business periodical Business

Week puts it:'a tell-tale sign of the fact that the industry is full grown is the willingness to increase prices' (36).

There is only one company that could foul up the position for the other 'capitalists'. In the 'top six' above, only those companies were listed that sold semiconductors to third parties. If we were to look at the producing firms, IBM would rank high on the list. 'IBM is possibly the world's largest chips producer, but it does not sell any outside the company' (37), as The Economist puts it. IBM uses its chips for application in its own computers, etc. 'Mother Blue' has, through her enormous research organisation, made numerous inventions in the chips field. These have been incorporated into IBM computers for some years now. One example, incorporated into the 4300 series, is the I2L-technology (38). If IBM were to start selling its semiconductors to third parties, the balance of power would shift drastically. In the end, this would be a great disadvantage to the smaller purchasers of semiconductors and related apparatus.

THE TELECOMMUNICATIONS INDUSTRY

The telecommunications industry manufactures the apparatus for data transport. Originally this was the work area of the telephone and telegraph industry. To name but a few: International Telephone and Telegraph Co. - the notorious ITT, AT&T, and General Electric. As the use of computers and 'long distance' data processing increased, the data communication market became more interesting for these firms. The products in question are data-networks including 'modems', cable systems and, of course, satellite communication.

The telecommunications market has a number of typical characteristics. For one thing, the individual orders (e.g. a telephone exchange) are often large, and for another, customers often have very specific wishes.

These customers are, for example, post offices or private firms. The post offices and manufacturers are internationally united in the International Standards Organisation (ISO). The task of this organisation is to lay down standards, on an international scale, concerning computers, computer-controlled exchanges and satellite communications. IBM does not participate in this organisation. Furthermore, the installations are used for a long period of time. The average useful life of a public telephone exchange is 25-30 years. For a private company exchange this is a minimum of 10 years, even though new 'generations' are replacing each other at an ever increasing rate. The fact that the Western European telecommunications market is divided into national markets is related to this. These national markets are dominated by the 'national' companies; i.e. the firms strongly related to the particular country. The West German Post Office, for example, ordered 60 percent of all telecommunication equipment from Siemens. In spite of this, however, ITT does play a part in these European markets (39).

The post-war development of the telecommunications industry is very similar to that of the computer and semiconductor industry. The first steps towards automation were, again, made possible through military contracts. In the telecommunications field, satellite communication is especially important. In the USA, NASA played the most important part. In Western Europe as well, development becomes very similar later on. ESRO (European Space Research Organisation), which became ESA (European Space Agency) in 1975, was founded in 1964. ESA does not only concern itself with scientific satellites (as ESRO did) but also with utility satellites and booster rockets (40). The first European 'launching vehicle' project, the ARIANE, was paid for two-thirds by the French government. In this way the French are trying to obtain a sizeable share of the telecommunications market (41).

This market seems extremely profitable. The data transmission by satellite no longer offers any technical

problems for telecommunications companies. In 1978, for example, the first newspaper page, including photographs, was transmitted from the US to France by satellite, using the so-called digital-facsimile-transmission. A number of large companies are now awaiting their chance. The SBS (Satellite Business Systems) has already been started by IBM and two other US firms. IBM, ITT and AT&T will each try to introduce their own standards into these satellite communication networks. Should IBM manage to succeed in this endeavour it will, just as in the computer field, hold a monopoly position. This was already forecast in 1978 by Simon Nora, an automation boffin of the French treasury. Nora appealed to the European Post Offices to standardise their telecommunications (43).

On the world market for telecommunications equipment, AT&T rose to first ranking in 1978, followed by ITT and Siemens. Philips was then in eighth position (44). The Table below gives preciser information:

The world market for telecommunications equipment, 1978

1. AT&T (US)	24%	6. North. Telecom. (Can.)	4%
2. ITT (US)	13%	NEC (Jap.)	4%
3. Siemens (FRG)	9%	8. Philips	3%
4. Gen. Electric (US)	5%	9. CGE (Fr.)	2%
L.M. Ericsson (Sw)	5%	Thomson-CSR (Fr.)	2%

source: The Economist, 28-10-1978

Various reports indicated that this list, and especially the 'top five', has not changed during the last few years.

In the Netherlands as well, data communication is developing rapidly. These developments are worthy of a close scrutiny by the labour movements. These develop-

ments do, of course, have historic roots. In the first instance, the Dutch post office (PTT) offered its telephone network to industry for data communication. Companies could rent special lines. The network however got overloaded, and transport was too slow. In 1975, the PTT started preparations for a new network which was designed purely for data communication (45). The 'Users Club DN 1' was formed. The plans were further worked out by this selected company. The club consisted of representatives of a number of Dutch Banks - ABN, AMRO, NMB, RABO, and the multinational (chemical) firm AKZO. The trades unions are not represented. The Secretary of State for Transport, Mrs. Smit-Kroes, of the VVD (Dutch right wing liberal party), later on explained why: 'Speed was essential, because a number of larger firms were desperately in need of faster and more reliable data traffic and were anxiously seeking their own solutions' (46). The PTT in fact just opened its new Datanet DNI officially in March 1982. In various other European countries, the post offices are working on similar Datanets. Together they are preparing for a European network (Euronet). In fact, Philips was by-passed as main contractor for the PTT in favour of Bell Telephone Company (AT&T). However, Philips is still in the market for all subsidiary equipment such as terminals, computer systems, etc., according to the PTT top executive, De Jong (46). Apparently, other capital groups, the users of the network, could not wait for Philips.

In the development of glassfibre cables, Philips and the PTT do however see eye to eye. These cables too are an important innovation in the field of data communication. They are made up of optical fibres, of which the basic material is sand, and which have a very small diameter and low weight. The transmission capacity (the amount of information passed during a certain time) is very high. Since 1979, Philips and the PTT have been experimenting with an optical cable between Eindhoven and Helmond (approximately 10 miles). According to the plans, each new cable for the Datanet from 1982 onwards should be an optical fibre cable (47). This seems to be an

interesting market for the Philips daughter NKF (Dutch Cable Factories).

THE NATIONAL PAYMENT CIRCUIT

Datanet is the technical basis for the National Payment Circuit. This NPC involves the linking up of all the PTT's giro money traffic with private banks. The possibilities for such a link have been studied by the 'Stuurgroep Integratie Giroverkeer' scretly for the last five years, led by the President of the Dutch National Bank (Nederlandsche Bank), Dr. J. Zijlstra. The top executives of the PTT and the large Dutch banks were assembled on this committee. In September 1980 the report from this committee accidently became public. One of the conclusions was that the NPC would be feasible by means of DNI. A number of stagnation points in the existing money traffic system could be eliminated (this means the elimination of the 'Bank Giro Centrale' together with its 750 employees).

This committee however still has a number of tricks up its sleeve. The system's flexibility would open still more 'possibilities'. The club would, for instance, want to install Point-Of-Sale (POS) terminals in the shops of large national chain stores. This type of cash register terminal would automatically read the prices of the various articles, calculate the total and subtract this from the customer's bank or giro account via Datanet. The customer would identify him/herself by means of a plastic credit card with a 'chip' embedded in it, keeping track of his/her account in its memory. The aims of the Committee are clear: 'the POS would give further stimulation to the (invisible) giro.....payment in shops and other points-of-sale' (49). All this should be in operation during the course of 1985. The next big step would make it possible to install similar terminals in bank branch offices. Private customers should also be able to have a personal terminal installed in their homes. In this way they would not need to visit their bank office, even though there would be someone there behind a terminal capable of dealing with

the financial transactions instantly. The last phase would involve automatic pay-and-deposit-machines, and the linking up to the international payment traffic.

The consequences for PTT, bank and shop employees are threatening. The report that became public accurately calculates the advantages for the PTT and participating banks. There would be, for example, a net saving of 80-90 million guilders in 1985. This would be obtained, among other things, but 'cuts in labour costs', which undoubtedly means redundancies. Also, the time needed to transfer money would be reduced, although this clashes with the inherent reduction of interest gains. The banks still have to find an answer to this problem through rate adjustments. The PTT also has this problem, but on top of this the Giro and National Savings Bank customers will probably transfer their money to the banks. A solution would be to offer a similar service package as the banks (50). In other words: the forming of the 'Postbank'. Even if the giro would not participate, the banks would still form their own payment circuit. The unions are also concerned about this. The civil servants unions ABVA/KABO will not cooperate with the NPC as long as the Postbank has not been formed (51). The PTT director, Mr. Leenman, apparently also sees the threat that billions of PTT guilders will disappear to the banks, because he wants the social and economic effects studied more thoroughly. The bank top executives however are pressing for 'the utmost speed in these and other studies', which appeared in leaked-out minutes. The Minister of Transport has kept the unions and parliament uninformed about the committee's plans (52). The possible drastic consequences of these plans demand a strong vigilance on the part of the unions involved as well as factual public decision making and control.

VICIOUS COMPETITION

The automation industry is a turbulent one. The battles fought to gain, to keep, or to expand a market position are extremely vicious. IBM's monopoly position is

besieged regularly, but 'Mother Blue' has managed to maintain her position. At the beginning of the seventies two large firms, General Electric and RCA, ceased their production of large computers altogether. Later on, smaller firms marketed computers which were compatible with IBM types. Compatible means that both hard and software can be used in conjunction with the IBM types. In 1979, IBM launched a counter attack on these firms: Amdahl, Magnuson, Itel and others. The hardest blow fell when IBM drastically reduced the prices of her older type CPUs. This angered many an IBM user as they were all contractually bound to far higher prices. This anger hardly touched Mother Blue. But the blow struck home: Itel had to give up the battle. The others, however, managed to stay 'in the ring'. In 1980 they enjoyed a small let-up when IBM increased the rental rate for large computers by a total of 12% (53). Apparently the giant monopolist still felt strong enough to do this, even without pricing her new models too sharply (54).

Also in the 'computer lobby' IBM apparently still feels very strong. 'Sweetener' trips, presents and especially exchanges of managers and directors is normal practice in this branch to increase sales. In this way, IBM organised a trip to the US in April 1978 for the benefit of a number of Dutch insurance companies. During a fortnight, an intensive programme was covered, visiting insurance brokers and IBM plants (55). The taking place of this trip became public knowledge by chance. But we can readily assume that this type of activity, and those even more reminiscent of bribery, take place regularly in this business.

The toughest competition for the existing computer firms, and particularly IBM, can be expected from Japan. The Japanese firms concerned, which owed their growth to consumer electronics, entered the computer market during the sixties. This was a late start, but the basis however is sound. This is especially true for Hitachi and Fujitsu. These companies and Nippon Electric Company

(NEC), Toshita and Mitsubishi as well, all produce IBM-compatible computers. The latest Japanese computers are supposed to contain even more sophisticated components than those manufactured by IBM (56). Over 1980 it was Fujitsa that first managed a greater computer turnover than IBM Japan (57). The Japanese are expected to shift their attention from the home market to the international market during the next few years (58). Their close cooperation between companies and government will be to their advantage (see following chapter).

It became clear that the competition war was also being fought, using standards as weapons. In preceding chapters we have already come across the standardisation of programming languages and in telecommunications. The main question remains: which company lays down the standards and thus gains a head start? IBM in particular always tries to force its systems on to others, including national governments.

There does however always remain a chance that compatible hard and software will appear on the market. This 'connectability' will undoubtedly play an important part in the competition war for the 'office of the future', which can be expected to start within the foreseeable future. Xerox, DEX and Intel for example have announced a joint project under the name Ethernet. These three firms will lay down specifications so that all office equipment - e.g. computers, terminals, copiers, word processors and printers - produced by them will in fact be interchangeable (59). This cooperation involves manufacturers who are specialised in office equipment, minicomputers and semiconductors respectively. DEC and Intel have therefore entered markets which are new to them.

This occurs frequently in the automation branch. The markets which we had distinguished are not as clearly defined as we made it look in the preceding chapters. On the contrary: the enormous profits were stimulants for the strongest capital groups to enter each others' fields of interest. New inventions further muddled the

former market division. ICs for example, being produced by semiconductor manufacturers, are in fact small electronic systems. Transistors were not. This forward integration is taking place by itself because these manufacturers are now 'without knowing it' producing semi-manufactured articles instead of basic products (60). Semiconductor manufacturers are entering the computer market in a similar fashion with the microprocessors. On top of this, large numbers of these firms have marketed microcomputers, using MPUs as their CPU. When these baby computers are equipped with more software, they will fulfil the tasks formerly performed by minicomputers. Texas Instruments and Intel switched their attention to this field around 1977. This was more fuel to the competition fire. The 'big boys' of the minimarket such as DEC and Hewlett-Packard, started feeling the pressure. They claimed that their computers had a far wider range of application possibilities (61).

The 'office of the future' has just been mentioned above. What is meant by this? Large companies aim to organise and automate their offices according to the 'flow-principle'. This seems essential in many cases even to be able to remain in control. Word processors and computers would be linked by telephone and electronic post systems. In this way, working efficiency would be greatly improved. A number of very large firms are already going in for this huge future market, even though their main field of interest is still in other markets. 'In the first place there is IBM which apparently has most of the pieces of the puzzle in its possession: copiers, typewriters, word processors, facsimile, computers and telecommunications satellites', according to a big automation business magazine (62). There are more however: combinations of firms and individual companies such as AT&T and Xerox. And especially those giant companies aiming their diversification strategies at this promising field, such as EXXON, Volkswagen and the French glass concern Saint-Gobain Poul à Mousson (SGPM). Those companies which are already selling automation apparatus, are now being confronted by a range of new, powerful 'automisers'.

They are spreading their interests over a wide field. SGPM for example started an IC producing company by the name of Eurotechnique, together with National Semiconductor. The French company also gained a 20% interest in Olivetti (63). In 1980 Volkswagen increased its share in Triumph-Adler to nearly 100%. Presumably this was to enter the new market through an already well known trademark. Or possibly VW has made a number of miscalculations. The opinion of national officials of the FNV has in the meantime been proved wrong. They stated: 'This development is not too bad for the Dutch Adler factories; Volkswagen cannot permit itself to close down these factories. The car manufacturer's interest in the Dutch market is too great' (64). Less than 3 months later the closing down of the Dutch Adler factories (in Luyk and Leiden) was announced.

The final development which we will look at here is the use of the 'information industry'. Through the possibilities offered by large memories and new ways of data transport the development of data banks has become the field for this industry. Excerpta Medica, a subsidiary of the Dutch publishing concern VNU, possesses the world's largest data bank containing medical information. This same VNU has lately founded Data Publishing International, an operative company with the task of building up a databank. The information industry is now entering the automation market, offering its storage facilities. Concentration of production is not the only concern: concentration of information (administration) is even more frightening.

GOVERNMENT SUPPORT

It was especially the US military spending that dictated the pace of the development of, in particular, the computer and semiconductor industries in the first post-war decades. These spendings were slowly cut down after a while, but enjoyed a fair revival during the Vietnam war. Through these military contrasts the US government spent a good 900 million dollars on the development of semiconductors in the period 1958-1974 (66). And this

despite a fast growth in civil production. On top of this the American government lost its subsidy monopoly on the semiconductor industry in 1975. At this time, all major capitalist governments were trying to raise their 'own' semiconductor industries. The automation concerns were all trying to get these governments to bear the cost and risk burdens. The fierce competition battle forced the production to become a government affair. A back drop to all this were the ever increasing development costs and investments, the compatibility of the equipment and the battle for the standards. Large portions of the equipment could only be marketed in a complete sales-package (telecommunications, office of the future). This too involved gigantic preliminary costs and risks. A further item of consideration was that of national military strategic type: see the end of this chapter. A 'national' semiconductor industry is of fundamental importance to a 'national' space technology. And, in extension to this, the formation of a military power with any form of independence. Besides this, the national governments were being used more and more by the wholesale customers of the automation industry. The aim: the more extensive and quicker deployment of these technologies in the various production lines. The West German government, for example, spent nearly 3 billion guilders on the development and application of automatic data processing from 1967 until 1979. The official use of this equipment is stated as being an instrument for rationalisation and efficiency increase (67).

The amounts of money supplied by other governments are equally stunning. Japan very likely beats them all. Government and large industries in Japan have been working flat out towards the perfection of automation equipment: office apparatus, robots, chips. They enjoy a very close cooperation. Since 1972, the government has supplied 5 billion guilders for the development and production of this equipment (68). Four firms were paid 250 million guilders only to produce a chip containing 1 million electronic functions (69). A new programme, concerning five firms, to perfect software and speech

and colour recognition by machines, is being sponsored by the Ministry of International Trade and Industry (MITI) (70).

Western Europe shows a similar development. The Schmidt government made 200 million guilders available during the period 1978-81 for the development of the latest IC technology: the Very Large Scale Integration (VLSI). The funds for 1980 went to Siemens, AEG-Telefunken and Valvo, a daughter company of...Philips (71). This proves that the funds are not always solely directed towards national capital groups. Philips is also always in the front line when French government subsidiaries are being distributed. Here it concerns Philips' daughter RTC. The 'French millions' - a mere 400 million guilders over 1980-81 - were explicitly labelled for the defence and telecommunications industry (72).

The 'chip' still remains the chief aim. Time and again it has been proved that the production and technology of ICs has become the key to domination of the computer industry. But who dominates what? The success of all government programmes is dependant on the ability to interest firms who have the technology, such as the National Semiconductor, Intel, Texas Instruments, and, since the takeover of Signetics, Philips. The Eindhoven company profits enormously through the French, West German and British subsidy flows (73). This money applies strong suction to the Philips investments and this endangers Dutch employment (see next chapter).

On top of this, one cannot find a word about the social consequences in the subsidy announcements. Only the last British labour government changed its 'hand out' policy slightly. Callaghan too 'handed out' but also founded a national semiconductor factory, Inmos. The Thatcher government, however, tried to stop the expansion of Inmos. For the time being, this stopping has not materialised. In July 1980 the decision to subsidise Inmos with a further 120 million guilders was taken (74). All in all this uncontrolled and wasteful 'chips-war' raises many a questionmark. This is

particularly true for a programme announced in the US during 1979-80: a large military research and development project for advanced ICs. Projected costs: 200 million dollars. The Pentagon has launched this programme for the development of a new generation highly accurate missiles. As the American Under Secretary of Defence puts it:'lethal accuracy, revolutionising warfare' (75).

The Pentagon is in this way trying to bridge the gap that has developed between military and civil electronics. The military market, not being particularly attractive any more (the series are too small) to the electronics firms, is being pushed heavily. The production of new Very High Speed ICs (VHSIC) not only demands new machines, but also new system designs. The Pentagon therefore supports 'team cooperation' of for example Westinghouse (a typical military manufacturer), Control Data, a computer firm, and the National Semiconductor. In this way the last two get tied to military production. This type of development could have a strong, and not particularly positive, influence on the electronics industry as a whole (76). Under the protection of a war-minded Reagan this could easily mean a fortification of the position of the 'hawks'. Since these firms produced guidance and radar systems for the Vietnam bombings, they have become a sinister pressure group (77). One of the most important suppliers of military ICs and MPUs in the US is Signetics, the Philips daughter (78).

THE DUTCH INDUSTRY

The Dutch position in the automation industry can only be called relatively strong on one submarket: the semiconductor market. The sole Dutch producer of semiconductors is Philips (at the Product Division Elcoma). This work involves about 4000 employees. ICs are designed and produced at the Philips Nijmegen factory. This factory also manufactures transistors and diodes, as does Philips Stadskanaal. The work situation in these two plants will be reviewed in the following chapter.

Related electronic parts are produced at another few Philips factories, in the same division, namely those in Eindhoven and Sittard. Most of the fundamental research is done at the Philips Physics Laboratory (Philips Natuurkundig Laboratorium) in Wallre, near Eindhoven (79). When the 'Dutch semiconductor industry' is mentioned in the Rathenau Report, one should read Philips.

Philips was later in entering the computer market. The first, small Philips computer was only marketed in 1967. Later, a broad programme was set up ranging from small to large computers. In the meantime, IBM had gained a very strong position on the European market. The competition amongst European firms too, such as CII, ICL and Siemens, had become fierce. Around 1971 it had become clear that this situation would lead to great losses. To counter this, Philips started a European cooperation programme called Unidata together with Siemens and CII in July 1973. The Eindhoven top hereby consented to refrain from manufacturing medium sized and large computers. According to Mr. A. Teulings, this was however pure bluff: the Philips computer adventure was in a hopeless position anyway (80). Unidata started a direct competition with IBM, using compatible equipment. Nevertheless, the European cooperation soon started to crumble. The turnover showed no signs of healthy increases and Unidata's European market share never rose above 9%. The financing by the French government of the merger between CII and Honeywell-Bull was the 'coup de grâce' for this organisation (81). The future of many Philips employees remains uncertain. Their protests were successful insofar as to stop massive redundancies. Nevertheless, the final 'score' is the loss of 2000 jobs at Philips Data Systems. The Van der Heem factory in the Hague closed down altogether. From now on Data Systems would concentrate on small systems (82). This work is done at the two Apeldoorn and Amsterdam factories employing approximately 2000 (83).

The possibility of Holland become an important software producer has been suggested frequently. The Rathenau-

advisory group also said this: a specialisation in the software production seems, looking at the high added value and the work intensive character of the production, perfectly suited for a country such as Holland. A market research proved this possibility, but also stated that the Dutch firms in this branch were too small, and that an enterprising spirit was not very obvious in these firms. The government should take upon themselves the concentration in this branch. The president of the 'club' of these firms in this branch (Mr. de Cosso) does not agree with this however (84). Anyway, this discussion appears to be a setup one, as the main sponsors of the larger software agencies turn out to be banks, insurance companies, computer manufacturers and government companies.

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Philips and automation

Theo Bouwman

Philips is one of the very large multinationals. With regard to turnover (in 1979, more than 33 billion guilders) it takes 20th place in the world; with regard to employees it comes fourth. It employs more than 370,000 people, of whom 80,000 are still in the Netherlands. Even though there are still enough to be able to call Philips the largest industrial employer in our country, there are still at least 20,000 less than at the beginning of the seventies. In other words: 20% reduction of employment within 10 years. We have lost that work in the Netherlands because Philips transferred such an incredible amount of work abroad (and exported capital) and because Philips has become highly mechanised and automated.

INTRODUCTION

When we hear the name Philips we think of automation. These thoughts become stronger when we look at Philips products: Philips does your wash, Philips makes your coffee, Philips makes your telephone connections, and Philips sorts your post.

But the production process is also becoming automated at all Philips establishment, even though the management talks obstinately about 'mechanisation' and in those circles the word 'automation' is practically taboo. A Philips worker had this to say:
'In some places the work is still physically demanding, but in most places lifting, carrying and forcing do not exist anymore. But it is still hard work in this factory.

In the old days, the work was hard and dull, now it is precise and secure; lots of control and administrative work as well. A shift has thus taken place, but it remains hard and you have to keep on working. Your work is lighter, but harder mentally. In the old days, you went home dead tired, now you're still tired but it's different.'
One of the bosses from the same factory said:
'But in many cases mechanisation happened very quickly to the people. They had to get used to new situations in a very short time. Now the work is very different... It is 'unaccustomed' work: keeping an eye on machines, controlling administration...An important part is that the work is much lighter, but the amount of products that have to be processed has increased enormously.'

This article handles the mechanisation and automation at Philips; over what has happened already and what can still happen. Because if it is up to the Philips top, the end is by no means in sight, and the reduction of work in the Netherlands has now nearly finished. According to the condfidential Philips statement 'Social Forecast', which was made public a few years ago by the Federation of Dutch Trade Unions (FNV), by 1991 there will be no more than 65,000 jobs at Philips Nederland. Therefore, another 16,000 jobs will disappear, if nothing is done about this development in time.

It has been clear for some time that the Board of Directors of the concern have no scruples about continuing with their plans. After the announcement in January 1980 by the Product Divisions (Hoofd industriegroepen) Elcoma and Glas of the loss of 1600 jobs, in the autumn there were yet again announcements of cuts at the Product Divisions Audio, Video and Medical Systems. And in January 1981 came the news from 'Eindhoven' that 1600 more Elcoma employees would have to go. The forced implementation of automation plays an important role in all this. We will now set out what the automation posi- is in various Philips factories.

PHILIPS NIJMEGEN

In the large Philips Elcome plant in Nijmegen (at least 2000 workers) semiconductors were developed and produced, including ICs or chips. The production process is getting more and more automated: Philips fits the chip and the microprocessor on a large scale in the home. The amount of jobs had not been reduced until recently, because of the rising production of chips. This means however that there is talk of an important rise in work productivity. In spite of this, the danger exists at the moment that the Nijmegen factory will loose its position as the main factory for ICs to a Philips company in Hamburg. The development of the most modern chips, the VLSI, happened with the help from large government subsidies, according to the report 'Afbouw afgewezen' ('Demolition overruled') from the FNV (May 1980). It also said in that report that Philips is busy concentrating the development of a series of very promising applications for chips and microprocessors in the U.S. at her daughter company Signetics. This threat seems realistic. Two weeks after it became public that Signetics was setting up a chip factory in New Mexico (U.S.A.) and undertaking other large investments, Philips announced the blow in Nijmegen: 230 employees had to go. (1).

The manufacture of chips in Nijmegen takes place in 3 phases: diffusion, assembly and final control. During the diffusion, via a series of lithographic and photochemical techniques, hundreds of identical little ICs are 'printed' onto a round piece of silicon with a cross section of 7.5 or 10 cm. Thereafter, the individual ICs are scratched or broken out of these silicon pieces, and then contact wires are soldered on in assembly. The assembly only has a trial character in Nijmegen. Thereafter it is carried out in 'low salary countries': Taiwan, South Korea and Brazil. Independent trade unions are suppressed by the dictators there, the employees often earn less than one-tenth of Philips salaries here. Moreover, the governments in those

countries bid against each other with subsidies for capitalist investors. Philips is automating semiconductor production in those countries at high speed too! (2). Lastly, it is the turn of final control, when the ICs are inspected. Even this happens less and less in Nijmegen and more in South Korea, Taiwan and Brazil.

Automation has taken the largest strides forward in the diffusions departments. In the years 1976-78, a large automation project, known as ERIC, was carried out. Before ERIC, work productivity sometimes increased by more than 100% per annum. Now, the actual diffusion in the furnaces is almost completely automated. At the beginning of the seventies, two furnace workers looked after 6 furnaces, now together they look after 45. At the same time, a change in the organisation was carried out, namely the so-called 'line curtailment'. The work of boss and under-boss have been incorporated into one job, the 'team boss'. This 'curtailed line' means a visible saving for Philips, but for the employees less promotion possibility and a reduction in jobs.

With regard to the partly carried out automation, it is roughly speaking noticeable for jobs that:
- the required knowhow and experience are less necessary due to automation, but more necessary due to influence of organisational changes: the furnace worker is now required to be able to fill in on other activities;
- the required skill is less important in connection with the actual manufacture, but more important because service and repair work have (to be able to) be done;
- autonomy (freedom for decision making) becomes less important in the work and the work become system-bound;
- there is less contact between people.

As already mentioned, operators and workers have to be able to carry out more functions. Insight into how the various steps in the production process fit together is

also required. A stiffening up of function requirements has therefore occurred. But this is certainly not made apparent by classification or reward! These tendencies have been proved by the results of an inquiry of the employees at Philips Stadskanaal, who are also concerned with the manufacture of semiconductors.

In Stadskanaal the introduction of new machines appears to make employees even more machine-bound, even though there are a few production processes where this is not the case. Over the whole line there is definite mental aggravation. The work requires greater concentration. The workers experience it as monotonous and soul destroying. During the last years it has become very important for Philips that the employees are flexible and able to fit in anywhere. The story of the Nijmegen furnace workers is also a general one. This can also clearly be seen in Stadskanaal. There is a swing from a demand for special qualifications (e.g. manual skills) to a harder demand for general skills. The management of Stadskanaal tried to bring this in by the introduction of job rotation. At first the workers concerned enjoyed not having to do the same thing all day. However, after a time, they again reached the point where they found it soul destroying. This also happened when the pressure of work became too great. Nevertheless, small groups of workers have tried to take a stand against this and to retain the positive sides of job rotation.

PHILIPS HOORN

At Philips Telecommunicatie in Hoorn (N.H.) telephone exchanges are assembled, particularly the so-called electronic PABX exchanges. This is an assembly factory: assembly of prints in racks and of these racks in consoles. Elcoma provides most of the components. Up until a few years ago, electromechanical exchanges were made in Hoorn. The assembly and testing of these (which also took place in Hoorn) was very much more complicated work than nowadays with the semi electronic exchanges.

At the same time, the production process itself is becoming automated. There are less people needed per product unit. This development will continue. As the complete computer-guided exchange comes into production, only one-tenth of the labout needed for an electro-mechanical exchange will be required (5). Once again therefore a huge rise in work productivity.

The content of the work also changes a lot:
'Many different activities, e.g. driving in screws, and soldering, have been omitted. The working-in period, which used to be 6-12 weeks, is now shorter. The various necessary skills have been reduced to the one skill necessary for much of Philips assembly work: the knowing by heart of schemes which belong to the type prints and being able to set these up faultlessly' (6).

There is no change of promotion. Without technical training (MTS or HTS) it is impossible to become boss of a line. The work tempo has also tightened up and it is more noticeable if someone is absent for a short time. The work gives less satisfaction: 'It cannot move and you don't have to check whether it moves. It is practically impossible to understand the process of the prints and is introduced by the computer elsewhere.'

The semi electronic exchanges have been designed to allow each phase of the production process to be automated. There is a different amount of automation in the various places where they are made. For instance, the manufacture of prints in The Hague is already automated while in Hilversum everything is still done by hand. And so, in The Hague, cold welding (wrapping) is computer-controlled while in Hilversum and Hoorn thread by thread it is wound round a pin with a 'wrapping pistol'. Why are there these differences? At the moment the machine in The Hague makes too many mistakes. Hard work is going on at Philips for the design of better machines. At the same time, people are kept working manually because the series are not big enough yet. And above all, until the machines are working perfectly,

there are some specifically skilled workers who can compete with them. In Hoorn, this is true for example of workers who quickly and accurately control prints with the naked eye. These are however all temporary circumstances.

PHILIPS MACHINE FACTORIES

Out of the many factories in Eindhoven, we are going to have a look at the Machine Factories. Complete machines and machine components are made here. These are mainly, but not exclusively, for Philips itself. This is where the parts for the F-16 jet fighter are produced as well as the sorting machines for the PTT (Post Office). We will concentrate on two developments.

The first development concerns a so-called mechanisation project for the material service of the Machine Factories. It concerns in fact the automation of 'handling, storage and preliminary processing' of rod material. The material service supplies the workshops with rods and sheet material in the appropriate sizes and amounts. The methods used here at the moment need intensive labour: the rods are collected either manually or with a hoist from the racks and brought to the saw machines. Usually the rods have to be sawn up, so that the work mainly consists of collecting and putting the rods away again. It is dirty heavy work, particularly in comparison with other storehouse work at Philips. A similar type of automation is used in many Philips establishments for transport in storehouses. In view of the high labour involved, this takes the place of many jobs. To avoid any unease about this, Philips reports mention 'mechanisation' time and time again.

The new system is practically fully automatic. With the result that 17 jobs are lost: 9 storehouse workers, 3 people in shipping and 5 saw workers in a low function group. Six saw workers remain in the slightly higher function group 25. Their jobs do not disappear because people who can be used anywhere as replacements are

necessary. A machine operator and a maintenance mechanic joint the indirect preliminary processing. This does not take away from the fact that total function level of the 7 'indirects' still falls. At the same time most of the nuisance allowances are terminated or reduced. There is little change for the machine workers, except that there are fewer people in charge.

The second development in the Machine Factories is the gradual bringing in of numerically operated machine tools. This replace the traditional lathes, milling machines and planing benches. With numerically operated machine tools everything happens automatically. The worker in fact only has to check that nothing goes wrong. In 1975 the first numerically operated lathe came into use at Philips. Now 3 or 4% of machine tools are numerically operated. The productivity of such a numeric lathe is 3 or 4 times as high. In the last few years the consequences of bringing these numerically operated machine tools in has become clear. Not only are there less jobs, the quality of the work is also lower. If this continues, within a few years many specialised workers will no longer be able to earn their daily bread at Philips. The young people who are attending the Philips Business School (educational level of LTS) will also have to be content with far less qualified work. Philips will undoubtedly do its best to adapt their remuneration and their chances of promotion (8).

PHILIPS (TV) TUBES AND TV SETS PRODUCTION

For many years, the television has been the most lucrative Philips article. That changed around 1978. In that year, Philips over hastily introduced the 30 AX-colour tube, to get ahead of Japanese competition. It is rumoured that this too hurried introduction made a loss of 300 million guilders. On the other hand, this new type of tube can be produced by far fewer people than the old types (9).

Technical modernisations are incorporated into tube and into television factories at high speed. Very often there are no tests carried out in the appropriate factories. Among other things, employment in these factories is affected. In this way, Aachen gets more products at the moment and the tube factory in Eindhoven less (10). In January 1981, Philips announced that 300 people in this last mentioned (development) factory would have to disappear. The same thing is true for the video factory in Eindhoven, where colour TVs are put together. A year earlier cuts of 185 jobs were announced in this company (11).

Further automation is planned for these factories, starting in the assembly department. Therefore, work is being done on the development of PAAS, The Philips Automatic Assembly System, also known as the 'pipe-feed'. From various calculations, it appears that this 'pipe-feed' assembly would mean at least 50% job saving, compared with the conventional print assembly. This is not all, as other forms of assembly will also be attacked. The following is a quote from a Philips minute: 'The assembly of large components such as coils, transformers, large capacitators, potentio meters, cooling plates, connectors, plugs, etc. can be done by robots' (12). Philips does not only buy these robots, it develops them as well. In a Philips laboratory in England work is being done on robots which can see - in colour. The specialised press reports: 'Then robots can be used in factories making TVs' (13).

New 'generation' products make much work unnecessary. This is certain true of TVs. In these, mechanical or semiautomatic parts are replaced by fully electronic ones. Therefore, from 1982 a gradual changeover to a 'flat tube' can be expected. This means a drastic change: in technical terms this means the changeover from analogous to digital signal processing. This changeover is made possible among other things by the use of liquid crystals (LCs), computer aided design (CAD), and new applications of ICs. Further, more and more work will

be done with separate modules which can easily be assembled in the chassis. Perhaps Philips will stop the step by step automation when they introduce such a new product. Quite possibly Philips will set up a new factory for this, one where the whole production process is extremly simplified and automated. Then whole production lines would disappear (14).

The working conditions in the production department of the Eindhoven tubes factory leave a lot to be desired. Skilled work which is still carried out now will disappear with further mechanisation. The machines mean a lack of freedom: the machines determine the sequence and speed of work. On top of this, working conditions are bad in this factory: too much noise and humidity (15). To think that the work situation would improve if robots were brought in is an illusion. A West German inquiry into the application of industrial robots at Volkswagen discovered the difference. First of all, there is a large loss of employment. There are 3.7 to 4.7 labourers saved per robot (16). But even so there is no talk of better working conditions! Only a small minority of workers interviewed were in favour of robots as an improvement in their own work situation. One-third frankly declared that their work situation was made worse by the application of the robot. In particular, the raised work tempo was not appreciated. In most cases, the situation becomes more monotonous, the chances of working together are reduced, and lack of freedom due to machines increases (17).

IDEOLOGY AND REALITY

The results of Philips automation policy are coming more and more out into the open. What springs most to mind is the loss of employment. We have already mentioned that abour 20% of jobs have disappeared within 10 years. Philips itself gives the reason for this as being 'the relatively high increase of productivity is not completely compensated by the proportionate growth of production volume' (18). The expansion of employment

through growth of production does not therefore equal up to the reduction from the rise in labour productivity. At the same time, the Philips top still refuse to deal with the trade unions over ways to check this productivity increase in the interests of employment. Shorter working hours were still taboo! But the unions can do more about this too. In Belgium, for example, after some determined campaigning it has been possible to reduce the working week at Philips to 38 hours.

To all this should be added the Philips capital export. For a long time, the capital movement of the concern has not only been directed at the 'low wage countries'. The USA is also popular and so are West Germany and Austria, lthough to a slightly lesser extent. Here, there is the temptation of hugh sales markets (with lucrative orders from the Pentagon) and ditto government subsidies. Because of this, Philips in the Netherlands is put through the mangle (19). In addition, Philips concentrates production in a small number of large companies. This can be seen very clearly with the production of colour tubes and TVs. In this way, automation should become more possible and this should strengthen the competition position automatically. Even under conditions of capitalism, this reasoning does not always make sense.

Whatever happens, many Dutch Philips companies are threatened with cuts. Up until the present that happened by means of 'natural labour turnover'. Nowadays, few people leave of their own accord because of the difficulty of finding a job elsewhere. Therefore Philips gives them a little push. For instance, by announcements in the manner of 'if we don't go willingly, we'll be forced out unwillingly' (January 1980). People with poor health are put under pressure and end up in the WAO (sickness benefit). The progress of women is also strongly speculated upon. It is assumed that women only work for a relatively short time and that they disappear when they get marrier or get pregnant. If they do not go fast enough, then personnel officers and managers are apt to

use some rather cool methods (20). It will certainly be clear that this sort of situation adds to tensions among the people. Rather different from the work paradise that the Philips press tries to bring across week after week in the 'Philips Koerier'....

Another point in connection with the developments in the work situation: in a memorandum, the Philips work group 'Investments criteria' has summed up a number of social standards to which mechanisation should have to comply. We would like to mention the following:

- 'optimal linking up of the level of the work with the capabilities of the workers;
- optimal size of groups (5-12 people);
- possibilities for the worker to move about more freely, and to vary his position and work tempo;
- possibilities of being able to communicate with colleagues during work;
- integration of preparing, supporting and controlling tasks in the job to be executed;
- a longer length of cycle (more than 1 minute) as a condition of the other recommendations.'

If Philips has anything to do with it, it is extremely doubtful whether anything will come of any of these magnificent starting-points. For the moment, we can only file them under the heading of 'Philips Ideology'. This blarney, delivered to every Philips worker at home by means of the 'Koerier', also consists of, among other things, the exaggeration of the need for unskilled labour, the praising of the idea of keeping pace with function and profession, and the constant talk of 'mechanisation' in connection with automation projects. In reality, the situation at Philips is quite different.

OPPOSITION AND TRADE UNION

In these circumstances, far fewer Philips employees allow themselves to be taken in by the ideology spread by the managers; fewer and fewer people feel themselves to be members of the huge 'Philips family'. This has

become clear from the many campaigns launched after the announcement of the cuts in the spring of 1980. One of the most noticeable things in these campaigns was the important role of the women. Now there is every reason for women to come up in arms against Philips as well.

Even more than men, women have become victims of the 'silent' demolition of work which Philips has carried out over the last ten years. In proportion, more jobs for women than for men have disappeared (21). In the fifties and sixties, Philips begged women and girls to come and work for them, even though the concern had opened new works where there was high unemployment and where the wages could be kept low: namely, Groningen and Limburg. In the role of the local personnel chief, 'Mr. Philips' sometimes visited married women at their homes to recruit them. This happened, for instance, in Veldhoven. There was however no provision of day nurseries, etc., nor were there even any plans for these (22). It was not long before a whole lot of women had to be gradually discharged. It was given out by the company that the girls and young women in Taiwan and South Korea 'worked harder'. What they actually meant was: it was easier to exploit them there. Many of the export companies in these countries (including daughter companies of Philips) come directly under military control (23). The number of female employees at Philips in this country has also been reduced as a result of the coming of automation: the mechanisation and concentration of production in large factories.

Philips women worked on the whole in smaller factories. For instance: Usfa-Helmond, Veldhoven, Valkenswaard and Heer (Maastricht). These plans have already been closed, or are on the list to be closed. There have been repeated protests against these closures. That was already the case in 1974 with the closure of Usfa. The occupation of the works by the women was not supported by the trade union NVV, but it was by the NKV. History seemed to repeat itself in 1980 at Philips Heer. On the day that closure was announced, the employees laid down their

work. That was the start of more strikes and go-slows which lasted almost six weeks. The Maastricht women's movement lent important support to this (24).

The relation with the board of the Industry union FNV remains much more difficult. Ultimately, it comes to it that the board, contrary to agreements with shop stewards, agrees that Heer should be removed from the central negotiations over Philips reorganisations. The amount of work for Heer is further reduced by Philips and premiums are paid out to anyone who leaves. The affair then fizzles out like a damp squib (25). The management of the trade union makes it too easy for Philips in other places as well. Discussions with the concern top are tuned to the maintenance of the 'duty of peace' incorporated in the CAO (collective bargaining agreements). This has the side effects: campaigns are not prepared in time, spontaneous campaigns are not supported and campaigns - including a strike at Heer - are prevented. Further, there is also talk that Philips workers have 'limited willingness for campaigning'.... The claims are also unclear. In fact, the Industry union FNV does not demand 'complete replacement employment' and accepts that Philips stimulates 'natural labour turnover' and does not fill vacated places. Once again talks about reorganisation and rationalisation are put in cold storage (26). The outcome is that Philips gets too much liberty. The Philips top are encouraged by this to carry through the automation plan, which just by chance happens to be ready.

It could be different. This has been shown on various occasions by Philips colleagues in Belgium, and also from the 1980 campaigns. In the working out of the elements of a new offensive approach 'from underneath' there are perspectives which were present in those campaigns. With the help of progressive researchers such as SOBE (see ref. 8), members of groups of workers were able to make public the bungling of the Philips directors and the way in which they commit their companies into oblivion. Moreover, they gave concrete possibilities

for the preservation of work. The shop stewards committee of Glas Eindhoven was the most explicit. The joint groups in Limburg published the 'Noodkreet Limburg' ('SOS Limburg'), and the earlier mentioned report 'Afbouw afgewezen' ('Demolition Overruled') resulted in the Stadskanaal group and the researchers working together. Much unused knowledge which was in the possession of the workers has already been put to use here. This is a start which has to be further developed by the trade unions, in spite of all the pitfalls and snags which are bound to turn up. This course - the building up of alternatives from the botton - can only really meet with success if the trade unions take up the right again. The only way for the Philips employees to keep the concern top from carrying out their disastrous plans is by active campaigning and actual opposition. In other words: preservation of employment and better working conditions can be enforced.

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Philips and military production in the Netherlands

Sami Faltas

In military telecommunications, exploration and navigation, management of artillery and missiles, data processing and planning and control in general, electronics have made unheard of progress since the Second World War.

Modern weapon systems practically always have an electronic brain to guide them, or at least electronic aids. The fact that we nowadays talk of weapon systems is enough to show the manner in which electronics have welded together separate weapons, direction apparatus, navigation apparatus, propulsion, and so on, to become a connected entity which can be coordinated.

This in undoubtedly especially true for aircraft, but also for shipping, armoured vehicles and artillery batteries. At the same time, electronics represents one of the most capital-intensive and technologically-advanced branches of industry.

Government orders, whether for civil projects (telecommunications, data processing, etc.), or for military projects have been the most important basis for growth and technological developments in the electronics industry. Many discoveries, new developments and improved test methods came from such government contracts and in many cases were financed with public money. Against this background, the meaning of military research and military production in the electronics

*Abbreviated T.B.

industry needed to be understood.

THE PHILIPS CONCERN

This bring us to the Dutch electronics industry, and namely the Product Division Telecommunication and Defence Systems of the Philips concern.

This division, which is working practically entirely on civil and military government projects, is without doubt more important for Philips than would be suspected from its size and growth. TDS, the abbreviation for the division, is responsible for around 7% of the concern's turnover. With regard to turnover growth, TDS has grown over the last 10 years to rank as middle sized among the fourteen Philips Product Divisions. The rise of military electronics in the Netherlands runs almost exactly parallel with the rise of military electronics at Philips.

Philips is however not an old-established arms manufacturer. Before the Second World War, the 'Nederlandse Seintoestellen Fabriek', the predecessor of Philips Telecommunicatie Industrie (PTI), manufactured radio-transmitting apparatus for the army. During and after the war, Philips incorporated various firms into the concern which would form the basis for the later production of weapon systems. The most important of these was of course 'Hollandse Signaalapparaten' in Hengelo, a firm which only became a real daughter company of Philips in 1956 (even though the State kept an 8 percent share).

PHILIPS MILITARY PRODUCTION

Within the framework of European rearmament, Philips began making weapon systems on a larger scale. Orders were received, financed by the Marshall Aid and later by the European Nato countries. Philips Telecommunicatie Industrie grew fast, due as well to a huge Argentinian order for a complete military and civil telephone and telegraph network. Signaal, already well known for its

mechanical firing control systems for ships, latched on to the development of radar techniques and later on to the rise of digital computers. PTI and Signaal were the core of the Product Division Telecommunication and Defence Systems.

It is now difficult to define clearly military production at Philips. As a true multinational, Philips has spread the military work over various companies at home and abroad. Most of these plants are not specialised in military work, but carry out both civil and military contrasts at the same time. The Signaal group is an exception: production there is almost exclusively military.

Neither is it known exactly how big Philips military production is. Most of it is carried out by the Product Division TDS, but there are also considerable military activities outside this division. In contrast, there is also civil work within TDS.

We would like to look closely at some important Philips arms manufacturers, first two foreign and then one Dutch.

MILITARY PRODUCTION ABROAD

Philips Elektronikindustrier AB and Philips Teleindustri AB are registered in Sweden. Together they form a very impressied industry for army and naval systems for the Swedish armed forces and for export. Intensive use is made of the latest techniques in the fields of electro-optics, lasers, radar and tv. Inventions, such as the 'spin-tuned magnetron' and the 'hydraulic motor-bearing' are proudly pointed out, which add to the glory of Philips Sweden. Without doubt, Philips is one of the most important military companies in Sweden.

Outside the Netherlands, therefore, Philips has a second large producer of radar and firing control systems at its disposal. But Philips Sweden is not the only important Philips military producer outside the Nether-

lands. In the United States, Philips is a supplier of radiographic equipment, naval guidance systems, sonar buoys, electro-optical products and various electronic aircraft apparatus, including flight computers. A substantial part of these activities takes place at Magnavox in Indiana (2).

MAGNAVOX PRODUCTION

This company, taken over by Philips in 1974, has a defence division which is responsible for about 20% of the turnover (4). It has delivered aircraft radios to the US army and airforce (the UHF transmitter/receivers ARC 34, AN/ARC 150 and AN/ARC 160). the US navy bought a radio system (ALR/50) from Magnavox, that warns aircraft crews of missile attacks, advanced flight computers for her P-3C aircraft ($9.5 million), electronic aircraft equipment for submarine warfare ($4.8 million), and sonar buoys of the AN/SSQ-41A type ($9.8 million), AN/SSQ-53 type ($7.8 million), and SSQ-53 type ($9.6 million) (5). (The contract fees mentioned refer to the years 1975 and 1976, after the Philips takeover therefore.)

HOLLANDSE SIGNAAL

Even though Hollandse Signaal was founded as a Dutch company, to equip the Dutch navy with firing control apparatus, it was strongly German oriented. 'NV Internationale Patenthandel' in the Hague, a co-founder of Signaal with a capital participation of 35%, was a daughter company of Siemens. 'Ipath' had to promote the production of military electric apparatus in the Netherlands by selling Siemens licences to Dutch companies.

Siemens was an important German military supplier in the First World War. It practically monopolised the field of electrical shipping apparatus and various military equipment. The Treaty of Versailles, however, heavily restricted the production of weapons in a defeated Germany, so that German arms firms fled to other areas, such as the Netherlands.

The majority shareholder of Signaal was the NV Fabriek van Electrische Apparaten v/h F. Hazemeyer & Co. in Hengelo, with a 65% holding. The successors of this company today form the electrotechnical group Holec.

HOLLANDSE SIGNAAL
Hollandse Signaalapparaten BV
Zuidelijke Havenweg 40, Hengelo (O), PO Box 42,
Telephone 05400 8 81 11

Hollandse Signaalapparaten BV is Philips most important arms producer in the world. At the same time, HSA is probably the largest military producer in the Netherlands.

The predecessor of Signaal, NV Hazemeyer Fabriek van Signaalapparaten of Hengelo, was founded in 1922. In 1948, the firm became NV Hollandse Signaalapparaten, with the State, Philips, and a bank consortium as shareholders. From 1956 onwards, Philips owned 92% of Signaal. The remaining 8% was in State hands. On 1 January 1974 Signaal became a limited company (BV).

The nominal capital of Signaal is 120 million guilders; subscribed and paid up capital is 42 million guilders (9). The results are not known, but Signaal ranks as one of the most profitable parts of the Philips concern.

The total personnel at all Signaal plants amounts to a total of 4500 (10), of which about 60% is organised (11).

In the military field, Signaal products consist of radar and radar firing control systems for warships, submarines, tanks and on the ground, as well as sonar equipment. Also related apparatus and components for similar systems: digital computers, display systems, etc. The civil products consist of equipment for air traffic control and harbour traffic control. Also, radar and sonar for other civil applications. Ninety five percent

of production is military; 75% of production is exported.

Signaal customers consist of (since 1948) the three Dutch armed forces and the armed forces of West Germany, Canada, India, Malaysia, Thailand, United States, Sweden, Argentina, Australia, Colombia, Denmark, Greece, Israel, Norway, Peru, Turkey, Venezuela, Belgium and Indonesia. Civil products are sold in the Netherlands, Belgium and Singapore.

FAST POSTWAR GROWTH

In July 1948, the new 'NV Hollandse Signaalapparaten' was registered. The shareholders were the Herstelbank (a government-controlled body for the division of the Marshall Aid), the NV Philips, and the bankers Mees & Zonen of Amsterdam. Initially there were no military contracts.

Philips became an important partner in a new field of work, one which would become Signaal's biggest interest, namely radar. Signaal designed and built radar aerials for the Dutch armed forces, which were combined with the transmitter/receiver from Philips Telecommunications Industry.

The Dutch navy installed Signaal radar systems on the aircraft carrier Hr.Ms. (HMS) Karel Doorman and on her cruisers and destroyers. The airforce bought Signaal radar for the airforce warning system. Already in 1949, Signaal supplied radar firing control systems for the Belgian army, consisting of 80 installations for army artillery.

The fast growth of Signaal began in 1949 when the re-armament of the Netherlands and Europe began to get going. The supply of firing control systems and radar installations could be very much expanded.

TAKEOVER BY PHILIPS

In this way, Signaal fell foul of Philips and it was a great day for the 'well known electric lightbulb factory in the south of the country' when it was able to take over 92% of Signaal's share capital in July 1956. The government kept hold of 8% and therefore their right to appoint members of the 'Supervisory Board', who had to guarantee a certain amount of government control.

This situation has remained the same ever since. Signaal became a relatively independent company within the Philips concern. In view of its reputation the company was able to retain its own name, but still clearly functioned within the planning of the concern. In times of back luck for Eindhoven. Signaal, which since its reopening had never shown a loss, remained a very important profitable corner of Philips.

Besides radar techniques, and in association with them, the rise of the digital calculator was of immense importance for Signaal. The armed forces' physics laboratory carried out the basic research for the development of the versatile military computer and Signaal had a huge success with it. These computers have become the heart of modern weapon systems, which became more complicated and more electronic. They became one of Signaal's most important military products.

Signaal's digital computers were very quickly applied in transistorised firing control systems for anti-aircraft defence, torpedo guidance, and air traffic control for civil aviation. In the newest Signaal systems, the computer is almost never omitted. There are two types, in principle, the large SMR and the compact SMR-S.

In 1955, a large new market opened up for Signaal. The West German Minister of Defence, Franz-Joseph Strauss, got the armament of the Federal Republic under way. He made a special visit to Hengelo to give an order for

practically all the firing control installations in the Federal navy. This work was so extensive that in 1959 Signaal set up a company in Hamburg (officially as a daughter company of the German Philips organisation) to take over the installation and servicing systems. At present, Radarleit GmbH employs 550 people, has naval plants in Kiel, Bremen and Eckernförde, and moreover also works for the West German army.

NATO PROGRAMMES

Signaal became more and more important for Philips. In the sixties, all Philips radar activities were concentrated at Hengelo. The impressive three dimensional radar was built - well known from the huge dome on HMS Tromp. Signaal's military activities were directed more and more towards NATO consortiums. In the sixties and seventies, revision of the European NATO countries' Nike missiles was a central part of Signaal's work. From 1964 until 1976, an extensive Signaal department worked on the Nike. Fokker was originally involved in the Nike work, and in 1976 was able to obtain the lucrative follow-up order for its belgian partner Sabca (12).

Two more NATO programmes which procured a huge amount of orders were the Hawk anti-aircraft missile and the Star fighter. Fokker was the main contractor for the building of the Lockheed 104G (Star fighter) for Europe. Hollandse Signaal was allowed to build the Westinghouse NASARR-radar. A licencing department was set up for this (14).

Again together with Fokker, Signaal worked on the revision of the NATO anti-aircraft missile (Hawk). Among other things, the inbuilt test equipment (Bite) was installed at Signaal on behalf of the Dutch Royal Airforce anti-aircraft batteries in the Federal Republic of Germany. An American licence was also bought for this. Until 1978, Signaal was busy with the Hawk, a programme which joined up with the earlier Nike work (15).

Another NATO project on which Signaal and Fokker collaborated together was the Sea Sparrow system of naval missiles against air and sea targets. Signaal sold firing control equipment for the Dutch and Canadian Sea Sparrow systems (16).

FIRING CONTROL SYSTEMS

Signaal is, however, not only a receiver of licences, it is also a giver. In this way, the American electronics concern Sperry Rand produced Signaal naval firing control systems for North America (17).

Over the years, Signaal has remained primarily a manufacturer of firing control systems for warships. We have seen that the most important technological impulses for Signaal have been the rise of radar and the digital calculator. The most important postwar markets were the Dutch and West German armed forces.

In 1970, F.J. Phillips (president-director of Signaal) considered the time ripe to found a second Signaal daughter company in the Federal Republic. As with Radarleit GmbH, this officially fell under the West German Philips organisation, Alldephi. Hengelo had, however, control.

Just over the Dutch border in Gronau, Hollands Signaalapparaten GmbH was set up with far reaching West German government facilities, and until 1975 was principally busy with the revision of the Nike missiles. Later, Gronau got work on the tank radar which Signaal made for Leopard and Gepard tanks. Gronau is more than just an expansion plant for Signaal. As a West German company, Gronau can compete for orders destined for the West German industry and so enlarge Signaal's grip on the West German market. There are 160 workers in Gronau, of whom many are women. The grade of organisation is much lower than in Hengelo, about 20% (18).

CIVIL WORK

Signaal's expansion has not only taken place in military areas. Production being 95% military so far, the civil branch of the company has to be strengthened in the future. What do these civil activities consist of?
- airport radar for air traffic control;
- shore radar for shipping traffic control;
- space travel;
- the 'twistless' spinning machine.

Signaal's space activities, and really those of the whole of the Netherlands, seriously began with the ANS, the Astronomische Nederlandse Sateleit. ANS was important for Signaal, not least because this Dutch astronomy satellite led towards a series of new space projects, which added 4 million guilders annually to Signaal's turnover in the mid-seventies. The Dutch ANS project was concluded in 1976.

The new projects on which Signaal is collaborating are the astronomy satellite Iras (NL, GB and USA), the communications satellite Aerosat (USA, Canada and Western Europe) and the communications satellites OTS and Marots. The communications satellites which are meant for the improvement of radio connections with transatlantic flights (Aerosat) and of shipping traffic (Marots), are at least potentially of great military importance to NATO (24).

But Signaal's most important civil activities are in another area, namely radar systems for the guidance of air traffic at airports and shipping traffic in harbour areas. This apparatus naturally exhibits many similarities with military radar, telecommunication and data processing apparatus from Signaal and PTI.

LEADING ROLE IN COMPUTER SECTOR

Signaal's work on airport radar and harbour radar is closely connected with the position of Philips Computer Industrie in Apeldoorn. Philips huge attack on the

European computer market, together with Siemens and CII (from France) forming the consortium Unidata, has failed. The Product Division 'Data Systems' of the Philips concern is in serious difficulties, which have particularly come to a head at the computer industry in Apeldoorn where at least 2000 people are threatened with unemployment. Signaal was awarded a leading role by Philips in the reorganisation of the computer sector. According to Signaal Director Doorenbos, because of a moral obligation Signaal has jumped in to help Philips Apeldoorn by building up a department for airport and harbour systems there. Between 100 and 150 employees of PCI in Apeldoorn are being reschooled in the production of calculators, tv screens, radar and software for these systems. Gradually, Philips Apeldoorn will become more and more part of Signaal. Philips does allow the government to subsidise this 'moral' action however. Loans without interest to a value of 30 million guilders with flexible repayment conditions were provided to help Philips acquire a remunerative position in the field of small computer systems, namely by improving software. The loans were provided between 1976 and 1980. At the same time, Signaal received government credits for the development and production of air traffic control systems (28).

In this way, with substantial government support, Signaal built up a civil department, for the most part on the remains of Philips unsuccessful computer division. As in the case of space, this development opened up interesting perspectives for crossing from military production to civil activities.

SIGNAAL'S EXPORT MANAGEMENT

In this way, Signaal directors show how closely civil and military production and civil and military export hang together. Because of limited export possibilities, the civil department becomes more important in military areas. As a result of competition considerations, Philips is more selective over military supplies and

sale of licences. The Americans must not capture markets with products developed in Hengelo, when Signaal itself is having so many problems over export. Elsewhere, another Signaal director gives an explanation of Signaal's export management: 'It is obvious that we cannot survive purely by supplied destined for the Dutch armed forces alone. In the last 20 years, about three quarters of our turnover has been exported. But the support of our Dutch armed forces remains indispensible for our further developments and therefore for our existence....
Export of firing control equipment is obviously very different to export of civil equipment. Not only is this bound by very strict conditions by the Dutch government, but because of very strong nationalism in various countries, we have in fact entry to only a relatively small number of states. Nearly 50 years ago, naval Captain Bart remarked: "firing control is 90% political and 10% technical". This is still true nearly 50 years later.' (30).

HEART OF THE DUTCH WAR INDUSTRY

Practically all modern RSV naval ships are full of Signaal equipment, firing control, data processing, navigation, etc.

Signaal has a 10% share in the BV Nederlandse Verenigde Scheepsbouwbureaus (Nevesbu), a daughter company of RSV, in which Werkspoor (VMF-Stork) as a builder of marine engines, also has a connection. Nevesbu works as a design office and supplier of technological knowhow for naval vessels. Through this company, RSV hopes to be able to get into the export market for naval vessels. Nevesbu also functions as a sales company for naval vessels and naval weapon systems.

In military aircraft projects too, Signaal plays a leading role. Together with Fokker, Signaal worked on or is working on the Star fighter, the F-5, the F-16 and on guided weapon systems, such as the Hawk and the Nike. Last year, Fokker and Signaal brought together

international interest in air and space fields, under the name of Netherlands Aerospace Industries.

So we see that Signaal is not only the largest weapon manufacturer in the Netherlands and of Philips, but at the same time the most central firm in the modern Dutch arms industry. Because of the character of Signaal's products and the concern in which it functions, it is hardly possible for a modern weapon system to be made in the Netherlands without Signaal being involved. We have seen that, in civil areas, Signaal is also busy acquiring a leading position in the market for direction, guarding and data processing equipment.

GOVERNMENT AND SIGNAAL

It is not surprising that Signaal has a very close relationship with the government. In the management of the company, the president and two 'directors' are ex-naval and airforce officers. Day to day contact between Signaal and the Ministry of Defence is in the hands of a team of naval technicians from the 'Marine Toezicht Ontwikkeling en Aanbouw' office. These technicians are permanently drafted to Hengelo to keep an eye on Signaal's naval production. They do this not only on behalf of the Dutch navy, but also for foreign customers. Whoever orders firing control systems from Signaal can count on quality and delivery through the conscientious control of this naval service. NATO armed forces receive this service free, non-NATO members have to pay for it.

NATO also places controllers at Signaal to keep an eye on the work on NATO programmes such as formerly the Nike and now the Hawk. The authorised NATO organisation is NAMSA (NATO Maintenance and Supply Agency) (33). In ex-Vice Admiral Doorenbos, the Ministry of Defence has an enthousiastic supporter and voluntary adviser.

SPEARHEAD INDUSTRY

According to Vice Admiral Doorenbos, Dutch defence should pay more for the same amount of military material in order to help such industries as Signaal with extra orders. These extra costs to the defence budget would then be refunded by the Treasury because this procedure would be very advantageous to Dutch economy and employment. That would mean that the promotion of spearhead industries should be taken very literally.

In the meantime, Minister Lubbers, the man in charge of spearhead management, has to a certain extent met Doorenbos' wishes via other channels. Signaal received stimulation subsidies and development credits from the Public Exchequer to save what can be saved of Philips computer industry. With this, Signaal is building up a larger department for civil harbour and airport radar. As already mentioned, this is a development with interesting possibilities.

Will employment in Apeldoorn be saved and a new successful civil industry come into being? Or will these measures above all be a stimulation to warfare industry and arms export? In view of the ambitions of the Signaal directors, this business will in any case have to be watched very closely.

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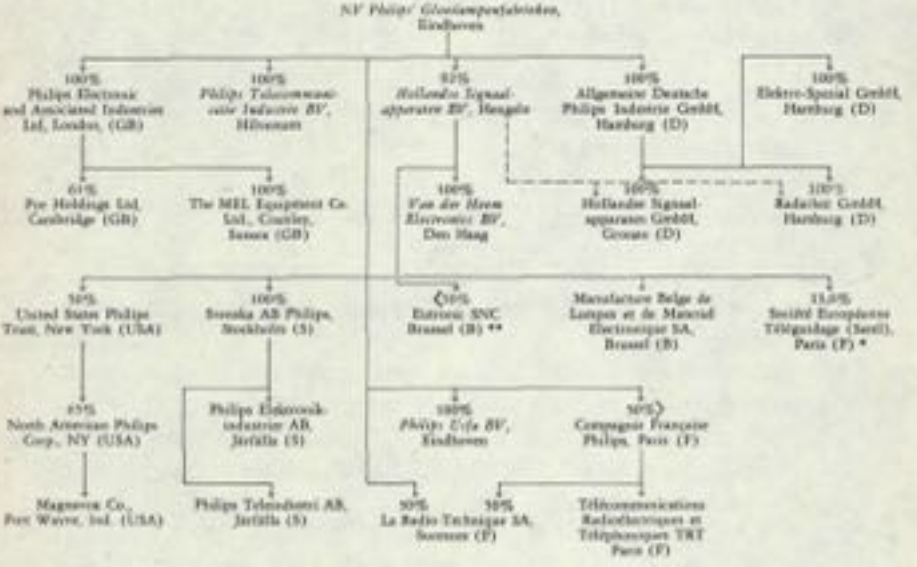
It is known that the following plants are involved with military production:

- Philips Telecommunicatie Industrie BV, Hilversum: military communication equipment;
- Hollandse Signaalapparaten BV, Hengelo (O): radar, radar firing control and data processing equipment;
- Hollandse Signaalapparaten GmbH, Gronau/Westfalia: expansion-plant of Signaal Hengelo;
- Van der Heem Electronics BV, The Hague: sonar, transformers and components for radar and radar firing control;
- Philips Usfa, Eindhoven: night guidance equipment;
- Manufacture Belge de Lampes et de Materiel Electronique SA, Rue des deux gares 80, B-1070 Brussels: partner company of Philips, unmaned espionage aircraft and components for guided missiles;
- Elektro-Spezial GmbH, Postfach 992, D-2000 Hamburg 1: electro-optic and radar systems;
- Radarleit GmbH, D-2000 Hamburg: under Signaal Hengelo management, installation and service of naval radar and firing control systems;
- Valvo GmbH (FRG): work on guided missiles;
- Télécommunications Radioélectruqyes et Téléphoniques SAm 88 Rye Brillat Savarin, F-75640 Paris 13ème: aircraft electronics;
- The MEL Equipment Company Ltd., Manor Royal, Crawley, Sussex RH10 2PZ, GB: radar and electronics for aircraft and tanks;

- The Magnavox Company, 1700 Magnavox Way, Fort Wayne, Ind. 46804, USA: sonar and military communications equipment;
- Philips Elektronikindustrier AB & Philips Teleindustri AB, Fack, S-17520, Järfälla 1: Radar, radar firing control, communications equipment.

Philips militaire vestigingen



Philips: Armament or employment a case study

Theo Bouwman

Reports from the Philips machine factory about employment, quality of labour and 'spin off' around the production of 'afterburners' for the F-16 fighter

When one hears Philips mentioned in the context of armament one automatically thinks of subsidiaries such as Philips Telecommunication and Defence Systems, the well known Holland Signaal Apparaten-fabriek, USFA or Oldelft. There are however more Philips firms active in the military branch. The Philips Machine Factory in Acht for example has enjoyed its part of the compensation market for some years now. The first of these compensation orders involved manufacturing parts for the Northrop F-5 fighter and now consists of, amongst other things, production of components for the General Dynamics F-16 fighter (in particular the afterburners for its Pratt & Whitney engine) and parts for the first prototype series of the German Leopard-2 tank.

This article will look into the experience gained from the production of the F-16 afterburners. This leads to three main questions:
- does the order give the expected employment figures?
- is there any form of 'spin off' of technical knowhow and experience towards civil production?

- is quality of employment improving?

After this we will go into the consequences of the answers to these questions, for the Machine Factory employees as well as the more general attitude towards reconversion. First, however, we would like to set out some background information.

REORGANISATION OF THE MACHINE FACTORIES

In April 1978, the shop stewards committee (bedrijfsledengroepen) of the Machine Factory wrote an article in 'Philips te Kijk', a joint publication by the shop stewards committees at Philips in Eindhoven over the reorganisation of the Machine Factory. They reported the following:

'The Machine Factories in the Netherlands have been fighting difficulties for some time now. Causes, amongst others, are:
- changeovers to different techniques;
- switching from metals to plastics;
- former mechanical machines are now electronic.

The Machine Factories supply the whole Philips concern. And therefore are dependent on orders from other Philips divisions, who in their turn are not bound to place their orders with the Machine Factories...
There are two Machine Factories in Acht. Both Factories have their own director at the moment. The Acht production involves X-Ray equipment, electron microscopes and film projectors. They are further active in the production of the F-16 fighter, a sorting machine for the Post Office and a lot of DAF work.
But what is going on?
The Machine Factory top came up with a four-year plan last year, implying that the Machine Factory as a whole was too large. They stated that the number of employees should be cut down. This would involve the Acht factories in particular. Before the directors came up with this,

there had already been reduced working hours for almost the last 18 months at the Machine Factory. What the report basically stated was that the two Acht factories should become one. This reorganisation was supposed to take place during 1978.
At the end of 1974 there were approximately 630 directly and 210 indirectly involved employees at Acht. At the time of the publishing of the plan, these figures were 580 direct and 185 indirect, respectively (total: 765). The total figure of the directly employed in 1980 will be 400, according to the plan.
The figure of the indirectly involved will be reduced proportionally. This means that there will be 155 indirectly involved employees in 1980. The total for Acht will thus add up to approximately 555 employees. This means, however, that there will be nearly 300 employees laid off during the next five years.'

So much then for the background information on the developments and plans for the employment situation at the Machine Factories.

In the course of these developments, Philips has not been neglectful in placing these employees in a situation of uncertain anxiety. For instance, by pointing out the reduced production figures at other Philips factories, by accentuating the 'principle' that the Philips Machine Factory does not deliver to third parties (i.e. non-Philips), (with the firm exception, of course of the Post Office (PTT) and DAF); by suggesting that one would be better off in another job ('possibly even that of baker, as there was never much else in Acht'). Amongst the employees there was of course an attitude of 'let's get out of here before it's too late'. And that is exactly what happened: the best workers left. At the end of 1978, the number of employees was roughly that planned for 1980. (Source: report of an employee at the Machine Factory in the 'Zeggenschap' issue about Philips, October 1978). Under this pressure from the Board of Directors and the recently formed shop stewards committee, the Workers Council (Ondernemingsraad) are demanding: 'bring more work into the factory'.

The directors' plan for reorganisation (integration of factories A1 and A2) was hardly published when a large military order became available: afterburners for the F-16. 'We were very happy, of course, and we felt that we had to try to get this order', according to the employee mentioned above. This attitude, however, would change rapidly. 'What the Workers Council forgot to find out was the type of work and the long term consequences; i.e. boring work, automation, etc.' Moreover, Philips, tempted by profits, dropped its 'third party principle'. The Board of Directors must have been certain about the F-16 order months before the announcement of the re-organisation plans. This would of course be another very good reason to reorganise - under American pressure.

THE ORDER AND PHILIPS IDEOLOGY

Philips pushed the compensation order with an incredible amount of fuss. An extract from the Philips Koerier of 23 March 1978 states:
' Of course the employment aspect was the most important reason for the Machine Factories to accept this order, as they have had their fair share of employment problems during the last few years. Another, nearly equally important, reason was the gaining of access to advanced techniques.'

This is just to give an impression! So what was the order about? The f-16 compensation order consisted of producing 1457 afterburners for the Pratt &Whitney F-100 engines, as fitted in the McDonnel-Douglas F-15 twin-engined fighter and the single-engined General Dynamics F-16 fighter. It is compensation for the Dutch industry, connected with the choosing of the F-16 as the new fighter for a number of European countries.

Not only is Machine Factory A in Acht working on the F-100 afterburners, but so are the Machine Factory tempering factory, the Metallurgic and Metal chemical laboratory of Philips and the Machine Factory 'Breda'.

'The Machine Factory has - according to the wishes of

the Dutch government - been in contact with a dozen or so non-Philips factories in the Netherlands, inquiring whether they were willing to cooperate on this order. The fact that only the Machine Factory 'Breda' remained cooperative was because the other firms were not able, or not willing, to comply with the demands concerning quality, cost price and necessary investments. Most of the interest was put into the mechanical work, while the largest part of this order involved high quality sheet and bench work.' (Philips Koerier, 23 March 1978).

In this quote, Philips continues to build up the image of the Machine Factory being an up-to-date, competitive, high quality producing factory. This, however, is a wrong impression. Through an investment backlog, the machine arsenal of the Machine Factory has become relatively obsolete. This Factory is what is known as a third-class supplier in the compensation order - i.e. 45% of other possible suppliers being cheaper than Philips. The only advantage that Philips might have as regards other factories is that they have had some experience in manufacturing parts for the F-5 fighter. It still remains a question of how Philips managed to get the order and what exactly the advanced techniques involve. Will employment and work quality be safeguarded, in the long term, by this type of order?

As already mentioned, the order consists of 1457 afterburners, supplying the factory with 1635 man-years work up until 1984, of which 1100 is for direct and 535 for indirect work. According to the planning, the production started in 1978 with 9 afterburners, followed in 1979 by 116 and 163 in 1980. And now the high numbers: 312 in 1981, 377 in 1982, 329 in 1983 and the remaining 142 in 1984. This means that during the next four years the labour quality situation at the Machine Factory is going to become critical. We will go into the experiences of a number of workers after they returned to other departments (through a rotation system) later on. Will the Machine Factory last until 1984?

Under the heading 'Special welding process demands

extreme accuracy and workmanship', the Philips Koerier informs its readers about the 'gaining of access to highly advanced techniques' as well as workmanship. 'A number of highly advanced techniques are being used at the Acht Machine Factory for the production of the F-100 engine (F-16 project). One of them is the welding of honeycomb structures in titanium, which are used extensively in the afterburners. These structures consist of a honeycomb structure of this titanium sheet, sandwiched in between half-millimetre thick titanium sheets.....an extremely strong and light construction. The arc-welding of these honeycomb structures to castings for example demands utmost accuracy. Moreover, the welding has to be done in the absence of oxygen, nitrogen and hydrogen.

The Machine Factory has, especially for the F-16 project, developed and built a number of cabinets for the purpose of welding, which are called 'welding incubators'. This welding incubator contains argon-gas at slightly more than atmospheric pressure to ensure the welding conditions. The parts to be welded can only be brought into the cabinet through a pressure-lock....

In no way does the welder come into contact with the environment inside the cabinet. He can manipulate inside through two airtight gloves into which he inserts his hands and arms. All necessary equipment, such as tools, welding wire, measuring instruments (and even a small vacuum clearner - T.B.) is inside the incubator.

It will be clear that welders must comply to high standards of workmanship. All actions concerned with this welding demand a high degree of discipline. Only qualified welders can do the work. Their workmanship is under constant control. They must weld a specimen, which is examined at the laboratory, before starting their day's work. On top of this, the welders have to make an annual specimen in order to retain their qualifications. Moreover, all executed welds are constantly checked for cracks, alien objects, etc. The high quality welds can only be realised by precisely following all instruc-

tions.' (Philips Koerier, 23 March 1978).

Most outsiders would by now have got the impression that what is going on here is indeed very special, and that the qualification of 'highly advanced technique' is a straight forward understatement. In reality, however, this is very different, as we shall come to later on.

First, we shall try to find out why Philips is only a 'third-class supplier'. The 'Philips Koerier' reported the bringing into use of the first numerically controlled lathes in the Philips concern, (this was in the Acht Machine Factory). At that moment, there were already a number of numerical milling and cutter-benches in use.

'The advantages hardly need explanation. For one thing, the production capacity has been multiplied by a factor of three to four, in comparision to traditional benches. Another advantage is that it is possible to manufacture a much wider variety of products, and at the same time keep the quality at a constant level. The adjustment times have been reduced to a minimum, the wear of the tools has been reduced. Moreover, there is the possibility of very rapid, automatic tool changing. All in all, these advantages economically weigh up to the considerably higher initial investment.'

It was calculated by Philips workers at the end of 1978 that there were 33 numerically controlled benches in service at the Machine Factories Eindhoven (M, G and Acht) as opposed to a total of 1000 traditional benches. In this calculation, no distinction was made between computer controlled (CNC) and micro computer controlled (MCNC) benches. Thus the total comes up to 3.3%. When this is compared to the figures published around that time in the magazine 'Metaalbewerking', it is very low: e.g. West Germany and Japan (10%), USA (33%), and USSR (24%). Also in the fields of CAD-systems (computer aided

design) and the introduction of industrial robots, Philips is a long way behind. Taking all this into consideration, one would expect Philips at least to bring her machine arsenal up to 'second class' standards with the sturdy compensation order (380 million guilders, of which 140 million represents added value).

WE WILL SURVIVE UNTIL 1984, 'BUT IT WON'T BE MUCH FUN'

With regard to the employment situation, there are a number of tendencies:

- The compensation order has not led to the spreading of work over a number of smaller companies, as the government had hoped; further inquiries into this are necessary);
- The military compensation orders represent an ever increasing share of the production package of the Machine Factories; the production of the Leopard-2 prototype series has already started;
- This makes the Factory increasingly dependent on the military market; the chance of losing a grip on the civil market (internally, but especially externally) is growing;
- According to the Philips four-year plans, the decline in employment numbers is lessening; a few figures concerning the directly employed in Acht:
  definite budget 1978 - 504 directs
  definite budget 1979 - 450 directs
  orientated budget 1980 - 400 directs (def. budget 440)
  orientated budget 1981 - 400 directs (def. budget 440)
  orientated budget 1982 - 440 directs
  orientated budget 1983 - 440 directs
  (source: four-year plans 1978 and 1980).
- According to this same four-year plan the number of employees at the Machine Factory Services continues to fall (from 145 to 120) while the number planned at Central Toolmakers Division is a constant 250;
- Whether the planned 1635 man-years of the compensation

order will be attained is not clear; there is a good chance that this estimate will have been too high, especially as the degree of automation is constantly increasing.

The following can be said about technological innovation, (the material for this paragraph was gathered from walks with Machine Factory workers):

The general impression is that the Acht Machine Factory remains behind in the techological field. The proportions of numerical vs conventional benches hardly changes. The only new equipment credited to the military compensation orders are: the welding incubators described above, a few Milwaukee NC tool centres (with two tables) and a number of new roll welding machines (Schlätter). Neither the tool centres nor the roll welding machines are anything particularly modern and have been available for years.

Neither can the welding incubator be described in any way as being 'an object of highly advanced technique'. The welding of titanium is a common process, especially in the aeronautical industry. In Belgium the same work is being done but without the rather conspicious 'home-make' metal box; there, the work is done in plastic bag-like containers containing a small air-lock and some - relatively simple - electronics.

The employees are particularly concerned with the labour quality. The most obvious characteristic is that the production of today involves relatively large series. This quickly led to Philips introducing a rotation system whereby no-one works in the F-16 shed for more than two years. After this period they go back to their original job. A large number of employees are now due to change back. The new and challenging aspects soon wear off and the job turns into monotonous production of large series.

The most capable people were chosen for working with the welding incubator and the Milwaukee NC tool centres.

For them - though under pressure of reogranisation - it was an interesting task. The glitter however has now disappeared. At the welding incubator, there are two men working together on a large series. which is experienced as 'rotten work'. There used to be all sorts of welding - electric, autogenous, etcl. Function group raises, so far as they existed, could hardly be attained through the job content; more likely to be based on an implicit damage risk. The workers are anxious to start work on a new job, because they are not learning anything at the moment. The whole fabulous story from the Philips Koerier, printed above, about workmanship, controlled qualifications, etc. proves to be grossly exaggerated and partly untrue.

Work on the Milwaukee tool centres mainly involves programming, setting up of the work objects, measuring and readjusting/reprogramming. Depending on the amount of experience in this work, which is done by two teams, one has, more or less, time for a chat or a glance at the newspaper. The actual programming is considered to be the most interesting aspect. Once, however, 'computer aided design' (CAD) linked with 'computer aided manufacturering' (CAM) is introduced, even this aspect will disappear. Competent skilled workman will be unnecessary, as experience has shown us in the U.S. where this work is done largely by unskilled labour.

Working with the Schlätter roll welding equipment - the last of the three new machines - shows us the same picture. The same monotonous working being done by skilled craftsman. The actions are all of short duration, leaving just enough time in between to read a few lines in the newspaper. Here, too, the wish for different work, and the remark that in the described conditions workers were more or less forced to participate in the rotation system, are normal.

The other work in the F-16 shed is mainly done using conventional tools and machines. 'Why did you want to

work in the F-16 shed? Now still? Why? What do you think of the work?' The answers to this type of question are set out below, be it in a highly consensed form:

- One could 'choose' for working in the F-16 shed against the background of the reorganisations already mentioned and the decline in employment figures. For the first batch of skilled workmen, the work contained a challenge: the actual starting of production in a shed, i.e. designing, building, the making of moulds, etc. In short, different surroundings, being a pioneer, less strict times, varying work. On top of this, one could earn quite a bit on the side from the 'idea box'.
- As time progressed the work became boring. After working the moulds one by one, the workers now find themselves producing large series on their own moulds. All bench workers feel that their skills are being wasted by all the relatively simple work they do for weeks on end.
- Because of the production of large series, there is no chance of function group promotion: most work done is at function group 15 level rather than 30. Function group 35 is totally unattainable. For most workers, the function group ranking however has not declined, the sort of work has though: no more interesting welds for instance. Compared to the old days (many employees have been in Philips service for at least 10-15 years), there is nothing to the work. Almost everyone is in the process of applying for another job at the moment.
- Most workers are happy to return to the other sheds after their two years. There are however a number of advantages coupled with the F-16 shed: it is clean (no oil in connection with the titanium, gloves), it is less crowded, less noisy, there is better lighting, the rules are less strict, and the work is better than for example in shed AQ ('the "X-Ray stuff" is not quite what it used to be').

It is usually not a question of the F-16 shed being attractive, but the choosing of the lesser of two evils.

SUMMARY AND PERSPECTIVE

The employment is not in strong decline anymore, but it is becoming increasingly dependent on military orders. The acquisition and expansion of technological knowhow for use in the civil field ('spin off') is limited to a minimum and the working quality is quickly declining. During the last few years, there have been many protests about the taking on of LTS (Lower Technical School) pupils instead of those from the Philips Company School (PBO). This was related to the hollowing out of skill as a result of slowly implemented automation (for example: with 3 new NC machines, six operators now produce more than what 20 operators used to on conventional benches).

The militancy is growing. During actions organised here by the Federation of Dutch Trade Unions (FNV) in March 1980, nearly 400 out of 600 employees laid down their work and went outside to listen to a speech by Mr. G. Fonteyn (district officer of the FNV). (A unique occurrence for Philips Eindhoven). As will be clear, the main demands involve the abolition of the function classification system. The general attitude towards compensation orders and military production is as yet still unclear. Most do not explicitly relate the sort of work they are doing and their opinion of it with who placed the orders.

Technically speaking, the Acht Machine Factory is fully capable of producing all manner of civil equipment. The factory is not only there for military and nuclear projects, but also for scientific and medical equipment, etc. In this way, the Machine Factory specialises particularly in high quality mechanical and sheet metal components. Besides this, they also take on complete

projects, with or without other Philips divisions (e.g. the post sorting machine). Against this background, it seems all the more important to reconvert to civil production.

Backgrounds in the restructuring in the Video sector

martien Bouwmans, Frank Hendriks, Kees Huismans, Jan Reijnders

1. INTRODUCTION

In 1979, the sales of colour televisions rose by only 2% in Europe. This was a huge blow for the producers, who had seen the sales for 1978 rise by 19%. Philips too was surprised by this development. The leader of the colour television market had expected a market growth of 5% in 1979. The continuing disappointing sales results for colour televisions was the main reason for giving up 500 jobs in the Product Division Video in the Netherlands in mid-1980. Already earlier (in January 1980) the decision to stop with the production of colour TV tube products in Stadskanaal had been made known. In the second half of 1980 and the first half of 1981 cuts were announced in rapid succession in plans which were directly or indirectly involved in television production.

The outsider got the impression that even a company such as Philips was unable to escape the economic disaster. This impression was strengthened by the dramatic manner in which Philips presented its reduction plans. While, during the last 10 years, the amount of personnel in the Netherlands had silently diminished by 20,000, people looked upon the reorganisation of January 1980 (whereby 1500 people would disappear within 3 years) as a sad low point in the history of the concern. 'At present a special situation is developing, in which these measures are not enough (what is meant here is the non or partial replacement of 'natural' labour turnover, or the offer-

ing of employment elsewhere - authors' note) and radical industrial restructuring in the plans concerned will be necessary' (1).

The restructuring at Philips reached just about all product sectors. In all these sectors, 'stagnation in the growth of the market' in combination with 'the continuation of the necessity of a high rise in productivity' are the reasons given. Stagnation is worse in the colour television market than in most other sectors. In this connection, there is talk of a threatening market saturation which makes adjustments in production necessary.

A second argument which Philips puts forward for the necessity of restructuring is the threat to her share of the market by Japanese competitors. 'The Japanese have an effective, but for us unclear, collaboration between politicians, companies and financiers, with the aim that in this century and the next Japan will be a world supplier of electronics' (2). The accusation that Philips would exaggerate the Japanese threat in order to justify her conduct was strongly denied by Philips: 'I would like to emphasise that Philips does not exaggerate when she states that the Japanese industry is a danger to her. This it certainly is, so much so that we cannot allow ourselves to do nothing about it. If we do nothing, then the Japanese steamroller will flatten us in the same way as it flattened the consumer industry in the United States of America' (3). In this article, we will go into the backgrounds of the reorganisation processes which Philips has adopted in its colour television sector, and how much weight will be credited to the arguments put forward. In paragraph 2 we will go into the reality content of the two main arguments mentioned above. Both appear to need further defining. If it would appear that the arguments are not properly founded, this would mean also that the implications of the arguments are different. This means, among other things, that Philips opinion, which is that the reorganisation processes are the result of external causes, and is consequently a defensive reaction, becomes very shakey.

In paragraph 3 we establish that due to its structure, the colour television market will probably follow a systematic development pattern. In paragraph 4, it appears that the changes in Philips internal organisation management exhibit similar systematics. In the final paragraph, we conclude from this that the reorganisation processes have a distinct place within this system. They could be characterised as elements of a long term strategy aimed at strengthening the position of Philips on the European market.

2. THE ARGUMENTS

2.1. Saturation of the market

The theory that the colour television market has almost reached saturation point in Europe has regularly been brought up over the last few years. This began with the disappointing sales in 1979. The growth of sales in that year contrasted sharply with the growth realised earlier in the seventies. From 1973 to 1979 the average yearly sales rose by about 11%. In contrast, in 1979 the rise in the sale of sets was only 2%.

Table 1. Sales of colour televisions in Europe

	1973	1974	1975	1976	1977	1978	1979	1980
sales (millions)	6.0	6.3	6.6	7.9	8.4	10.0	10.2	10.9
rise (%)		6	5	20	6	19	2	7

(source: the data for this table is taken from: The Financial Times 16-11-73, 15-11-74 and 14-4-77; Het Eindhovens Dagblad 10-4-80; Financieel-Economisch Magazine 1979, No. 21; Multinational Business 1978, No. 4)

The moderate sales in 1979 had important consequences for the companies involved with the production of colour televisions. Various producers started to have problems,

had to merge together or were taken over (namely AEG and practically all British firms). Others, such as Grundig and ITT, reorganised their activities. In 1980, Philips also announced some reorganisation in the production of television glass, tubes and television sets. The reaching or estimation of saturation point in the colour television market were often used here as arguments for the steps taken. It is not easy to decide when a market has reached saturation point: it could be defined as the point when the market is only made up of replacement sales. The degree of penetration of the product (i.e. number of products per household) is then maximal. The maximum degree of penetration does not however have to be 100 percent; it varies per product. The degree of penetration of hifi equipment in Japan is 55%, although the market can be regarded as saturated. On the other hand, the number of radios per household is between 3 and 4. The maximum degree of penetration of the colour television seems to depend to a large extent on expansion of the amount of application possibilities. The expansion is now fully underway. In 1978 the expected expansion of possibilities for a television set was inducement enough for Japanese market experts to forecast that 'TV is going to be very big business in the future' (4). At that moment the degree of penetration in Japan was 132 percent!

From Table 2 it can be seen that Europe has not nearly reached this situation. The degree of penetration for the most important European markets is set out in the Table, as estimated by Philips. In comparison, the degree of penetration taken from a CBS inquiry is added for some of these countries. The Philips estimation appears to be systematically more pessimistic.

We too can theorise that the reports of a threatening saturation of the European market, which have caught on recently, have yet to be proved by the facts. We are alluding to:

- the big differences in the degree of penetration within Europe where large markets such as France, Spain

Table 2. Degree of penetration of colour televisions (percentages)

	Philips*	CBS**		Philips*	CBS**
Netherlands	72	68	Belgium	61	54
West Germany	74	65	Italy	25	21
England	76		Spain	22	
Switzerland	89		France	42	36
Total Europe	60				

* source: Philips Press Service (poll date December 1979)

** source: CBS, Sociale Maandstatistiek 1980, No. 2, p. 73 (poll date October 1979).

and Italy are still clearly behind;
- the big difference between the degree of penetration reached in Europe (60%) and that in the U.S. and Japan (respectively 116% and 148%, according to Philips estimates);
- the revival of the market in 1980 when sales rose again by 7%.

A further growth of the colour television market can also be expected, particularly because of the various uses of the colour television. The video cassette recorder is a good example here. This does not take away from the fact, however, that the sudden drop in sales in 1979 was fairly unexpected, and that because of this various firms got into difficulties. The last mentioned were however mainly smaller companies. It is unlikely that a giant such as Philips would not have the financial and economic strength at its disposal to be able to deal with such a disappointment.

2.2. Competition from Japan

During the seventies, Japanese companies found a way to conquer a prominent share of the market, particularly

in the small tube market. Of the colour television sets sold in the EEC in 1978, about 25% were fitted with a Japanese tube (5).

Particularly in recent years, the Japanese share has risen sharply. This is partly due to the fact that in the years 1977-1979 Japanese imports had only limited access to the American market. In 1977 the American International Trade Commission had cleared the so-called COMPACT (Committee to Preserve American Color TV in which the most important manufacturers and 11 trade unions are united) when it was accused by Japanese companies of illegal business practices. In view of the fact that the Japanese firms' share of the colour television market had already reached 30%, COMPACT feared a repetition of the history of the black and white television market, in which the Japanese industry now has a 75% share. The conflict has been solved by means of a voluntary agreement between Japan and the United States to limit the import of Japanese colour televisions to 1.75 million sets (instead of 3 million). In exchange, Japanese factories in the United States would be stimulated. In this way, the Japanese industry would not be saddled with an impossible production surplus. On the one side, this led to capacity being stopped or moved to the United States. On the other side, a larger amount of televisions and tubes were brought on to the European market (or dumped, as the European manufacturers would like to believe). In 1978, the Japanese industry produced 8.5 million sets and 14.8 million tubes, while in that year on the home market only 6 million sets were sold. In Europe, in the seventies, Japanese competition was still limited to the market for small screen sizes (51 cm diagonal or smaller). Japanese firms made use of that section of the market, even though it was only because the European industry had always neglected it. On the other hand, however, the European industry has been able to prevent Japanese competition getting a hold on the much more important large screen television section of the market in Europe by licencing policies (6). In order to be able to make sets under licence according to

the PAL (Phase Alternating Lines) norms used in Europe, Japanese firms have had to make many more concessions than European licence holders. They were only allowed to manufacture sets with a diagonal of 30 to 41 centimetres. Later, when European firms also started to make smaller sets, the Japanese licence holders were also allowed to produce 56 centimetre sets, on the understanding that they were only allowed to export half of them. In this way, the Japanese competition was limited to a small section of the market, as can be seen from Table 3.

Table 3. Breakdown of the market according to screen size in 1978

	51 cm or smaller	larger than 51 cm
Great Britain	37%	63%
West Germany	23%	77%
France	24%	76%
Italy	10%	90%

source: HAGA Research Group, 'Herstrukturering, Automatisering en Gevolgen voor de Arbeid', Utrecht 1981, p. 88.

The unease between European producers over the increasing Japanese competition is based on two developments:
- Now that there is already a colour television in most households, the demand for a 'second' set is growing - this demand is usually for smaller sets. Philips expects that, in 1985, 69 percent of sets being sold in Germany will fall into the category above 51 cm, the rest will be smaller or the same size;
- the ban on Japanese firms to export large sets to Europe was only valid for the duration of the patents. Because most of these have already expired, Japan has now also been able to export large sets to Europe for about a year.

Nevertheless, there is doubt about the explosive growth of Japanese exports in the video field to Europe, for the following reasons:

1. Japanese companies' domination of the 'small tube' market is not only by their own merits, it is also the result of European firms neglecting this section. From the moment when Philips began to get more seriously involved in this market, their share of the market and the turnover has increased annually. In 1978 the turnover on the small screen market was something more than 600 million guilders, in 1979 it had risen to more than 800 million guilders.
2. The situation where Japan had to channel her surplus production to Europe has changed. The American market is again completely open to the Japanese industry. Part of the Japanese production capacity has, in the meantime, been broken down and moved to the United States.
3. The termination of the PAL conditions does not mean that Japanese firms now have a free hand on the European market. In various European countries there are still, in fact, bilateral agreements with Japan over import quotas (7).
4. The export position of the Japanese video industry is getting worse due to the rise in transport costs (this is especially true for large sets) and through the revaluation of the yen. As a result of the increase in value of the yen, among other things all Japanese video cassette recorders became more expensive at the beginning of 1981. The chance that Japan had, in this situation, to open an attack on the large screen market was slight, the more so because they have so much ground to make up in this area; in 1978 Philips alone made already 8 times as many 'large TV tubes' as the whole Japanese industry put together.

There are therefore enough reasons to see the readily asserted threat of Japanese imports in a relative way. This is supported by the visible increase of Japanese foreign investments not only in the United States but in Europe as well. Through these investments, protection measures can be avoided and high transport costs

disappear. A large part of these investments were made in the late seventies, when the value of the yen rose sharply against most European currencies. All Japanese companies now have use of a production centre in Great Britain (in the same way as they all already have use of a plant in the U.S.). With the exception of Sony, the most important Japanese manufacturers established themselves in England between 1977 and 1980, either by taking over a British firm, or by setting up a new company. The planned capacity of these factories varied between 60,000 and 120,000 sets annually. Apart from Great Britain, Japanese concerns are also active in West Germany (Sony-Wega) and Finland (Hitachi-Salora). For the supply of large tubes, Japanese companies often work together with European manufacturers (Sony with ITT, Matsushita with AEG).

All in all, it would appear that Japanese video manufacturers partly replaced their export of merchandise with export of capital. In this way in the near future, Japanese video recorders, which until now have all been imported from Japan, will be made in Germany. This means that Japanese companies have to manufacture under the same conditions as the Europeans with the result that their feared competition power will merely rest on a possible more efficient business conduct for a better quality product. For Philips, far and away the largest of the remaining independent manufacturers in Europe, there is once again no serious threat to its position on the market. Philips is no less efficient than Japanese competitors: the assembly time per television set both at Philips and for the Japanese has been reduced over the years to about 1.8 man-hours. In view of the number of failures in starting Japanese plants abroad, it is unlikely that their products will be qualitatively better than those of Philips, who can boast years of experience in large screen sets.

Looking at the whole picture, it can be concluded that the import of small Japanese sets, which rose so sharply in the seventies, will possibly go on rising but not so

fast. This growth will not, however, form a threat to the sales of smaller Philips televisions. Since Philips has been concentrating seriously on the production of small televisions (since 1977), it has been announced in the annual report that each year sales are rising quicker than the growth of the market. Imports of larger Japanese sets are improbable in view of the growing activities of Japanese companies themselves in that field in Europe. A repetition of the Japanese small screen success in the large screen market would appear impossible, in view of the strength of European competition and the amount of ground Japanese companies would have to cover.

3. THE STRUCTURE AND DEVELOPMENT OF THE MARKET

3.1. General characteristics

As can be seen from the last paragraph, it is necessary to go further into the saturation and competition argument. The implications of the arguments have however exceeded the factual content. If the content of the arguments can show why reorganisation would be necessary, the implication is that the reorganised firms are not to blame. The reorganisations are a necessity and something or someone else is responsible for this necessity: the elusive saturation feelings of consumers or the mysterious dealings of foreign competitors.

It is, however, a question of whether one can presume that reorganisation processes carried out by Philips are defensive reactions to a number of external influences. In view of the market structure, every large concern has a real influence over its development. When planning and carrying out its course of action, every concern will take into consideration the possible actions of its rivals.

From the point of view of the international system, one should be able to regard the colour television market as an oligopolic market, which is in the charge of a limited

number of giants. In their shadow, a slightly larger number of smaller (sometimes marginal) companies are holding their own, thanks to the price policy brought in by the giants. There is, however, no talk of a real world market. In fact, the colour television market is a segmented market, in which the segments (Europe, N. America, Japan and the Far East) form regional influence spheres of various large concerns. Within these influence spheres the market leaders (Philips and Thomson-Brandt in Europe, Zenith and RCA in North America, and Hitachi, Matsushita and Toshiba in Japan and the Far East) operate as oligopolies who employ a so-called 'qualified joint profit maximising' strategy (9). This implies a market conduct that can be explained by the theory of price-calculation under monopoly conditions. The described structure of the market, in combination with the market conduct of the market leaders, offers an interesting starting point for the explanation of the systematic return of the symptoms which are often defined in business language by such notions as 'saturation symptoms' and 'sudden intensification of foreign competition'.

There is a contradiction concealed in the monopoly market conduct. As the reader will already know from the literature, a monopoly price is the result of price setting and quantity adjustment, in such a way that, given the structure of the demand, an optimal relation between price, costs and volume of production is ensured. The price is, as it were, manoeuvred into an optimal position by relatively limiting the offer, i.e. in view of what would have been the case in a situation of open competition. The final result of the price and offer conduct is the monopoly profit; this is not, however, an aim in itself. The accumulation of the profit, the enlargement of the working field of the original capital, is the reason behind making the profit. However, particularly in this essential process - the accumulation - the contrasts which lie hidden in the functioning of the monopoly are revealed. Accumulation, enlargement of the designated capital, should in principle contain expan-

sion of production in the related sphere. This is, however, in contradiction to the mechanism of limiting production to optimal proportions, which is essential for the existence of monopoly profit. The accumulation of the monopoly profit thus runs up against a boundary which is decided by the function of the monopoly itself.

The monopoly profit becomes a surplus that can only be accumulated through a bread of the monopoly in the related sphere. This leads to tension because of which the surplus will on the whole be driven out of the related sphere. There is doubt however whether this is also valid in the concrete case of the colour television industry. In view of the large profit margins which are available in this sphere and the financial function which the colour television branch appears to fulfil in connection with the electro-technical industry (10), it is probable that the pressure to accumulate surplus there is great. In this way the tension remains unless the surplus can find an outlet in an allied product in the same branch. Through this, new investment possibilities would be created as an outlet for the surplus without having to touch the basis of the monopoly. (The quick transition from black and white to colour can be explained in this way, for example.) When there is no similar escape on hand, however, the tension continues and there is a deadlock in the market. In such a situation, the term 'market saturation' gradually starts appearing in business publications. In this connection, it will be clear that this term has nothing to do with the unwillingness of consumers to buy more colour televisions (the meaning in which the term is normally used). On the contrary, it is the inability of the manufacturers to enlarge production, in view of the price political consequences this would incur. Breaking through the existing deadlock demands a breakthrough of the existing market situation. In view of the concrete circumstances on the colour television market, there are in principle three possibilities open here:
1. Enlargement of own share of the market at the cost of the marginal companies; this is possible simply by take-

over or by prixing them out of the market;
2. Enlargement of own share of the market at the cost of the partner-monopoly; this implies however breaking the joint maximising strategy;
3. Enlargement of the range of the market by penetrating other market segments.

With regard to takeovers, the first possibility is most applicable, and has also been seen in practice with the development of the television industry. Although the price competition is applied in a limited measure (e.g. the period 1960-1964), its general application area is rather small, since there is a threatening danger that the critical point, where the basis of the joint maximising strategy starts shaking, is passed.

Since it can be taken for granted that maintaining the (joint) monopoly will take priority, the use of the second possibility is limited. This implies in fact the breaking of the monopoly. Above all, a price war threatens in this case, which could have disastrous consequences for the 'partners' concerned.

Finally, there still remains the third possibility by which tension is lessened by casting off the narrow shackles of one's own sphere of influence and penetrating another sphere of influence. The form which such a penetration takes, falls into two main categories:
a. As long as there is talk of scale advantages, and transport costs are not dominant, the accumulation process can still find a place within the existing production structure. The enlarged capacity is then employed for the manufacture of goods which are to be exported to foreign markets. In view of the fact that the positions on the home market do not change, and therefore the financial function also remains unaffected, dumping practices cannot be excluded.
b. Whenever there is talk of trade barriers (import rates, import quotas, etx.) which impede export penetration, there is the possibility of capital export. In this way the surplus itself is exported. The accumulation process is then continued within the boundaries of

foreign influence spheres by building up new capacity on the spot. Whatever form this penetration takes, it is clear that, within other market areas, it will give problems. If this does not happen by the rise of already existing tensions, then it would happen by advancing the point of time when a market deadlock appears. It is not surprising therefore than penetration is interpreted by the companies whose influence spheres are broken into as an attack by a frightening enemy, who in the words of the Philips Directors 'drive over us like a steamroller' (11). However, it is not important how the duped company interprets the foreign competition, but how the competition from a foreign influence sphere originates. It is the behaviour of the market leaders themselves and the structure of the market which, by the absence of escape in the form of new products etc., generate this foreign competition. The same is true of the market saturation illusion already mentioned.

3.2. Developments within the European market

The contours of the development of the colour television market have earlier only been explained in abstract. To understand the actual development it is necessary, however, to take into account a number of concrete circumstances through which the general picture outlined is modified. At the end of the sixties, the consumer electronic industry in Europe switched over from the production of black and white televisions to the production of colour televisions. In this way manufacturers found a new source of profit, at a moment when sales of black and white televisions no longer came up with the same figures for the trading results as in the golden years. From 1960, in fact, the realisation of monopolistic market conduct was impeded by two developments:

- First of all the creation of the Common Market, the EEC. Before that time, the European market was still segmented with various market leaders in various countries (or regions, such as Benelux). Within these areas, monopoly market conduct was put into practice.

In the Netherlands in 1961, Philips sold black and white televisions for 645, 647 or 895 guilders, while the cost price irrespective of type was under 200 guilders (12). Smaller companies also profited from the high price level. Even though they were not able to produce sets for the same cost price as the large concerns, the margin was big enough for them. To be able to repeat the same conduct on the newly formed Common market, the branch of the industry had to be concentrated at a European level. When the large concerns became involved in a competition war for the market shares of smaller companies, the prices and the profits fell. In 1964 the prices fell by 30%. While the large concerns carried out accelerated rationalisation and mechanisation programmes to keep profits up to the mark, many small firms disappeared or were taken over by large ones.

- Secondly, the appearance of Japanese competition. When the oligopolistic branch structures, which previously had existed in smaller areas, were reproduced at European level, the realisation of a joint maximising strategy was quickly impeded by the increasing imports of black and white televisions from Japan, where there had been no competition war as in Europe. The five big electrotechnical concerns in Japan had not come up against any obstacles in the realisation of their market conduct. Finally, to maintain a relative limitation of (the offer on) the Japanese market, these companies looked for an outlet for their products and found it on the American and European markets. Owing to this, the execution of a joint maximising strategy in the last mentioned markets became a problem. Colour television had to restore the old monopoly situation, be it within a larter area, but on the basis of more advanced concentration. It was known that the Japanese were denied entry to a large part of the market by means of the already existing patent agreements (PAL). The large European factories, which had become even stronger from the problems in the black and white sector, shared up the market. A handful of companies now controlled the market for colour televisions and TV tubes.

The colour television market grew prosperously until the mid-seventies and the colour television effortlessly took over the function of the black and white one: in 1974 the ratio between sales and cost prices of Philips sets were about the same as those for black and white sets in 1961 (13).

Next to the monopolistic price setting, which exercised a delaying effect on the growth of supply, Philips also appeared to be explicitly striving towards a delay in the growth of supply: 'When it became known that delivery times for TVs in the retail trade were very delayed, questions were asked in the 'Tweede Kamer' (parliament) whether Philips had purposely limited TV deliveries. Owing to this, an extra large stock would arise, which would be used as an argument for reducing working hours' (14).

Even so, the time came rather quickly in Europe when the described supply conduct reached its boundaries. There were two reasons for this:

- With the changeover to the production of colour televisions, it was possible for a very fast production expansion, seeing that this only required the switching over of already expanded production equipment; in view of this fast expansion, this 'gap in the market' was very quickly filled up and the top limit was reached again; consequently, the escape lasted only a short time;
- in view of the fact that European manufacturers had neglected the market for small screen sets, the Japanese industry, which produced almost exclusively small screen sets, had an excellent chance to go over to export penetration: in this way frictions appeared on the European market.

Thus, around the mid-seventies, tensions again reappeared on the market, which had already been called a market deadlock. Japanese operations on the small screen market made the tension even worse. Even though the market for small screen sets was initially rather small (scarcely 10 percent), it still had some influence on the large

screen market. In view of the fact that the Japanese industry had the support of a closed home market, it was possible for them to deliver small screen sets for prices which compared favourably with the European monopoly prices for large screen sets. Because of this, a slight shift happened in demand structure in favour of small screen televisions. The European market leaders were therefore forced to reconsider their price and supply conduct. This led, among other things, to the fact that eventually in 1977 Philips lowered the prices in the Netherlands (where its share of the market was 70%) by 5-10 percent. The price adjustments made problems for the smaller manufacturers, who thus became a ready prey for both Japanese and European concerns. In England nearly all factories found themselves in Japanese hands: AEG and Nordmende were taken over by Thomson-Brandt; and via share exchanges Philips acquired a substantial interest (24.5%) in the share capital of Grundig.

In the second half of the seventies, Japanese companies gradually strengthened their position on the European market. Thus, they kept crossing the European joint maximising strategy. Because the stable home market guaranteed large profits, Japanese companies were content with low profit margins on their export production in order to get a share of the market. It is true that Japanese companies were regularly accused of dumping practices, but this was not actually proved. At the end of 1978, it was ascertained that large screen sets which were sold in Japan for 3600 guilders only needed to produce 2200 guilders on the export market. When the Japanese industry was made aware of this, it lowered its prices drastically to the European level (the amount of large screen sets sold in Japan is negligible).

As already mentioned, in the U.S. the TV lobby reached the point in 1977 when Japan observed a voluntary import limitation of colour televisions. This limitation was induced by the American International Trade Commission condemning the Japanese practice of not imposing the

commodity tax, which is applicable to good produced in Japan, on products which were destined for export. Japan voluntarily limited export for a period of 3 years in order to avoid a trade war with the United States - which could also damage the far bigger interests in the steel and automobile industries. In this way, an important outlet for capital accumulated in the Japanese video market was cut off. As a result, European activities were expanded. When, however, it appeared that this came up against an increasing European protectionism, the Japanese companies had to resort to direct investments in Europe (as they otherwise would have done in the United States). As we have already pointed out, the fear of the European manufacturers that the opening of the large screen market would mean a new boom of Japanese imports is probably unfounded. We have already mentioned various developments which have worsened Japan's competition position (the rise of transport costs and the value of the yen) and the limited Japanese experience in the production of large screen televisions. Moreover, the Japanese industry has already found a new profit marker: the video cassette recorder. This can be considered as the successor to the video market, the escape in which the surplus, generated in the television market, can be invested.

3.3. Philips campaigns

If the Japanese interest in the United States and Europe from the mid-seventies can be explained by the joint maximising strategy theory, the question naturally remains of how Philips, as the most important video manufacturer in Europe, has solved the reinvestment problem.

Apart from the financing of the professional sector, in which Philips has taken more interest in the second half of the seventies, it can be put on record that Philips used the same strategy as the Japanese industry. The surplus generated was invested through the capture of a market share in other influence spheres and the manu-

facture of new allied products. Already in 1974, Philips took over Magnavox in the U.S. The market share which Philips acquired in this way in the United States amounted to 7% in 1980. In the same year, it was more than doubled by the takeover of the television activities of General Telephone and Electric (GTE). Thus Philips became the third largest colour television supplier on the American market with a 15% share of the market. In 1980, Philips also took over a firm in Japan. This was Marantz - a producer of audio equipment. The idea behind this takeover was that the firm would play a part in the distribution and possible production of the video cassette recorder in Japan. Philips was very early with starting the manufacture of video products. It launched its video cassette recorder on the European market in 1972 (the Japanese equivalent only appeared in Europe in 1977). Philips, however, make the mistake of introducing the set too early and on the wrong market. At that moment, there was hardly a market for the video cassette recorder, the more so because, in particular on the European market, the possession of a colour television was rather more the exception than the rule. Moreover, the recorder had a number of teething troubles, which made the consumer lose faith in the Philips product.

On the other hand, the Japanese manufacturers used the breathing space, gained through a market agreement with Philips, to develop the product further. In 1975 they introduced the video cassette recorder both on the Japanese and American markets, where the degree of penetration was visibly higher. When the Japanese apparatus eventually appeared on the European market all the teething troubles had been taken care of, and they were already being produced in large series. Philips and Grundig saw their market shares disappearing from under their noses in favour of the superior Japanese apparatus. This is why Philips and Grundig have been cooperating closely together over the development of a completely new video cassette recorder, to bring their technical inferiority to an end. In the meantime, Philips and

Grundig have regained some of the lost ground with this new recorder from the Japanese companies Matsushita and Sony (their joint share rose from 25% in 1979 to at least 30% in 1980). Philips expects to have recovered the initial expenses by 1983. However, in the meantime Japanese companies are making large profits.

Philips was first to start the development of the video long player, and this was much more carefully introduced (in the United States!). The video long player was initially brought out on one, and later on a second, trial market before being release over the whole U.S. In Europe the introduction has been put off several times and is now scheduled for the end of 1981 (in England). In view of the problem which arises in connection with the production of the software, it is however as yet unclear whether the video long player will catch on in the same way as the video cassette recorder.

4. INTERNAL COMPANY STRATEGY

From a survey of the developments of the colour television market referred to in the previous paragraph, it appears that these can be broken down into three stages:
1. Up until the mid-seventies, there is talk of a fast growing market, dominated by a limited number of European concerns. The demand rises sharply, whereby the supply can also grow sharply. Thanks to the growing demand, the optimal relation between price, costs and production size shifts, so that an increase of supply while maintaining a high price level can be realised. The profits are high therefore.
2. From the mid-seventies the optimal relations are influenced by the appearance of Japanese companies on the small screen market. The relatively low prices of small screen sets demand price adjustment for large screen televisions. In the years 1976-1979 the Japanese industry used the surplus generated on the home market further to penetrate into Europe, also because the American market was temporarily protected against imports on too large a scale. European import barriers forestall

too much competition. The Japanese industry concentrates more and more on the production of a new profit maker - the video cassette recorder. Philips exports its generated surplus to the United States and to new growth markets (South America and the Far East).
3. The third stage comes into existence in 1979-1980 when on the one hand European import barriers are reduced and on the other various 'marginal' firms in Europe fall into Japanese hands. The continuation of the joint maximising strategy is now in danger. The cooperation between the large European firms increase (AEG/Thomson-Brandt, Philips/Grundig). The two last named place all their bets on the video cassette recorder, to get ahead of Sony and Matsushita. Philips doubled its share of the market in the United States and took over a Japanese company.

Philips appeared to show a consistent market conduct in all these phases. On these grounds, it should be possible to find the same sort of consistency in the internal company strategy as well. Our own investigations in this field (5) confirm this. If we limit our description of the management to management of production techniques and location strategy of plants, we arrive at the following general picture.

At the start of the production of colour televisions, mechanisation and automation of the production process hardly received any attention. The first priority was the expansion of production capacity by extensive investments and far less by lowering production costs through savings on labour. As far as the problems which Philips had to contend with were concerned, these had to do with recruitment of personnel. The intensive, routine and unpleasant character of the work and the shortage of unskilled labour made a number of steps necessary. The problems of limited labour saving were solved by the following: recruitment of foreign labourers; creation of facilities to attract married women; making the work more attractive by experimenting with work-structuring; the selective mechanisation of heavy

and unpleasant work. The rise of labour productivity was mainly reached by product innovations.

From the mid-seventies, there was more emphasis on production-technical renewals. Mechanisation was carried out at many points in the production process. In TV tube production, which was already highly mechanised, more attention was given to streamlining the production process and reducing dependence on manpower. In particular, the positions which were critical for the total process were mechanised initially. In colour television production, where there had always been manual assembly, various methods were introduced at this time to replace manual assembly. This covered the so-called Insertion and Thick Film methods. The Insertion method is the mechanical assembly of electronic components on a print, according to an already fixed programme. The Thick Film is a chemical process through which a trace pattern is applied to a ceramic plate. The traces take over the electric functions of the former components.

Up to the end of the seventies, both manual and mechanical assembly were used, with the result that the former became less important. In 1980, at least 65 percent of components could already be place mechanically on prints. A Thick Film module could take over 77.5 percent of electronic functions of manually produced modules. A small amount of manual assembly did of course remain but, due to the improvement of both methods, this got more and more an odd job character.

Another important economy came from the introduction of a new type of TV tube: the 30-AX. Through this, difficult and therefore time-consuming adjustment and regulating work were vastly simplified. In time all adjustment work will be taken over by the so-called 'adjustment robot'. The robot only needs to be connected to the television set and then carries out all adjustment work in fractions of seconds. The time needed for adjustment work is thus reduced from 10 minutes to about 30 seconds. All in all the lead time, the time needed to assemble a

television set, has dropped steadily due to changes in the product and mechanisation. This means that the assembly of a colour television, which took a day and a half in 1966, now takes less than two hours (16).

Due to the choice to go mechanical, from the mid-seventies onwards the emphasis of internal organisation strategy was concentrated mainly on saving costs. When changes were carried out, they were adapted to the production technique. This meant that work structuring experiments were reduced, in spite of positive results shown by internal evaluations.

With regard to location-strategy of plants, to start with local-for-local production, already used for black and white television, was continued. The result was that TV tube and colour television factories were spread out over Europe, where Philips carries out 70 percent of its video production. TV tubes are produced in nine plants in seven countries, and colour televisions in about twenty factories in eleven countries.

In the Netherlands, TV tubes are produced in Stadskanaal and Eindhoven. Outside the Netherlands in Aachen (Germany), Dreux (France), Simonstone and Durham (Great Britain), Barcelona (Spain), Monza (Italy), and Lebring (Austria).

The Dutch television production takes place in a relatively small factory in Eindhoven, which is closely concerned with developmental activities. There is also a factory in Tilburg, where television components are made, and a small cabinet factory in Roermond. Outside the Netherlands, large European television factories can be found in Brugge (Belgium), Croydon (Great Britain), Krefeld (Germany), Dreux (France), Barcelona (Spain), Monza (Italy) and Norkøping (Sweden) among other places. Besides Tilburg, television components are still made in Washington (Great Britain) and Ovar (Portugal). Apart from the production of video cameras in Eindhoven, related equipment is made in Vienna (Austria) and

Krefeld (Germany).

Since the mid-seventies, there has been a change in decentralisation policy. No more plants are opened, and here and there capacity is reduced. In this way, a production line is shut down in Eindhoven and the promised completion of the production line in Stadskanaal is constantly put off.

The increasing emphasis acquired by mechanisation in the seventies led to a reorientation of decentralisation policy. It became clear in 1979 that the Philips management wanted to terminate the principle of local production for the local market. A number of the nine TV tube factories in Europe would close down in the near future. Monza has already closed and Barcelona has been nominated for closure (after Spain's entry into the EEC). The number of closures will probably go up even further. The reorganisations in Stadskanaal and Eindhoven certainly point in that direction. Philips is apparently trying to concentrate production to a limited number of large centres: Aachen, Durham and Dreux in the EEC and Lebring in the EFTA countries (EFTA: European Free Trade Association). The large production centres work together on a scale which lies above the 'minimum efficiency scale' for TV tube production, which was recently estimated at about 1 million by Macintosh Consultants (17).

Aachen is the most modern of the four. As anticipated, it will become Philips first in-line factory, where everything from glass parts to complete tubes will be manufactured in one integrated process. It looks as though the expansion of tube manufacture will follow the same road as its main subcontractor, the colour television glass manufacturer. This will also be concentrated in such a way that all Europe's needs will be taken care of in one factory (Aachen!).

In colour television manufacture as well, local-for-local policy seems to have made way for concentration

policy. In at least six countries the activities are being reorganised. It is expected that the number of plants in Europe will go down to less than ten. The smaller plants will be closed and production concentrated in larger centres. These centres (IPCs: international product centres) specialise more and more in the production of one product (or one type of a particular product).

It can be seen from the above mentioned short outline of the changes in Philips internal company strategy and accentuations thereof, that there is a distinct pattern. In the same way as the development of the market, and therefore the followed market strategy, knows a distinct phasing, the development of internal management is also clearly bound to such a phasing. In the first phase, the accent is on extensive expansion and organisational measures are taken to support this expansion in connection with staffing. In the second phase, the accent shifts over to mechanisation of the production process and an end comes to the management of the spread of production. In the last phase, mechanisation is forcefully carried out and is supported by a branch management in which concentration of production is most important.

4. CONCLUSIONS

We have argued above that in view of the structure and form of the colour television market, it is probable that this is developing according to a definite system. We have also established that the actual development of the colour television market follows a pattern that clearly resembles the abstractly described development path. It appears from this that the history of the market covers three phases, which after closer examination also appear in the development of Philips internal company strategy. From this it can be deduced that a very definite system has been enclosed in the internal company strategy, which corresponds with the development pattern which has the same form and structure as the

colour television market. This system gives the company strategy an internal consistency which betrays a master plan, a strategy. If it then appears that such a strategy has contained a clear continuity for a period of more than 10 years, it is difficult to see why an exception such as the year 1979 should be reason enough for breaking this continuity. This means that the re-organisation process is not an emergency measure, but part of the long-term strategy itself. In this context, the arguments used by Philips to make the reorganisation process seem like an emergency measure appear to be nothing more than attempts to set up a smoke screen. If it it true that in the long run the management is showing an internal logic and there is talk of long-term strategy, what does this look like and what place will reorganisations occupy? In the first place, the deadlock on the black and white television market is broken using the escape offered by the colour television. To fill up the 'gap in the market' local-for-local policies are continued through the whole structure to switch black and white production over to colour television production. Mechanisation and automation do not play important roles because the accent is not on cost saving but on capacity expansion through extensive investments. However, the gap in the market was quickly filled and around the mid-seventies the market was again threatened with deadlock. It can be seen that the escape did not have any lasting effects, from the fact that the switch over from black and white to colour did not demand any particular adjustments in the production structure. Thus, this was only a way out while there was a supply backlog.

Philips and Japanese firms reacted differently to the new threatened market deadlock. The Japanese changed over to export penetration of the American and European markets with small screen televisions. Philips on the contrary, saw important possibilities in the video cassette recorder. This was looked upon as a new escape and Philips threw itself into this adventure, with little success as it was discovered afterwards. In spite

of the fact that competition through Japanese small screen televisions did not touch the weak spot on the European market, there was still a certain amount of friction. This was motive enough for Philips to start strengthening the European empire, in order to consolidate the colour television market. Mechanisation and automation were chosen for this. This tendency is clearly visible from the mid-seventies onwards. The quickest advances were made to start with in the production of TV tubes, which technically speaking already demanded a high degree of mechanisation. The progress in television manufacture was slower. In the first place because with the replacement of hand assembly by mechanical assembly and photochemical techniques there had been a lot of technical problems, which required long experimentation time. In the second place, because the reduction of adjustment time, which is a second important bottleneck in television manufacture, was dependent on improvements in the tube, which in its turn was dependent on the progress in the improvement of tube manufacture techniques. By the end of the seventies, the major problems had been solved. TV tube manufacture had become an almost fully automatic processing industry. And in the television factory the Inserters arsenal grew, assembling components at high speed, while the Thick Film department turned out practically complete and regulated modules in a single process. In 1980 the first adjustment robots were installed which drastically reduced adjustment time.

From the point of view of the automation process, the years 1979 and 1980 can be seen as the years when preparations for bringing in the harvest were made. The main power of the processing industry likes in its economies of scale. Consequently the expansion policy in the TV tube sector (which the television glass sector in its wake) is turned to concentration policy. Tube production dispersed throughout Europe is brought together in a number of large production centres, of which the integrated Aachen in-line factory is apparently the show piece. The advantages of the Insertion and Thick Film

techniques are at their height when a high level of standardisation of production is reached. Consequently, as far as plant management is concerned local-for-local policy per product is replaced by a specialisation policy. In this way, each plant concentrates on only one product or more types of a single product. Besides plant specialisation, concentration of colour television is likely. The Insertion technique did not give immediate cause for this. However, in view of the processing character of the Thick Film technique and the high capacity of the adjustment robots, it is probable that television manufacture on a larger scale, and therefore concentration of production, is called for. Moreover, the expansion of television production will probably be adapted to the spatial structure of TV tube production.

In this context, reorganisations are bound to take place. They are nothing more than systematic steps which are part of a purposeful policy based on a previously fixed strategy. The ultimate goal is to strengthen Philips position on the European market and make it resistant to either Japanese or other competition. The stable European position can then serve as a base for Philips attack on the American market, and the new growth markets in South America and the Far East, and as financier in the second round in the fight for supremacy in the field of the new escape: the video recorder and the video long player.

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International trade union activities:

The strike at Philips Barcelona (Miniwatt)
The actions of solidarity
with the strikes at Philips Colombia

SOSV

1) SOLIDARITY ACTION COLOMBIA-STADSKANAAL

Colombia - Strikes

All Colombian Philips workers laid down their jobs on 18 February 1975. This strike was organised to force concessions about a number of demands in the Central Labour Contracts such as:
- wage increases to keep pace with inflation;
- guarantees about employment;
- banning of the labour-broker system.

Colombian workers are allowed to strike for 45 days. If, after this period the conflicts are not settled, the employees have to go back to work anyway. In this case a judicial committee which represents all of the interests pronounces a binding verdict. The conflicts at Philips Colombia have a long history. The employees told us that Philips had been dodging central labour contracts for a long time by:
- taking on workers on a limited contract basis;
- taking on workers via employment bureaus;
- prematurely firing personnel.

When a worker has been employed by Philips Colombia for more than 10 years he obtains the right to a pension. If, however, he is fired prematurely he looses this right. The strike is over - after 78 days. Not all demands have been conceded to. The workers however must accept the outcome of the negotiations.

*SOSV: 'Stichting Ontwikkeling & Samenwerking Vakcentrales' in Nederland (Foundation of Development Cooperation of the Trade Unions).

STADSKANAAL - IN SYMPATHY

The work group SOSV Stadskanaal (aimed at Philips), deputised for the strikes. It started actions of solidarity in the Netherlands. This solidarity did not drop out of the blue. Stadskanaal has maintained a correspondence with the Colombian employees for some years now. Various companies are part of the same Product Division and so maintain direct contact. Both groups keep each other up to date on the employment terms at Philips. The SOSV group had been expecting the strikes. Colombia is a developing country. This is clear when one looks into the labour contract. The wages are low, the cost of living high. The comparison with the Netherlands showed great differences. The comparison with the Netherlands however also showed great resemblances.

Both Dutch and Colombian workers are employed by one company, Philips. Decisions made for one plant can have consequences for the other. All workers need a good labour contract, and employment. The way in which the Colombians and the Dutch showed this mutual interest was through *international solidarity*. By having this contact, Dutch and Colombian workers obtain a small amount of international information.

The strike in Colombia is past. The people have gone back to work. The labour contract has been signed. Peace however has not returned. Shortly after the strike 16 people were dismissed. These people had a permanent contract with Philips. Philips refused to discuss the matter with trade unions. The majority of these 16 people were active during the strike. Philips Colombia started an intensive reorganisation programme after the strike. Jaime Ruiz, president of the Colombian trade union, said the following about this development: 'internal discipline is being tightened and workers who do not agree with compulsory transfers to plants in other cities are threatened with dismissal.'

INTERNATIONAL CONTACTS

Jaime Ruiz added: 'whichever way one looks at it, we have learned a lot from the strike. We are now planning to hold a regional Latin American meeting with all the Philips trade unions. After that we hope to cross the Atlantic to exchange ideas with our European, and especially our Dutch, colleagues and friends. We will then have a chance to thank them personally for their priceless support during our strike.'

2) PHILIPS IN AN OPPRESSED COUNTRY

SPAIN

The Spanish Philips employees at Barcelona were due for a new labour contract (just as their Colombian colleagues). Both in Spain and Colombia there are no trade unions operating independently from the government of the country, as in Holland. The employees in Spain have to made do with 'official' negotiators. These negotiators are no more than puppets with the Spanish state holding the strings. This was the source of the troubles at Philips Miniwatt in Barcelona.

Job unrest developed at the beginning of May 1975 about the course of the negotiations. Philips used coarse measures and dismissed 16 people. As a protest to this, their 600 worker colleagues occupied the plant. Once again, rather unrefined methods were used. Philips ordered the Spanish Military Police to clear the factory of its 600 occupants. This 'clearing up' was a rather tough exercise. The plant was closed, the workers were suspended. Only then did the solidarity amongst the other Spanish Philips plants really come into the open. The unrest spread to all Philips plants. The dismissed Spanish employees were in a nasty position. They were without earnings. Moreover they were likely to enjoy 'special attention' from the Spanish state police. The possibility of being beaten up by right wing terrorist groups, which are very active throughout Spain, was

present as well. The suspended workers too were on the street without revenues.

DUTCH UNION ACTIONS

The three Dutch trade unions signed protests against these actions by Philips Spain and sent them to the Board of Management of Philips in Eindhoven. The unions demanded:

- restore the employment for the dismissed workers as soon as possible;
- withdraw the suspensions of the other 600 workers as soon as possible;
- restarting of negotiations about improvement of employment terms as soon as possible.

The Dutch unions formulated these demands at the request of the International Metalworkers Union. Philips received these demands by post on 7 May, 1975. It was nine days later that the Board answered by telex. They confirmed the dismissals and suspensions.

CONCRETE REFUSAL OF INFORMATION

The Board did not go into the union demands. This caused the unions to call upon their members to start actions of solidarity. They also called upon their members to put questions to the workers council about Philips Barcelona.

Correspondents of the VARA radio programme 'De Rode Haan' intercepted the following telex message from Philips to the chairmen of the workers councils:

TELEX: chairmen workers councils and combined workers councils you are aware of the fact that there have been problems at a plant in barcelona. the industry union nvv has turned to the board of management. this union has in the meantime called upon its members to start supporting actions. amongst others the workers council will be called upon. if a request is filed for discussion in the workers council we request you to ignore it.

we will see to it that you have received copies of correspondence by monday for your personal orientation.
if necessary contacts with eindhoven telephone 55013 employment department.
f.a. de stoppelaar blijdesteijn ph ehv/nphesoc

THE WORKERS COUNCILS

Despite this telex chosen members of the various Philips workers councils did not let themselves be intimidated. They had the matters discussed at the workers councils. Various workers councils in Eindhoven discussed the matter. The retort from the management was, as could be expected: 'What Philips Spain does is none of our business, we have no influence there.'

The Nijmegen workers council also discussed the matter. Similar disucssions also took place at the workers council at Philips Doetinchem despite the chairman of the workers council following up the instructions from Eindhoven. This could happen because the chosen workers council members made sure they had a majority of votes when the agenda was set up.

The argument mostly used by the workers council chairmen was: we cannot decide about a plant out there. Our plant has nothing to do with Barcelona.

Despite the vague answers and evasions, various workers councils sent telegrams to the Board of Management. In their telegrams they requested the Board to avoid such decisions in future and where possible to revoke them. They further pressed for a resumption of talks in Barcelona.

THE WORKERS COUNCIL IS NOT TAKEN SERIOUSLY

The workers councils were not taken seriously by Philips. When the workers council members did manage to get the item on the agenda these questions were only answered with vague evasions.

Apparently international solidarity is a vulnerable spot in Philips policy.

CONCLUSIONS

This was a story about two actions, which were organised in support of fellow Philips employees, struggling for better employment terms. Both actions incited resistance from the Philips management. This resistance proves that international solidarity is a hard matter for the company to digest. The Philips brochure (also published by SOSV) shows us in the chapter 'international trade union movement' that Philips is not intending to take international trade union organisations seriously.

Philips backs up this attitude with arguments such as: 'In our company the responsibility for the social policy is completely in the hands of the national Philips organisations'; and 'We cannot decide about a plant out there, our plant has nothing to do with Barcelona.'

Why then the need for international information and solidarity amongst Philips employees?

3) PHILIPS AN INTERNATIONAL CONCERN THIS....

Philips has plants in the Netherlands, Western Europe, America, Asia, the developing countries, Australia and the Middle East. Branched out over the whole world. Taiwan - television, Singapore - irons, Colombia - radios and lightbulbs, Ghana - radios, Barcelona - shavers, Drachten - shavers, Sao Paulo - glass, Winschoten - glass, etc. etc. Philips is a global company, a *multinational company*. This giant employes hundreds of thousands (404,000). Despite the great differences in nationalities, race and age, all these employees also have many similarities: they all have to work to stay alive; they are all in Philips service. This means that

they are all dependent on the decisions Philips takes on employment.

There is only a very small group of people, a handful, who have a complete insight into what the company does. That is the central management in Eindhoven. Together with the directors of the Product Divisions and other experts, this handful of people decides over the companies' futures. And the future of thousands of employees. The Board of Management (a sort of bank) invests money in those businesses which seem to be most profitable. 'Most profitable' means that the invested money is returned with sufficient interest. Then you can use it again somewhere else. A reasonable social policy costs money and cuts returns. Therefore it is more to one's advantage to have a company in countries such as South Africa or Chile which have low standards for social policies.

THIS...DEMANDS AN INTERNATIONAL TRADE UNIONS STRATEGY

Many developing countries which boast Philips plants, do not boast trade unions. Many developing countries have company or state trade unions (Chile, Spain, Colombia, etc.). Interests of employees are best served by *independent* trade unions. Philips has plants in nearly 60 countries. Which of these 60 countries have effective trade unions? Independent trade unions, which have enough money to organise actions? Colombia and Barcelona are in a tough position. Solidarity from the Dutch employees was a great support therefore. The Stadskanaal employees had already made contact with their Colombian colleagues before the strike. They made use of their union rights to support the strike. Because the strike was about a labour contract they could ask their organisation for support.

The European Metalworkers Federation has contacts in Barcelona. The Spanish employees however have no union rights, they live in a dictatorial state. Union activities are forbidden. It is a good thing that Dutch

trade unions and workers show themselves sympathetic. Stadskanaal produces the same articles as the plants in Spain and Colombia. It is not unlikely that if Barcelona was closed, Stadskanaal would take over its production. Without the workers knowing it they are being used as *strike breakers*.

THIS HOWEVER CAN ONLY HAPPEN IF EMPLOYEES HAVE NO INFORMATION ABOUT PLANTS WHICH MAKE THE SAME PRODUCTS AS THEMSELVES.

In the same way, Barcelona can also be used as a strike breaker by unrest in the Netherlands. The workers can then strike until Doomsday, and spend their trade union money for nothing. The director in Colombian can quite rightly say: 'For my part, the strike can go on for a thousand days.' The stocks are high anyway, and other companies in other countries produce the same product.

INTERNATIONAL INFORMATION AND SOLIDARITY IS THEREFORE A MUST TO BE ABLE TO KEEP A GRIP ON THE EMPLOYMENT SITUATION.

CONTACTS NECESSARY

The contacts between Barcelona and the Dutch trade unions already existed. The contacts between the Netherlands and Colombia were laid with the help of the group 'Aktie Colombia'. These contacts between unions and employees have been essential for thorough execution of actions.

Philips Glass international: Experiences

Wout van der Vlugt

These are the experiences of the shop stewards committees Philips Glass Eindhoven and Winschoten with regard to 2½ years of international trade union work.

EXPORT OF WORK AT GLASS

At the beginning of 1975 the shop stewards committee of Philips Glass in Eindhoven was brought up to date by its workers council about a number of restructuring plans for Glass companies in Eindhoven. It became clear straight away that these plans involved Glass plants in Winschoten as well as those in Eindhoven. Through the combined shop stewards committees (consisting of representatives from various Philips Glass plants in the Netherlands) there are contacts with members from Winschoten, so that discussion is possible with them.

It appears that what happens with the Glass plants in the Netherlands is very much tied up with what happens with foreign plants. What is made in one plant does not have to be made in another. And for the last few years, employment has been moved to low wage countries. In Eindhoven, employment has already been reduced by 750 jobs over the last 7 years. In Winschoten there is the fear of closure in 1980 (±400 work positions). Aachen is being reorganised (300 jobs less by 1980). But in Lommel (Belgium) it has been agreed that the work position will remain the same until 1980. And in Taiwan production is further expanded, etc.

And now the fear of closure at Glass Winschoten has been realised! 'If Philips wants to retain Glass' market position, it has to concentrate production. That can

only take place in Aachen, because the facilities are there. Concentration in Aachen creates employment problems in Winschoten and Simonstone (England)', according to Mr. de Groot, ex-Director of PD-Glass at the meeting of the Winschoten workers council on 16 June 1978.

Thus we see that, by the existence of more Glass plants throughout the world who make corresponding products, employees can be played off against each other. The strings only come together at management level of the Product Division (PD).

To be able to get any real grip on the management, or in connection with the consequences of this for employees, to be able to exercise any control, contact with foreign colleagues is imperative. First of all, for the exchange of information, but possibly in the future to decide jointly what can be done. It is obvious that union managers have to be involved too, but that does not mean that it is any less important to have international discussion and exchange of information between shop stewards from the various unions. After all, they are directly involved.

AN INTERNATIONAL MEETING OF GLASS WORKERS

In November 1975 the shop steward committees from Glass at Eindhoven and Winschoten, in consultation with the ex-SOSV (Foundation for Development Cooperation Trade Unions), decided to make contact with colleagues from Philips Glass plants abroad. After an unthusiastic and active start, a meeting was arranged for the end of February 1976. However, the first problems arose very quickly. The NVV would not help: international trade union work belonged to the EMF (European Metalworkers Federation; in which the three Dutch industry unions are represented) and not to lower down. The meeting could not take place. When the industry union NKV did give its support, it was agreed with the SOSV to organise an international conference in the autumn of 1976. Enough time to make proper preparations. In the months of July,

August and September intensive preparations took place. With the help of SOBE (Foundation for Research in the Electrotechnical Branch), the position in the various plants was inventorised and put on paper. Together with a survey of all Philips Glass plants throughout the world, various bits and pieces were collected together into one conference folder, which was translated for foreign participants (Belgian, German, English).

The meeting took place at the end of October 1976 in Helvoirt, but was only partly successful. Partly through Philips' refusal to give time off and partly through the aloof attitude of the NVV, the German and English delegates were absent. It was decided at this meeting that further contact should be made with foreign plants, and a new meeting organised.

CONTINUATION

It is important to note that at the end of 1976, relations with the SOSV were stopped and activities were continued with the BOSV (Department of Trade Unions 'Awareness of Development Cooperation'; under the responsibility of the industry union NKV).

Meanwhile, a day was organised from the NVV-side in April 1977 in preparation for discussions between the EMF and the Glass management over restructurings. A few foreigners were also present at this, even though they were mostly officials. In view of the framework (top talks for top negotiations) and participants, this meeting had a very different character to our hard-worked-for follow-up meeting in Helvoirt.

Together with BOSV, it was decided to hold a new conference in mid-December 1977, as a follow-up to the Helvoirt conference. In October it was made know that this would not take place. A decision which was taken almost without consulting the work group. A way of business which certainly would not add to the slowly built up confidence of foreign colleagues.

The aloof attitude of the NVV again played an important role in this decision. At the same time, it appeared however that from the BOSV (NKV) side no actual energy had been put into the development of contacts and other preparations. In January 1978, everyone connected with the BOSV work groups met together in Doorn (A.G. de Bruin Instituut). In preparation, the Glass work group set out the strange state of affairs, and made a number of proposals to make a success of the meeting now to be held in May. No undertaking that the affair would be actively gone into was received. On 23 February 1978, the affair was discussed in Utrecht with various people from the work group. Through circumstances, the responsible official was unable to be present, so that once again no undertaking could be given.

The little bit of enthusiasm that we still had over is, in view of the conference being unable to go on, almost completely crushed. Only after two months was the news received from Utrecht which - as we had already discovered - led to the meeting not being held.

AND NOW WHAT?

From our side, there is no point in putting any more energy into the arranging of an international meeting. We are still of the opinion that, when talking of becoming aware and of international cooperation, meetings with foreign colleagues for exchange of experiences are very useful. This is not explicitly denied by the union, the opposite in fact. But when 'Glass' is used as an example of international trade union work, it seems that you have to swim permanently against the current. You can only do that for so long. This is not a stimulating story; we hope that other groups have more success.

English Philips workers in the Netherlands

Frank Hendriks

In the last weekend of November 1981, there was a meeting between English and Dutch Philips workers in Eindhoven. Two of the five unions which operate at Philips in England were represented by a few officers and 10 shop stewards from five different plants. There were also ten employees present from comparable Dutch factories, who were mostly members of the Industry Union FNV. The idea of the get together was to come to a more regular exchange of information over the management of Philips in connection with plants in both countries. There were also discussions over the objectives and plans for the international schooling meeting for Philips employees to be held during the coming summer. In the same way as the November meeting, this conference will be organised by the 'Stichting Onderzoek Bedrijfstak Electrotechniek' (SOBE). The Stichting DIAS (Diensten Internationale Arbeiders Samenwerking) was also involved in the organisation of the meeting held at the end of November.

THE PLANNED DEMOLITION AT PHILIPS

After General Motors, Ford and ITT, Philips is the largest industrial employer in the world, with at least 370,000 employees. The greater part of these, namely 220,000, work within the EEC. Within the EEC, the highest share of employment at Philips is in the Netherlands and the United Kingdom: respectively, 80,000 and 39,000 in 1980. But it is also in these countries that the international restructuring which Philips is carrying out has had the most severe consequences on employment. In 1970, 105,000 people were employed at Philips in the

Netherlands. The turning point came somewhat later in Great Britain, but nevertheless 25,000 work positions have also disappeared there since 1973. All the other EEC countries have also been involved in reduced employment at Philips, even though absolutely and relatively (as yet) less than the Netherlands and Great Britain.

Three Philips strategies are responsible for this reduction in employment:

1. First of all, the removal of simple production processes to up-coming developing countries, with low wage levels, no labour laws, an extreme curtailment of democratic right, and often important tax facilities. Even though this reallocation was primarily realised at the beginning of the seventies, it is still of importance, particularly within the Product Divisions Audio and Elcoma (the branches of Philips where sound equipment and electronic components are produced).

2. Philips strategy is directed towards the capture of a prominent share of the United States and Canadian markets, both in the fields of consumer electronics and the professional sector. For this reason, Philips took over Magnavox in 1974 and Sylvania in 1970, thus acquiring a 15% share of the TV market in the US, and in 1975 Signetics thus becoming the second semiconductor producer (transistors and chips) in the world. In 1978, the Canadian computer firm MICOM was also taken over. Reasons for this migration to the west: the presence of a huge state market, the technological lead in the US, and the substantial government subsidies for research and development.

3. Finally, there is talk of concentration of production in Europe in highly automated large scale production centres. Through the amalgamation of the European market it is possible to manufacture the total production of the common market in one or a very few specialised centres. That means that very many plants in Europe, originally producing for the national market, would be (or are already) closed.

BOARD OF MANAGEMENT WILL NOT NEGOTIATE

The decisions which are taken in connection with these strategies are as a rule carried out (with the exception of the Netherlands) by the national management. In their negotiations, national trade unions have to deal with the national management and not with the Board of Management, who in fact dictates the action to be taken. Until recently, in the Netherlands, the Board of Management was the trade unions' negotiation partner, because there was no national management. But now such a management is being formed here too. Because of this, in the future the Dutch trade unions will no longer be able to negotiate with the strategists from the Board of Managers, but only with the administrators of the management.

It will be clear that trade union resistance at a national level comes up short against the force of Philips. This is why in the past many attempts have been made to organise resistance internationally against Philips (reduction) policy. And so, in connection with the 1975 reorganisation plans for Product Division Glass a Philips work group was set up in the 'Europese Metaalbewerkers Bond' (European metal workers Federation). Until very recently, the half yearly meetings of the work group were only attended by national or divisional officers. The effectiveness of the work group suffered further by the absolute refusal of Philips to recognise the EMF as a discussion partner, and by the existence of both national opposition and opposition between dissident unions. At the last meeting of the work group in the Autumn of 1981, which was dedicated to the problems in the TV sector, not only were officers present but also shop stewards from the factories involved with TV production.

EARLIER INTERNATIONAL CONTACTS AMONG EMPLOYEES

International contacts between Philips employees have taken place earlier on various occasions. In this way, with reference to the events in Philips Glass Division,

an international conference was organised by shop steward committees at the Dutch Glass factories in Eindhoven and Winschoten and by SOBE. At the last moment, Philips found ways to prevent a number of shop stewards (from England, among other places) attending the conference, by refusing to give time off. Because of this, the conference was less successful than expected, but eventually resulted in regular contact between members from Philips Glass in Belgium, Germany and the Netherlands. The so-called Eurregio consultations partly arose from this, but are however more widely oriented than just on Product Division Glass. In these consultations officers and shop stewards from Philips plants in the Limburg region of the Netherlands, Belgium and Germany, work together. The deliberations are also directed towards the problems which arise out of under development of the region.

Sometimes, incidentally, there is a subject-directed cooperation between Philips workers in different European countries. For instance, last summer in Milan, when Belgian, Spanish and Dutch employees from PTI (Philips Telecommunicatie Industrie) met each other at a conference over the New Technology.

In the past, there have also been a few solidarity campaigns for colleagues in the third world countries (e.g. Stadskanaal and Bogota in Columbia). Just recently, there was a sequel to these campaigns when a Colombian trade unionist - just back in his own country after a number of visits to Dutch trade union groups - was picked up by the police in the Philips factory.

EXCHANGE OF INFORMATION

Last year, 40 English Philips employees came to Eindhoven to protest against the demolition of employment in the United Kingdom. Apart from contacts with Dutch trade union people and colleagues, they did not get anywhere because the Board of Management due to 'pressure of work' refused to see the British delegation. The delegation was further given to understand that this

of thing came under the jurisdiction of the British Philips management.

Some of them again formed part of a group of fifteen English employees who came to Eindhoven, not to see the Board of Management this time, but to take a new step along the long road towards International trade union actions against Philips demolition policies in Europe. The delegation consisted of two divisional officers (managers with national responsibility for Philips business in their union) and shop stewards from two of the five English unions active at Philips: the ASTMS, Association of Scientific, Technical and Managerial Staff, and the GMWU, General Municipal Workers Union. The shop stewards came from plants in Blackburn, Simonstone, Durham, Cambridge and Crawley. The Dutch employees worked in comparable factories in Sittard and Eindhoven (Glass, TV tubes, Machine Factories and S & I).

For two days, the English and Dutch employees exchanged experiences and information, either in small groups (split up into company of origin) or the whole group together. The way in which the meeting should be followed up was extensively discussed. In any event, the information exchanged during the weekend will be set out in a detailed minute of the meeting. Apart from this agreements have been made to give shape to the exchange of information between employees in various countries. SOBE, in connection with the international schooling meeting for European Philips workers in June 1982, has already made contacts and collected information in many European countries. These data, which are becoming known in the various countries, will be circulated by SOBE to those plants for whom this information could be of importance. The English unions and shop stewards have offered every support in this connection. Finally, agreements have been made for the preparation of this international conference and the role which the British divisional officers and shop stewards can play in it. In this way, an important prerequisite for the success of similar meetings is fulfilled, namely the establishment of objectives by the participants themselves.

Employees' plan should be the main issue in the negotiations

Ingrid Cramer (editor)

The Philips concern is cutting down the number of job positions in the Netherlands at an incredible rate. There is not one Philips plant which is not threatened by cuts. In their battle for employment, many Philips workers have chosen to set up their own plan for the employees, the trade unions or the workers council. In this plan they set up their own policy against that of Philips.

Members of the FNV Industrial Union had become active in this way in so many Philips plants that it became worthwhile organising a get-together. This meeting took place on Friday 18 December 1981. Philips employees from Eindhoven, Drachten, Best Apeldoorn and Stadskanaal came to the FNV congress centre in Utrecht, each with their own completed plans. Employees from Nijmegen came with incomplete plans, and one union member came from Uden where they are having problems with the employer but where there are (as yet) no plans. Together they discussed the employment situation and in particular: is the making of own employment plans a good way for the trade unions to enforce an employment policy within a company? The discussion was chaired by Guido Bayens who is a cooperator in the department of schooling and development.

RIOTERS, RADICALS

Guido Bayens (Industry Union FNV): You nearly all have an own policy plan, or are making one at the moment, to

*Alternative production and employment plans T.B.

set up against the Philips policy. You have all tried to involve the employees in this by way of pamphlets, personnel meetings and inquiries. Do you think it important to involve your followers in such an alternative plan?

Geert van Delden (Elcoma, Stadskanaal): For a good plan it is essential that all employees act as one, and that means everybody: the members of the other unions, even the unorganised. You can only be strong if you have the greater part of employees behind you.
Gert Könemann (Elcoma, Nijmegen): Only 10% of our employees is organised in the FNV. This means that you have to be very careful not to be categorised as rioters and radicals. We managed to involve nearly all the workers however in the development of the plans so that the management would acknowledge us. This did mean that we had to dilute our views. The process is not going at high speed, but it will bear its fruits in the long run. If you want to reach a certain goal, you need the people behind you.
Jan van de Nieuwenhof (TV tubes, Eindhoven): It all sounds nice. Perhaps you will manage to get all the people behind you. But when you take the next step, they all back out, especially the more senior personnel.
Martin Overbeeke (Data Systems, Apeldoorn): Our experience is that increasing numbers of managers are thinking along with us. You must however keep on motivating your people. We want the employees to think of it as 'our' plan. This is why we held an inquiry within the plant after handing our the brochure. We consciously chose to go to the people and fill in the inquiry forms via oral communication. In this way, we sent out 120 forms and got back 120 filled-in forms.
Gert Könemann (Elcoma, Nijmegen): If you want to involve people in something, it is very important to approach them with a subject that interests them.
Richard Oostwal (Data Systems, Apeldoorn): It is also very important that you are not only against certain things. You have to be able to give the people a concrete goal which they can back up.

Jan Poelman (Medical Systems, Best): The people are frightened. the bosses put pressure on them: 'do you have to go to the workers council again?' they ask. And then if there is a meeting about the 'social plan' or the early retirement regulations for 57½ year olds, only 2 people appear.
Gert Könemann (Elcoma, Nijmegen): You should not accept this sort of thing. In order to motivate the people you have to find arguments which appeal to them. The directors would laugh their heads off if you came to the workers council with lovely stories but without support. As a trade union you only have the power of numbers.
Jan van de Nieuwenhof (TV tubes, Eindhoven): But we have not even got the power of numbers. Philips is a multinational company. Look at Ford (Amsterdam) for example. They have a very good plan. It all went off well, one and all solidarity, but where did it get them?
Jan Poelman (Medical Systems, Best): Philips consciously holds off international contact between employees.
Bé Kruize (Elcoma, Stadskanaal): And it is true if you can't manage anything internationally, you can forget it here.
Jan de Blaauw (Elcoma, Stadskanaal): How could we manage anything internationally? Philips plays employees off against each other. That even happens inside Holland. Take a look at the 1980 reorganisations: they took work away from one plant so that they could give it to another. He who fights for his own employment is fighting against somebody else's.

This even happens in one single plant. At the start people were one and all willingness. Philips however has a way of managing to put off its plans so that people start thinking: 'You see, everything is all right.' In this way Philips is obstructing our progress.
André Bergman (Medical Systems, Best): Philips is following a long-term policy whereby the employees start thinking after a while that there is no real danger.

Gert Könemann (Elcoma, Nijmegen): The employees plan is the suitable answer to this Philips policy. It is one of the very few things we can use to prove that Philips is not always right. It is our business to demonstrate what is and is not right in the Philips policy so that we can tune in our policy. If we do not do this, the employers certainly won't do anything. They will rightly say: 'You don't have an answer either do you?'
Geert van Delden (Elcoma, Stadskanaal): In our plant Philips always comes up with plans without motivation or future perspectives. I cannot judge any plans that way. And when I do react they always have answers to crush my arguments.
Akkie Bosma (Drachten): I think there is a great difference between our employment plan and that of the others. Most plans are a reaction to a concrete Philips reorganisation plan. Of course one must react to such a plan. I think however that you cannot change much once the whole plan has been worked out at the top. We purely reacted to the first signs of reorganisation, before there was ever any worked out plan. In this way we were in from the start. Perhaps we have a bit more chance with our people against Philips. As yet we are not in a situation of loosing anything, and we can fill in our part of the plan without treading on anyone's toes.

ON THE ATTACK

Gert Könemann (Elcoma, Nijmegen): We are still too much in the defence. The strength of the employees' plans should be that we use it in an offensive. We must set out a strategy. We will see what Philips has to say to that.
Geert van Delden (Elcoma, Stadskanaal): If you would do this without knowing what the company's strategy is, they will use it against you. You would be preparing Philips' reorganisation plans.
Gert Könemann (Elcoma, Nijmegen): If you want to be a serious trade union you cannot restrict yourself to mumbling protests.

Akkie Boema (Drachten): At our plant you can see that Philips has changed its policy on a number of points. According to the management this was all in the plans. According to us it wasn't. But never mind that discussion, it happens.
Guido Bayens (FNV): In how far do you as trade union become the manager in this way?
Akkie Boema (Drachten): In a number of fields this is unavoidable. When we suggest that Drachten should manufacture certain things itself instead of purchasing them elsewhere, we are in fact managing. Up to a certain level. Because we show what is needed for employment, but not the way in which this should be done.
Martin Overbeeke (Data Systems, Apeldoorn): We now want to assemble all ideas suggested by employees, and a survey per department of what the various employees are making and what they could make, into a book. If the management wants to reorganise you have a complete view so that you can come up with counter proposals immediately. To be able to do this you must of course keep your own plans up to date. But there you are again; are you in fact just another manager?
Guido Bayens (FNV): Then you keep a check on the long term planning. During the discussion with Philips you come up with the information which you had accumulated at an earlier stage.

ONE MUST DO SOMETHING

Gert Könemann (Elcoma, Nijmegen): The idea is of course that we can use the employees' plan as an issue in the negotiations about an 'APO' (arbeidsplaatsenovereenkomst) - as an employment deal.
Martin Overbeeke (Data Systems, Apeldoorn): Up until now Philips has consequently refused to take up the employees' plan as an issue in negotiations.
Gert Könemann (Elcoma, Nijmegen): We have not really done this up until now. The development of a central labour contract which leaves room for individual negotiations, has only started this year. In this way you have the possibility to take up issues with a local appeal.

Martin Overbeeke (Data Systems, Apeldoorn): You could then reach a central agreement about working time reductions and after that work them out locally. The need for added schooling etc. is great at Data Systems. Elsewhere this could involve five shift working or lightening of dirty tasks. You would have to work that our per plant. On top of this we need solidarity, up to an international level. It is not 'either or' but it is 'both'. Although I have a feeling that building up an international network will be extremely time consuming and difficult. An alternative plan is nice, but next to this you have to, as a union, develop a fair amount of power to fight. Within and outside your plant.
Jan de Blaauw (Elcoma, Stadskanaal): There is of course always a chance that your employees' plan could get 'mislaid in a dustbin'; one must do something however. It all depends on how creative you are. One must never give the impression of being content with the situation.
Guido Bayens (FNV): What can the union do so as to ensure a maximum effect of the employees' plan?
Leen Jongeling (Glass, Eindhoven): The union must support groups which are active or need information. That would get us a long way.
Gert Könemann (Elcoma, Nijmegen): Teaching is the most important. One must learn how to take on a job like this. We have the advantage of getting support from the campaign plan for employment in Nijmegen. In this way we support each other and keep each other going. Something like this would be very useful in the other regions. Endurance: that is the problem.
Bertus Eradus (Uden): So this has been a useful meeting. We disagree on many issues, but we all feel we should go on. This is the history of the workers' movements in a nutshell: struggle.

ELCOMA STADSKANAAL

Philips Stadskanaal was involved in the great Glass/ Elcoma reorganisations of 1980. Out of the 2,100 employees, 700 had to leave, but Philips would raise

the employment figure again to 1,700 by offering substitute employment. Philips had pulled off its famous switching trick again: Philips takes work, Philips gives work, but always less.

Because Philips wanted to cut down on employment at an increased place during the following year, the workers council asked workers to set up plans for a healthy Stadskanaal. The result was a report which was handed to the management. After a month this report was returned with the comment: 'the workers council had done a good job'. The effect however was not great. The employees were told in September 1981 that Philips would not keep to its promise: there would be no substitute employment in Stadskanaal. The employees have however managed to keep the possibility open by various actions.

An own plan is not really necessary for the shop stewards. They do feel however that employees should do something in such a situation.

MEDICAL SYSTEMS BEST

By holding an own inquiry and delivering a memorandum, the workers council and the unions broke the silence observed by the management. It was like the bursting of a dam. Of the 2,200 employees at Medical Systems, 400 indirectly involved and 100 directly involved workers had to go. A few months later part of the plant was sold to Honeywell: 137 jobs were saved by the unions and the workers council, but now fell under the American company. Later again, ultrasound was sold to the US: 50 jobs. In December 1981 the workers council received word that another 100 had to go. A report by the McKinsey bureau, which checked out Medical Systems in the middle of 1979 because the overheads were too high, still has not been published. The workers council and the unions published the already mentioned memorandum. They informed and involved the people and set up as good a 'social plan' as possible. But the impression is: you cannot do much about it, Philips will go its own way.

GLASS EINDHOVEN

Philips announced a large scale reorganisation of the product divisions Glass and Elcoma in January 1980. For Philips Glass this involved three things: termination of pressed glass activities in Winschoten (-380 jobs); transfer of special glass production from Eindhoven to Winschoten (involving 260 jobs) and possibly transfer of the trial plant for pressed glass from Eindhoven to Aachen.

The employees decided not to undertake anything during two earlier reorganisations in 1975 and 1977. They refused principally to take over the managers' chair. This time however they decided to undertake actions. The shop stewards committee of the Industry Union FNV made a 'black book' with as main issue: preservation of jobs in Eindhoven and Winschoten SOBE (foundation for research in the electrotechnical industry) cooperated in this action. The workers council was enthusiastic about the plan and incorporated it into its official advice. In spite of a lot of publicity for the plan, Philips disregards it. The shop steward committee is stuck, while the next closures are looming up.

UDEN

The Philips plant in Uden, which manufactures black and white ceramics and control transformers, was confronted with restructuring plans in September 1981. A sizeable part of production had to go abroad. The employees immediately wondered if their plant would still have a right of existence, especially as the memorandum which accompanied the plan appeared to be completely unfounded. In cooperation with the workers council the various unions demanded clarification, but have not received this as yet. An expert has now been called in.

According to Philips, question time has passed. The unions and workers council however still do not know what the situation really is. Only because of this, they

have not set up their own plan yet. If they would, they fear that Philips would not give in anyway; that would mean loss of face for the executives.

DRACHTEN

According to Philips' memoranda of 1978 and 1980 part of the shaver production had to go to Japan and possibly the United States. This would hardly have any consequences for Drachten. The FNV shop stewards however demonstrated that this policy could mean the loss of 500 (out of 2,100) jobs. This was recorded in a brochure about the effects of Philips policy on Drachten (and Sneek). The last chapter of this brochure was about proposals for a company policy which would safeguard the future of Philips Sneek and Drachten. This brochure was presented at a busy press conference in September 1981. The management refused to be present. The unions will now discuss the brochure with the management in January.

The Philips employees in Drachten have one important advantage: they did not write their brochure because of an emergency situation. Their proposals can still be incorporated in a plant plan. This is of course what they are hoping for.

TV TUBES EINDHOVEN

In March 1981 the management announced reorganisations. There had to be a cut of 350 jobs. The Eindhoven plant was to become a short of technology centre. According to the unions and the workers council this meant a total demolition of the Eindhoven TV tubes factory. A few months before the FNV had published a report which was written by researchers at Utrecht University: 'Demolition coming up!' The workers council and the unions now came up with an alternative: the Eindhoven tube plant had to remain a fully fledged company with production and research facilities. The plant management consented to a research by experts from the Twente School of Technology. Their conclusions, which were published in

December, were largely the same as those of the workers council and unions. Workers council, unions and management will now have to discuss these matters. The expectations over the result however are not high: 'We have been proved right. But the level of organisation is so low that we cannot rely on supporting actions to attain our goal.'

DATA SYSTEMS APELDOORN

Around the New Year 1981 the shop stewards of Data Systems Apeldoorn and the Hague decided to undertake actions against all the reorganisations which were taking place. It became a brochure which first saw the light of day in July: towards a new strategy. Conclusion: 'Data Systems has good potentials for survival and growth. Bad policy decisions have led to the current situation of anxiety.' Inspited by Lucas Aerospace and Wim Mennink of Smit Ovens, the shop stewards dedicated the last chapter to the possibilities of working our their plan.

Shortly after publishing the brochure, the shop stewards formed a group from the various unions, to inquire amongst employees about their views on the possibilities for Data Systems. Together with the HAGA group from Utrecht University, which had cooperated with TV Tubes earlier, the results of this inquiry are being analysed. The idea is that the management will cooperate in the execution of the plan, but the members doubt strongly if this will ever happen: 'Philips has pressed home its ideas in the Hague. Philips will now probably say "no" to all proposals again, simply because it is Philips.'

ELCOMA NIJMEGEN

Most employees at Philips Nijmegen thought up until not so long ago: 'no problems here'. This was confirmed again when Glass and Elcoma were reorganised. Some jobs in Nijmegen disappeared, but others returned. It did however become clear that Nijmegen employment was not entirely safe from cuts. Automation for example can

drastically increase turnover while using less employees. Now that this is gradually dawning, the Industry Union FNV at Philips Nijmegen can slowly and laboriously start developing an employment plan together with the other unions. An inquiry list of production possibilities in Nijmegen (which manufactures ICs) was assembled. Because the shop stewards do not want the management to deposit the plans in the waste paper basket, they must be involved in the development. This is now going to happen. The group will go to work as a committee from the workers council which has to realise the ideas about employment in the plant, together with the management.

JOHAN DE WITT DORDRECHT

None of the shop stewards from Johan de Witt could be present at the conference; however, their brochure was. The shop stewards had, in cooperation with SOBE, looked into the development of the production package: electromotors for Philips, audio and video equipment and small domestic appliances. According to them, Philips was endangering employment, especially in Gorinchem, by its policy. It was the idea that this brochure would also contain alternatives for the Philips policy. Developments however caught the committee unawares. Large scale work time reductions in both plants forced them to publish the unfinished brochure. Various alternatives were indicated in this way, but not worked out.

Although the management qualified the contents of the brochure as 'untrue', more and more has become fact. The future of Johan De Witt still looks grim.

The strategy of job destruction

Oskar Meggeneder

Oskar Meggeneder (Austria)

By having factories both internally and abroad a multinational company has the possibility of executing a business policy over the heads of its employees.

In order to fight this, international cooperation of employees and their representation has become necessary. An example of one such international collective action is the 'Workgroup Philips' of the European Metalworkers Federation. By exchanging experiences and information the delegates from various countries can develop compatible strategies, trying to stop the threatening job cuts at Philips plants.

The aim of this article is to show how serious spontaneous and widely spread actions by the workers can be overwhelmed by concentrated capital interest, and even by a passive attitude of the trade unions. Finally, the following descriptions may be of interest to our country, as Philips Austria is the second largest multinational within our borders.

THE PROGRAMMED STEPS TOWARDS JOB DEMOLITION

Philips announced reorganisation plans for the Product Divisions Glass and Elcoma on 17 January 1980. For Glass, the plans involved the termination of pressed glass activities in Winschoten, the transfer of the special glass production to Winschoten from Eindhoven and possibly, the transfer of the pressed glass research department to Aachen. This reorganisation would mean the loss of 260 Eindhoven and 120 Winschoten jobs. This

reorganisation plan was however merely another phase in the years-old practice of 'curing' the companies 'by shrinking' (see Table).

Employment situation in the Glass factories in Eindhoven and Winschoten (situation at year endings)

Year	Eindhoven	Winschoten
1970	1,982	
1971	1,746	
1972	1,640	
1973	1,537	452
1974	1,572	444
1975	1,435	431
1976	1,312	428
1977	1,248	414
1978	1,228	380
1979	1,346 (1/80)	382

source: Zwartboek Glas, published by the shop stewards committee Glass, Eindhoven, page 6.

The shop stewards committee (referred to from now on as BLG or Bedrijfs Leden Groep) calculated that the actual number of lost jobs would come close to 1,500 and therefore condemned the reorganisation plans. Immediately after the announcement of the reorganisation plans the trade unions uttered loud protests and demanded government support. The FNV (Federation of Dutch trade unions)- a joint socialist, catholic union, which with its 1.1 million members represents 60% of the organised workers - tried to lay international contacts via the European Metalworkers Federation.

Violent reactions also took place in the cities and provinces concerned. Political organisation united in Heer to form a committee of support, and four days after the announcement, wild strikes broke out there. Protest meetings and petition actions completed the picture of

a regional uprising. After an unproductive meeting between the Philips management and the industry union FNV on 8 February 1980, the trade union declared its support to hard actions; a decision without effective prolongation. On 23 February 1980, a nation wide demonstration which brought 2000 workers from all over the country ended in Eindhoven. The day before this demonstration, union members and officials occupied the Philips light tower.

On 6 May 1980, the BLG Glass Eindhoven published their 'Black Book' which contained a summing up of experiences had with reorganisations and alternative plans for the conservation of jobs.

Despite the protests of the trade unions and the workers council, on 1 July 1980 Philips decided to go ahead with its reorganisation plans. The Management declared itself willing to negotiate about social plans, which became a dragged out history. The first trade union to agree with the plans was the union of managerial staff (FHPP). The industry union FNV was the last to consent on 1 August, 1980.

The reorganisation plans were fully executed. By closures and transfers of plant nearly 1,500 workers lost their jobs. The question now arises: how is it possible that despite the spontaneous uprising of employees, the Philips plan managed to find approval?

THE OPPOSED RESISTANCE

It is interesting to note that the officials of the industry union FNV are of the opinion that the actions were successful, because the interests of the workers are now protected by the social plans. Quite rightly, the BLG Glass Eindhoven remarked that: '...this type of interest protection is a kind of death escort or an early retirement therapy.'

During the job actions, the trade unions pointed out frequently that, except for the directly involved

workers, it was not possible for them to organise officially job actions elsewhere. It is now known that the existence of the reorganisation plans announced on 17 January 1980 was known of by the trade unions before hand. This can be proved by a memorandum published a year earlier by the workers council in Winschoten announcing the probable closure of the plant.

The industry union FNV knew the full extent of the plans on 12 December 1979. This was the very latest moment that the unions could have started their actions, in order to prevent Philips from playing one plant off against the other. The first actual talk of actions only started three weeks after the official announcement, and then still only in a small circle of insiders.

A further disadvantage was that the trade unions had a 'peace treaty' with Philips: Article 36 of the Collective Labour Contract. In at least three cases the 'peace duty' of the unions was used not to support but even to stop spontaneous actions. The wild strikes which took place in Beer and in South Limburg only go to show that there is increasing action willingness amongst employees. A careful long term planning is necessary particularly as the level of organisation amongst Philips employees is relatively low, especially amongst technical employees and specialists who support the reorganisations on personal grounds.

The Philips management used the mass media in a clever and fast way to explain the reorganisations, employing regional political motives. By closing down plants in one region and establishing others in another region threatened by unemployment, the concern found a way to play local authorities off against plant managers. This meant that the unions had to look upon the reorganisations 'as a whole' and also negotiate in this fasion. So, it was a mistake to negotiate along Philips' lines - separate negotiations for each plant.

A further tactic of Philips was the increasing pressure on 'socially weaker employees', so that they dismissed

themselves!

CONCLUSIONS

In general, one can say that the trade unions are much slower in reacting than companies or company groups. This means that trade unions are condemned in their activities to reacting rather than acting. This situation too certainly must have its historical roots.

The BLG Glass Eindhoven, as the lowest step on the trade union ladder, analysed the resistance against the Philips reorganisation plans thoroughly, firmly criticised the officials of its unions and, for the future, demanded that the following proposals be executed:

- Collective demands as foundation for job actions; reorganisation plans had, in future, to be seen as part of total Philips strategy, so as to avoid the situation that the various interests of employees would be played off against each other.
- Only the managements being able to decide about plant reorganisations must be avoided. The related government institutions and especially the trade unions should be able to take part in the decision making in this field.
- The cooperation between workers councils, active employees and union officials must become closer so that proposals from 'low down' can be taken more seriously.
- Finally, the plans of action of the unions should be set up on a long term basis so that the various specific aspects such as level of organisation, various grades of willingness towards actions, particular interests of employees, etc. can be checked up on. In this way, by using focused actions, specific forms of strike and a public-aimed information system, one can attain a lot of effect while using relatively little energy.

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