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INTERNATIONALIZATION: THE 'FIN DE SIÈCLE' CHALLENGE FACING THE AUTOMOBILE INDUSTRY

If the challenge facing automobile producers in the 1980s was how to change their industrial model, that of the 1990s has been how to reorganize internationally. Of course, internationalization has been one of the industry's characteristics since its inception, and international trade has accounted for a higher proportion of sales than it does today at several periods in the past (Bardou, Chanaron, Fridenson and Laux, 1982). Globalization has neither been achieved nor is it irreversible and unavoidable.

Yet the current tendency towards internationalization differs from previous phases, and in particular, it differs from the situation in the 1970s and 1980s analyzed by GERPISA in one of its initial research projects (Gerpisa, 1984). In part, this is due to the global context of deregulation and the emergence of new growth poles, but above all because of its origins. The clash between the industrial models used by companies and between national growth models seen over the last twenty years has destabilized the wage-labour nexus and, in turn, the markets of many mature countries, including countries that have benefited from this confrontation. Companies can no longer rely upon markets that are relatively predictable in terms of the level and type of demand.

Companies are therefore faced with the following choice: either to organize themselves in such a way that they can remain profitable in an unstable international economic environment while they await a possible homogenization of competitive conditions in terms of products, capital and labour, or to seek out local and regional economic spaces in which they can recreate the conditions of regulated growth. Which process will win out? The analysis of international trade does not yet permit us to arrive at a clear conclusion. It is therefore necessary to undertake a detailed description of the internationalization trajectories currently being followed by

BETWEEN GLOBALIZATION AND REGIONALIZATION:

WHAT IS THE FUTURE OF THE AUTOMOBILE INDUSTRY? *

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companies (producers, suppliers, distributors) in order to identify their strategic choices and to understand the outcomes.

This is an important question not only for companies in the auto industry, but also for our understanding of what is going to happen in the automobile industry. Either companies are going to adapt or transform their socioproductive model as a function of the new global context and the integrated regions that are being created, or they are going to focus on the areas that contain, or may in the medium term contain, the preconditions for the continued functioning of their existing model, or alternatively they will misunderstand or underestimate the choices before them, as a result of which their performance may well be seriously compromised. An understanding of the actions and outcomes of the actors who make up the automobile industry in all its aspects (productive organization and employee relationships) therefore requires an understanding of the concepts and paths towards internationalization being followed by each of them.

THE RECOMPOSITION OF GLOBAL ECONOMIC AND POLITICAL SPACE

The 1990s do not appear to be a mere continuation of the crisis that started in the early 1970s, but rather a new phase. It would appear that after having reduced the competitive gaps between them, automobile producers and their suppliers are once more attempting to increase their production volumes and penetrate their competitors' markets. But this offensive is occurring in a global space which is undergoing a process of repositioning under the impact of four different, and sometimes contradictory, processes: financial globalization, the liberalization of world trade and deregulation, the constitution of regional entities around each pole of the Triad and finally the emergence of the newly industrializing countries, particularly in Asia.

These are having a major effect on the automobile industry as they reinforce the global character of the competitive process.

Financial globalization

While the internationalization of the automobile industry remains undefined, particularly with regard to the form it takes (globalization or regionalization), financial globalization has been largely completed, even if this process has not been accompanied by the development of a system of regulation appropriate to the new configuration. Even without evoking the systemic risks that make the whole world economy fragile (Aglietta, Brender and Coudert, 1990), companies are permanently subject to erratic fluctuations in exchange rates. These fluctuations have enormous impacts on company competitiveness and profitability, and can undermine the parameters of long-term industrial strategy, forcing changes in investment projects (Dohni, 1995). The three principal automobile producing countries, the United States, Japan and Germany, have the three main currencies used in the international monetary system, the US dollar, the Yen and the Mark now the Euro for the European Union which are immediately affected by the transactions of financial institutions and through which governments may try to create new competitive advantages.

Significant and sudden fluctuations in exchange rates affect not only the relationships between the three world regions, but can also occur within regional spaces, such as the European Union in the early 1990s. However, in the second half of the 1990s the most dramatic shifts in exchange rate parities, have taken place in the emerging markets, with the collapse of the Mexican Peso late in 1994, then in Southeast Asia in 1997, Russia in 1998 and Brazil in 1999 (see the paper by Lung in this volume).

Thailand following the 1997 crisis. The globalization of competition is in practice leading to an erosion of the national bases of the automobile industry both in terms of final markets (increased imports and decline of national producers) and in terms of components (internationalization of the components industry) which is making the situations of domestic companies and whole supply chains in every country more fragile.

Even so, the globalization of competition does not imply the creation of a world automobile market. A world market presupposes that in various countries it is possible to find homogeneous products or product ranges and the same price for the final product (vehicle or model range) and for intermediate goods (production equipment and components), which would facilitate an international decomposition of the production process at the world scale. We are far from this situation, in part because the process of regional integration is continuing apace.

Regional integration

The internationalization of economies is occurring largely within the framework of the construction of regional groupings. Integration in Europe is the most advanced case, with its economic and monetary union proceeding beyond the removal of barriers to trade to include the coordination of economic policies. The European union thus constitutes an integrated economic pole, particularly for the automobile industry, in which companies define their sales strategies and their production investments at the continental scale: Europeanization (Bordenave and Lung, 1996; Hudson and Schamp, 1995). In North America, companies did not wait for the official creation of a free trade zone (NAFTA) in order to integrate their markets and production systems. Canada, which was always attractive for the US industry, benefited widely from the Auto Pact agreed with the United States as early as 1966,

Liberalization of automotive trade

The wave of free trade which dominates the end of the twentieth century has brought about the negotiated introduction of new rules to govern international trade. These rules seek to eliminate tariff and non-tariff barriers to trade, either immediately or after transition periods of varying length. The creation of a supranational regulatory body, the World Trade Organization, bears witness to the will to do this even if it is not yet powerful (especially given the prerogatives of the major economic powers, such as Act 301 in the United States). Both the major automobile powers and the smaller countries that have long been concerned to protect their national industry have been affected by the reduction, or indeed elimination, of barriers to trade in automotive products (vehicles and components) which has taken place in recent years.

As far as trade between the United States, Europe and Japan is concerned, tariff protection is almost non-existent and the other forms of protectionism, notably between Japan and its partners, will be phased out. The agreement reached between Japan and the European Union to assure a voluntary restriction of exports by Japanese producers until the final opening of the European market on the 1 January 2000 (Vigier, 1992) illustrates this trend. The abandonment of import substitution strategies has led to the reduction of tariff barriers and elimination of quotas in a range of countries (see the paper by Humphrey and Oeter in this volume).

This tendency appears to be strong even if there have been some reversals in crisis situations. One example is the 1995 decision of the Brazilian government to increase tariffs on automobiles from 20 to 70 per cent and adopt a quota regime until this latter policy was ruled out by the WTO. A second example would be increased tariffs in

while North American investments designed to make the North of Mexico an export base began in the 1980s (Carrillo, 1990; Michelli, 1994; Layan in this volume). The growth of regional integration in the Southern countries (Mercosur, ASEAN) is a more recent phenomenon and is of particular importance to/for the automobile industry, given the significance of economies of scale in the industry.

In a context of the globalization of competition, companies are drawn to develop production activities in every region, including the Asia-Pacific zone, where the integration process is economically dominated by Japanese companies even if it can take institutional forms that do not recognize Japanese political leadership (for example ASEAN). At the scale of each of these regions, companies organize a division of labour that draws on the advantages inherent in each place with its specific competencies. This regional vertical division of labour is very clear at the European scale, in North America with the integration of Mexico and within the ASEAN countries (see the papers by Layan, and by Guiheux and Lecler in this volume).

The emergence of new automobile countries

The globalization of competition is not limited to renewed direct competition among the main automobile producing countries (United States, Japan, Germany, Italy and France). It also includes the emergence of new spaces in the automobile industry, both new markets given potential growth in demand and new production locations given advantages in terms of costs, particularly wage costs. These emerging regions and countries are the focus of the papers in this volume.

The automobile industry is thus greatly influenced by the recomposition of global economic and political space; the globalization of competition is a powerful factor in determining the rhythms and forms of internationalization by companies.

THE GLOBALIZATION OF COMPETITION

Internationalization in turn modifies the context of a competitive game which is dominated by three main characteristics. The first is the geographical redistribution of markets with the search for markets in industrialized and developing countries. The second is the reorganization of production, which has transformed norms of production and trade. The third is the destabilization and deregulation of wage-labour nexus.

The search for markets

As far as demand for automobile products is concerned, the saturation of the mature markets in the industrialized countries stands in contrast to the recent dynamism of the newly emerging countries (see the paper by Lung in this volume). The stagnation of the automobile market in the Triad countries is not simply a cyclical phenomenon (recession in Europe and Japan). It reflects a relative saturation of demand for automobiles with the rate of growth in these markets not exceeding 2-3 per cent per year over the long term. The utilization of automobiles for personal journeys is made almost obligatory by the concentration of the population in urban agglomerations which are often poorly provided for in terms of public transport systems and where living spaces are predominantly dispersed (Dupuy, 1995; Orfeuil, 1994). Mobility can only be achieved through car use. The emergence of multiple car households raises the level of ownership and this leads to urban congestion and increased air pollution. The success of the automobile becomes a threat for its industry in the sense that the car is criticized as a cause of the ills of modern society.

With the threat of radical measures by the public authorities becoming increasingly credible, automobile producers are exploring new social usages of the car (such as car pooling) and boosting research into technical solutions through new functions or new products. If research into non-polluting vehicles (electric cars) does not come up with solutions soon, other ideas will be favoured, notably hybrid vehicles.

Hence new actors are emerging in the industry, such as electronics supplier companies. These actors may better be able to rethink, and thereby save, the principle of a self-propelled individualized vehicle that is diffused to the masses. In a deteriorating context, more radical innovations are likely to emerge outside the automobile industry from actors less restricted than the vehicle producers by previous technological choices (see David, 1985, for a discussion of 'lock in'). In the short term, intense competitive rivalries among automobile producers tend to favour retention of their traditional paradigm. They are obliged to respond to the saturation of demand with an increased segmentation of markets, offering vehicles that are better adapted to new consumer attitudes such as the combination of comfort and practicality of minivans in Europe, light trucks (pick ups) in the United States and even the urban minicar and its electric variants.

Given the saturation of such markets and the emergence of excess production capacity (estimated to be more than two million units in Europe) with the arrival of new producers, the manufacturers sought out new markets in emerging countries. To be sure, markets in the North continued to account for three quarters of global automobile sales in 1997, but the crisis of 1997 in East Asia and its consequences for the emerging markets have intensified competitive pressures on auto companies

Industrial reorganization

The automobile companies are confronted with this new competitive context, and in recent years they have adopted new techniques to manage production so as to permit quality, variety and productivity to be increased simultaneously. Such structural changes arose out of differentiated trajectories (Freyssenet, et al, 1998) and as a function of different time-scales in the creation of coherence within the new 'apparatuses' which link market relationships (productive organization) and management of work (employee relationships).

This diversity of trajectories and the often underestimated plurality of industrial models is a result of the different responses of producers to the new global norms of production and trade in the automobile industry (Boyer and Freyssenet, 1999). Of particular note is the relative levelling of quality gaps compared to the situation that prevailed in the mid 1980s (MacDuffie and Pils, 1994), as well as the relative homogenization of model ranges once producers diversified their models in order to be present in the same major market segments. At the same time, companies (both suppliers and producers) have significantly increased factor productivity thanks to more efficient modes of organization which have permitted the simultaneous management of the main dimensions of production efficiency: quality, variety and productivity. Significant increases in productivity have been achieved recently, even if differences remain. Internationalization therefore offers new opportunities to restore profit margins that have been reduced by price competition and to attempt to rediscover quasi-profitable situations.

There have been reconfigurations of industrial models (Boyer and Freyssenet, 1995), but only at the level of each company that has attempted a more or less complete

process of creating internal coherence and external relevance from a variety of technical, organizational and managerial apparatuses and practices aimed at reducing the uncertainties of the market and the labour process. However, these local reconfigurations have not led to renewed macroeconomic coherence, and this has contributed to continuing uncertainties regarding the evolution of automobile markets.

The destabilization of wage-labour nexus

The reorganization of production has led to a contraction of employment in the automobile industry. This has been worsened by the draconian cost-reduction solutions adopted by both producers and suppliers in order to reinforce their price competitiveness. This process has been dramatic in countries where the sector plays a major role: in France for instance, over the past fifteen years more than 100,000 jobs have been eliminated in the automobile industry. The drop in employment has contributed to an accentuation of the social dichotomies resulting from the destabilization and deregulation of the wage-labour nexus, notably through the crumbling of the systems for collective bargaining which had been created in the postwar period in different forms in different countries (Boyer, 1986). The reduction in employment in the automobile industry has led to an increase in unemployment, both directly through redundancies and especially indirectly through cutbacks in the hiring of young people who have just finished their training. In single-industry regions centred on automobile production, the crisis has been particularly sharp, as for example in Detroit in the United States (Trachte and Ross, 1985), affecting the whole local economy and society. The elimination of jobs in the automobile industry has certainly sometimes been compensated by a rapid expansion of the service sector, yet the precarious nature of the jobs created, the low levels of pay and the absence of

collective bargaining may well lead to a decrease in workers' real wages. In this context, the current questioning of the welfare state further accentuates social inequalities.

This situation tends to raise questions about dominant consumption behaviours and favours the development of new consumer attitudes, particularly new social uses for the automobile, and new expectations about products. Meanwhile, the diffusion of unemployment throughout Europe and the reduction of real wages in the United States are leading to the exclusion of part of the potential automobile market (Froud et al., 1998). Social crisis reinforces the saturation of the automobile market and encourages producers to offer specific products to the low income clientele (Renault Twingo or Fiat Seicento). However the shift in demand towards smaller cars jeopardizes the profitability of producers because profit margins on these cars are lower than for luxury cars.

INTERNATIONALIZATION TO REDUCE COSTS AND INCREASE VARIETY

Cost reduction and increased product variety remain two major objectives for automobile companies wishing to strengthen their competitiveness objectives that are, in fact, compatible in many circumstances (Jetin and Lung, 1996). Internationalization lies at the heart of these challenges, as can be deduced from an analysis of the five main strategies producers are adopting to attain these objectives: the simplification of products (decontenting), the reorganization of distribution, pressure on wages and flexibility of work, reducing the costs of components, and, naturally, the internationalization of production.

The vogue for decontenting

Lately, the vogue within the automobile industry has been towards decontenting the simplification of the product by stripping the car of superfluous complexities. Such complexities directly increase costs through the cost of components manufacture or the 'complexification' of assembly; alternatively, indirect costs result from, for example, excessive weight or even the costs of managing an excessive variety of certain components. The necessary technical or managerial sophistication cannot always be justified, particularly when it remains invisible to the consumer and contributes no additional use value to the product. To a certain extent the vogue for decontenting is, in large part, a compensation for excesses on two levels: firstly, in terms of the introduction of new technologies aimed at improving comfort, quality or safety, which has led to a significant rise in the real price of cars recently (while real wages remained stagnant or even fell); secondly, through an excessive proliferation of model varieties and of variations for each model.

These excesses were particularly noticeable in Japan during the economic boom (bubble) of the latter half of the 1980s, so much so that the sudden change in the economic situation revealed an overengineering or fat design that has compelled producers to rationalize costs (Fujimoto, 1999).

Through a process of copycat competitive behaviour, the Americans followed suit, and then the Europeans imported this tendency, just as before with reengineering or benchmarking. While decontenting is not a major factor in internationalization, it may go some way towards facilitating it through a rationalization of models and components from a global perspective (parts sharing, fewer platforms).

The reorganization of distribution

Prior to the vogue for decontenting, another strategy adopted by producers to curb costs was the reorganization of distribution systems. There is much room for manoeuvre in this domain, given that marketing and distribution costs account for close to a third of the sale price (excluding taxes) of a vehicle. The concern to curb distribution costs is not only an outcome of competition among producers but also a reaction to the appearance of potential new competitors in the automobile distribution sector. Producers are having to take account of the shift towards the sale of new vehicles by new large independent distribution groups such as AutoNation in the United States, the effects of competition on services linked to distribution from specialized automobile repair groups (such as Kwick-Fit and Midas) and the effects of deregulation of distribution in Europe (Chanaron and Jullien 1999).

Automobile producers have, therefore, been forced to rethink their distribution systems by testing new forms of distribution, notably at the launch of innovative products (for example, with the marketing of the Mercedes/Swatch Smart urban minicar). Nevertheless, experimentation has been limited, and restructuring largely confined within particular countries, even in Europe. Distribution practices are rooted in a strong institutional inertia, reflecting not only the impact of national regulations but also the cultural practices of consumers, as illustrated by the traditional distribution system in Japan. In this context, one might speculate on the possible emergence of large international distribution companies that might become a threat to the automobile producers (Jullien, 1999).

In order to reinforce their positions during these negotiations (whether explicit or implicit) and obtain concessions from their employees, most companies make use of a double threat:

- The first is relocation of production operations abroad. Widely used throughout the 1970s against workers in the automobile industry in the United States (towards Canada and then Mexico) and Great Britain (relocation to Spain), this strategy paid off. The same tendency is currently operating in Germany. While the traditional advantage of German industry (its non-price competitiveness) is crumbling under the impact of growing foreign competition, particularly from Japan, its high salary costs make the idea of relocation abroad increasingly credible. Most of the automobile producers operating in Germany have obtained significant concessions from the unions (VW, Mercedes, Opel, Ford). In a reversal familiar to history, after having been associated with threats to British workers (Bordenave and Lung, 1988), Spain has now itself become threatened by the prospects of relocation from Southern to Eastern Europe.

- The second threat is the externalization of production of components previously undertaken internally, when suppliers are able to offer the same products at lower costs and with a wide adaptive flexibility (volume, quality, just-in-time, technical competencies, and so on).

Pressure on the supplier industry

Pressure on suppliers is another basic strategy in the automobile industry aimed at reducing costs, given that almost 70 per cent of the value of a car is produced by the components industry and subcontractors. With the reinforcement of price

Pressure on wage costs

The third avenue for producers to curb their costs is well known: containing or reducing wage costs. While these costs represent only a small part of the value of the automobile (7-10 per cent), companies are permanently concerned to limit the growth of direct and indirect wages paid to automobile workers (or to social welfare institutions) so as to avoid cost inflation. While the indexing of wages to prices whether tacit or recognized in collective agreements characterized the golden age of Fordism, de-indexation is now the norm, and the tendency is to vary wages as a function of the company's economic results as a form of profit sharing. Producers are also attempting to obtain a fresh start from their employees and unions with regard to modes of organizing work, reconfiguring the employee relationship in order to obtain greater internal and external work flexibility. External flexibility involves the various means of facilitating the quantitative adjustment of employment levels as a function of the short-term economic situation: hiring and laying off, seasonal adjustments to weekly working hours over the course of a year, and so on. This concern may be compatible with claims made by unions for shorter working hours, and hence negotiations between union and management may permit progress in this area. Volkswagen has, therefore, at least temporarily, conceded a 28.5 hour week to its German workers, which has allowed the company to deal with a surplus labour force. However, what is also at stake in such negotiations is often the internal flexibility of labour through the redefinition of modes of involving workers, notably within a teamwork framework (Durand, Stewart and Castillo 1999), the intensification of work, and schedules that allow the longer use of equipment (for example night and week-end shifts) so as to accelerate the rate at which it is amortized.

competition, producers have, therefore, turned to their suppliers in the search for significant price reductions.

The rationalization of the supplier industry should accelerate therefore, particularly under the impact of the globalization of this sector which constitutes one response to the various pressures placed upon it. Companies have to reinforce their technological competencies if they are to design components with a high technology content (electronics, composite materials, and so on); use high technology processes, and supply products to the highest quality standards, not only in terms of absence of defects but also in terms of product integrity (characteristics in use). Hence, there are strong pressures to innovate. These competencies have to be consolidated when producers delegate a growing proportion of the design, production and assembly of components, and even whole functions and subsystems of vehicles, to their suppliers. Suppliers, therefore, need both improved competencies and lower costs, which constitutes a force for relocation of labour intensive activities to countries and regions with low wage costs, such as the peripheries of the Triad.

Global sourcing is becoming a leitmotiv; this involves a special supply relationship between the producer and the supplier (often the sole supplier of the component in question) which supplies all of its client's factories, wherever they are located worldwide (see the chapter by Humphrey and Salerno in this volume). The assembly lines may be supplied by components imported from a global factory or by products manufactured at a supplier factory located in the same country or region as the assembly plant. Global sourcing permits both:

- Reliance on a supplier of international scale, which has the requisite capabilities (Chandler, 1992) since it has developed basic competencies and possesses adequate financial resources to invest in research and development and to innovate by offering new components;

- Costs cutting thanks to economies of scale permitted by increased production volumes.

Hence the concentration of the supplier industry (Chanaron, 1999) appears to be accelerating through merger and acquisition tendencies operating at the global scale. The criss-cross flows of investment across the Atlantic are reinforcing the presence of American suppliers in Europe, and the European industry has tried to respond by investing in the United States and around assembly factories being built in emerging countries. Internationalization continues the industrial concentration already taking place under the impact of the restructuring of supplier relationships through the adoption of hierarchical patterns (Chanaron, 1995; Helper, Sako, 1999). This is not to be interpreted as an alignment with some Japanese model of supplier relations; Japan itself is being affected by a questioning of traditional supplier relationships (Guiheux and Lecler in this volume; Lecler, 1998).

At any rate, globalization has become the key word for an automobile supplier industry, which is now being thoroughly restructured by this race to global scale. The outsourcing of a significant proportion of production and the growing diffusion of modular assembly (Lung et al, 1999) reinforce the role of the major multinational supplier companies. With their specific technological competencies and extensive financial resources, they can negotiate on an equal footing with the automobile producers. This will stimulate changes in power relationships between the participants in the automobile system and lead to a reconfiguration of relationships between producers and suppliers.

special vehicles that some producers offer in the emerging markets can be developed on the same platform, which reduces design costs and the lead time (time to market), and increases economies of scale for shared components.

Hence the Palio, developed on the platform of the Fiat Uno model, may be produced in volumes up to 1 million in the new car emerging countries of the South and in Eastern Europe (Balcet and Enrietti, 1998, 1999). Similarly, the papers by Guiheux and Lecler and by Fujimoto and Sugiyama in this volume discuss the development of Asian cars for South East Asian markets by Japanese producers. Increased variety involves a broadening of the product range through an increased number of models and variants and accelerated product replacements. This increased variety cannot, however, be permitted to generate excess costs, and this leads the producers:

- To utilize components and platforms to the maximum (commonalization, platform strategy)
- To conclude alliances with competitors for low volume vehicles and components (de Banville and Chanaron, 1999)
- To delegate a significant proportion of development, production and even assembly to suppliers. This externalization reduces financial commitments and therefore the risks run by the producer.

The evolution of the automobile product

These developments assume both a certain convergence among the principal markets so that platforms can be shared among models which respond to the different expectations of consumers, and a technical development of the product towards a modular vehicle concept. Here, there are two contrasting conceptions of the

The internationalization of production

Finally, and more directly, cost reductions may be based on the internationalization of production. Internationalization permits companies to benefit from economies of scale, as firms relocate to emerging countries and simultaneously maintain a presence in the markets of the industrialized countries. In practice, at constant volumes, the production and sale of the same products across different markets, rather than the sale of country- or region-specific products, leads to economies of scale. The global car strategy takes up the attempts to create a world car by the Americans in the 1970s as a response to successful Japanese incursions into various markets (Maxcy, 1981). The aim is to produce and market a vehicle in the major markets (particularly those of the Triad) which responds to the expectations (sometimes diverse) of consumers in these markets, sharing a number of components whilst accepting local adaptations. This strategy, which was initiated by Ford (Bordenave, 1998), is now being taken up by General Motors. To a certain extent, Japanese companies are involved in an inverse tendency with their strategy of local adaptation of models while they had previously marketed an homogeneous product throughout all their markets (on global localization for Honda, see Mair, 1994).

If we accept that there is a relative convergence of automobile markets, 'commonalization' and the sharing of principal components fit in with the automobile producers' strategy to reduce the number of platforms used at the global scale (Table 4.1). The idea is to distribute, over a greater volume, the growing costs of designing an ever increasing number of models the life cycles of which are reduced due to the accelerated pace of product replacement. The platform strategy permits cost reduction to be reconciled with the greater variety that results from the competitive battle: the new products in the industrialized country markets (minivan, urban minicar) and the

automobile product. From one perspective, the automobile is a product-system. Several examples illustrate this proposition: the way the vehicle holds the road does not depend only on the steering but on a chain of reactions within the whole vehicle; vibration and acoustic characteristics are determined by numerous components and their way they are arranged. The car is a product system in the strong sense of the word system: the characteristics of the vehicle are more than the sum of the characteristics of the parts. The increasing demands of consumers for quality (product integrity) should lead producers to design low volume yet better adapted products.

Table 4.1 Platform Strategies

<i>Automaker group</i>	<i>Brands</i>	<i>Number of world-wide (passenger cars only) platforms mid-1990s</i>	<i>planned</i>
Volkswagen ^(a)	VW, Audi, Seat, Skoda	16	4
Fiat	Fiat, Lancia, Alfa-Romeo	7	3
PSA	Citroën, Peugeot	6	3
Renault ^(b)	Renault	5	3
Nissan	Nissan, Infiniti	24	5
Toyota	Toyota, Lexus	20	7
Ford ^(c)	Ford, Lincoln, Mercury, Jaguar	24	16
General Motors	Chevrolet, Buick, Oldsmobile, Pontiac, Cadillac, Saturn, Opel, Vauxhall, Saab	14	7

Notes (a) Except luxury brands (Bentley, Bugatti, Lamborghini)

- (b) Excluding the Dacia subsidiary in Rumania.
 (c) Number of platforms for passenger cars and light trucks - before the take-over of Volvo.
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Sources: Companies, Press.

From a contrasting perspective, the automobile product is considered to be modular; it can be reconfigured, at least partially, by modifying the various subassemblies. This is the conception of the car which prevailed at the inception of the industry with a separation between the design and production of the chassis on the one hand, and that of the body and the fitting of the interior on the other, or again that of the engine and the mechanical components. This conception has been maintained in the truck industry and perfectly corresponds to the demands of commonization and the delegation of design, production and the assembly of subsystems to suppliers. Given the specificities of the truck industry, the first experiments took place in an assembly factory for Volkswagen trucks in Brazil (Marx, Zilboevius, Salerno, 1996). Modular assembly is now diffusing, especially in greenfield sites in emerging countries (see Humphrey and Salerno in this volume).

These developments position product design and the organization of design at the heart of current restructuring processes. Product development at the global scale implies new methods in relation to different markets and in the management of relationships between the different services and departments involved in the design of a world car. The aim is to have all employees belonging to different services (for example marketing and design) and who are located in different world regions (for example marketing employees in Europe and the United States) working together. The platform-based strategy, and more broadly the modular vehicle, also entail the redefinition of organizational and design methods, to the extent that the early involvement of suppliers in the development of new products becomes the norm (Lecler et al. 1999; Laigle, 1995). Following the restructuring due to the introduction of simultaneous and concurrent engineering techniques (Clark and Fujimoto, 1991; Midler, 1993; Jürgens, 1999), globalization may bring about new changes to the organization of product development by automobile producers.

affecting the coherence of the whole, unless the differences were profound that they produced significantly different income distributions and therefore different automobile markets. This would undermine the hypothesis of an homogenization of global demand.

The intermediate scenario, regional diversification/global commonalization, presupposes that without attaining complete homogenization both product markets and work share certain fundamental traits across the different world regions, only being differentiated by secondary factors. In this framework a strategy of sharing principal components (global commonalization) and platforms and a relatively similar policy regarding the basic elements of workplace relationships would enable companies to offer both differentiated regional product ranges and workplace relationships with regional specificities which would still be targeted at the same ends, for example, flexibility and polyvalence.

This scenario would lead to a centralization of platform design and the creation of an overall employment policy and would lead to a globalization of components production and, consequently, of the supplier industry. At the same time, it would be accompanied by a regionalization of model design, locally derived from global platforms, and of course of their production. Autonomy would remain in the determination of concrete modalities for workplace relationships as a function of the local context (with respect to rules regarding wage determination, for instance). One might imagine that production could be transferred between regions if necessary, since each factory would assemble different models on shared platforms. Global planning of production programmes might therefore be envisaged. Ford and Honda display some of these characteristics.

Finally, in the regional heterogeneity scenario, homogenization clashes more directly with the creation of differentiated regional complexes. In this hypothesis, it is the

WHICH STRATEGIES OF INTERNATIONALIZATION?

The success of the internationalization of automobile companies and their suppliers will depend upon their aptitude for facing the multiplicity of uncertainties about markets and employee relations. Moreover, the survival and position of companies will depend on the success or failure of this internationalization. Hence the working out of internationalization strategies will largely determine company futures. These strategies can initially, at least, be grouped into three major scenarios: 1) global homogenization at one extreme, 2) regional heterogenization at the other extreme, and 3) regional diversification / global commonalization as an intermediate outcome.

The global homogenization scenario would correspond to the case in which the liberalization of global trade prevailed over the processes of creating more restricted economic spaces, with all automobile markets or at least the most important amongst them tending to homogenize, with employment conditions converging under the impact of constraints that were common to all. At this point, the decision to create a global model range would be relevant, whether a full range or a niche range. This scenario assumes that the reduction or elimination of customs duties is not substituted by other restrictions on trade, notably local content requirements. In the medium term at least, companies should invest where they want to sell, though even in this case the creation of a world model range is by no means impossible.

In this context, a strategy of internationalization might consist of specializing production operations and regions in one segment of the model range, either for components or for finished vehicles, in order to benefit from maximum economies of scale. Given that each region is specialized in one segment, one can imagine that each local subsidiary might have its own particular socioproductive system without this

dynamic of regional integration that prevails, including the integration of countries at different levels of development and with somewhat different competencies. Within each region this dynamic produces a specialization and concentration which relaunches growth. However, regional integration may assume different forms. These include simple free trade zones (in which economic and social power relationships are permitted to work themselves out) or true economic, political and social integration (in particular, involving a controlled policy to increase the purchasing power of the population).

Markets and work would be so different, and permanently so, between world regions that product ranges and employment policies would be specific to each region, except for interregional trade in some niche markets. This scenario could tolerate the persistence of less internationalized companies, which would remain local players with an intricate knowledge of the regional market and great agility. However, given the handicaps which this type of company would experience (see above), this scenario seems to support a multiregional configuration: regional subsidiaries would have great autonomy in terms of their product strategies, but the group would exercise financial control and probably distribute knowledge and experience between the different regions. Here we recognize 'Multi Regional Motors', described as the optimal form of international organization in Chapter 8 of *The Machine that Changed the World* (Womack, Jones and Roos, 1990) in contrast to the 'global company'.

Our intention, therefore, is to question the idea of the globalization of the automobile industry (Solvel, 1988; Chanaron and Lung, 1995) and to explore the hypothesis that the creation of new economic regions and their coexistence will produce new heterogeneities that go beyond short-run or apparent convergences. This viewpoint is justified because they are constituted by different economic, political and social processes. Consequently such processes can be contradictory and lead to social and

political tensions with uncertain outcomes. They will therefore enter competition maintaining or endowing themselves with particular advantages.

Automobile companies therefore coordinate their activities across the different regions of the world according to approaches which fit their internationalization strategy. The variety of configurations is greater when the scopes of activity of different companies have different contours and are heterogeneous. Even when faced with the same environment, companies organize themselves in different ways depending upon their own history, their previous learning and their strategic horizon.

Hence, while the two principal American producers, Ford and General Motors, have had parallel internationalization trajectories for more than seventy years, operating in the same regions according to very similar chronologies, there have been significant differences throughout this history (Dassbach, 1989), as there are today (Bélis-Bergouignan, Bordenave and Lung, 1996). With its Ford 2000 plan, Ford has launched the global integration of its activities with a transregional configuration based on local competencies (United States, Europe, Japan). GM is following its rival, but it remains within a bi-regional structure with GM North America on the one hand and Opel, in charge of the rest of the world, on the other. A similar variety of structures can be seen among Japanese firms (Boyer and Freyssenet, 1999); the idea that they are converging towards a single model of globalization may be disputed.

Following this, it is necessary to examine the development of the new regions involved in the internationalization of companies in other words, the emerging countries or regions which are being created if we are to understand the likelihood of success of the various internationalization strategies. For each type of region we need to know how markets work and what institutional frameworks (in particular state intervention) are evolving. Beyond this overall framework, we need to identify the problems being encountered by companies, given their international structures and

industrial models, the solutions they have discovered and their performance in each location. It would appear essential to analyze the impacts of investments on host regions as functions of the modalities of local penetration (relationship with the local industrial fabric or position in the international division of labour organized by a multinational company, for instance), particularly with regard to the development of the technological potential of these emerging countries.

Translation by Sybil H. Mair

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