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THE U.S. AUTOINDUSTRY: CAN IT ADAPT TO GLOBAL COMPETITION?

by Christoph Scherrer

Until the 1970s the U.S. automobile industry developed largely independent of global competition. In line with most domestic manufacturers its products were designed solely according to the specificities of the domestic market. Exports were seen as a bonus to normal business operations, which therefore did not require special attention (Edmonds 1983: 67). Instead foreign markets were primarily served by the domestic producers' foreign subsidiaries with largely autonomous product developments. During the last decade, however, the supremacy of the three major domestic manufacturers, the so-called "Big Three", i.e. General Motors, Ford, and Chrysler, was challenged in their home turf. Starting in the small-car segment, foreign producers were able to capture ever increasing market shares. With the recent decisions of some foreign auto makers to invest in domestic assembling facilities even import restrictions or manipulations of the value of the Dollar will no longer be effective tools for insulating the "Big Three's" North American operations from foreign competition. The domestic automobile production has become permanently integrated into the global circuits of competition.

The initial difficulties the U.S. automobile industry faced in adjusting to this new competitive environment became the object of public debate. As Lawrence and Dyer have so pointedly remarked, "in a crisis of such magnitude, there is plenty of blame to go around, and there has been no shortage of critics (inside and outside the industry) offering opinions as to what went wrong" (1983: 17). Though in the meantime the "Big Three" have managed a spectacular come-back, doubts remain about their competitiveness. The skepticism is nurtured by the continuing successes of foreign imports, which captured a record

market share in 1985. Since the "Big Three" have spent an enormous sum on retooling their production facilities, the rising tide of imports seems to vindicate those who have argued that attaining parity with these foreign producers involves more than realigning the product line and implementing state-of-the-art technology (Abernathy 1982: 3). More specifically, a number of academic studies concluded that the past structure of the whole complex productive federation of the industry have been a major structural barrier to a swift adaptation to the new conditions of competition (e.g. Rothschild 1973, Auto Situation 1980: 59; Abernathy et al 1981: 13-24; Ouchi 1981; Altshuler et al 1984: 171-175, Piore and Sabel 1984).

For an inquiry into the validity of these accusations the locations of the structural difficulties for smooth adaptation have to be analyzed. Accordingly, this study will be guided by the following questions:

> which structures were perceived to be inadequate for the new condition of competition, which ones were changed and to what extent, and what were the restrictions for more profound changes?

While it can be shown that certain structural elements caused competitive disadvantages to the domestic auto manufacturers, doubts will be raised as to whether the industry could have adopted a mix of coordinating mechanisms more conducive to international competitiveness at an earlier point in time, as White (1982), Lawrence and Dyer (1983), and Salter et al (1985) have argued. In contrast to these studies the analysis here proposes the hypothesis that

> a change of the industry structure in favor of a more flexible response to foreign competition was only possible in the context of the internationa-

lization process and that the crisis functioned as a midwife for these changes.

In the analysis of regulatory influences on adaptive capabilities of industries one faces the basic technical problem of how to define and measure successful adaptation (Dyson and Wilks 1983: 250). The 80.000 former Chrysler workers probably view the drastic cost cutting measures imposed by the new management team of Lee Iaccocca differently than the stock market analysts of Wall Street. In accordance with most scholarly literature this article will view the Japanese automobile industry as the standard against which the domestic assemblers will be compared. This viewpoint intentionally excludes the social or socio-economic impact of the modernization process of the domestic auto industry. This should, however, not imply that the social consequences of the present modernization process are condoned.

The presentation of argument will start with a brief discussion of the main causes and the macro-economic framework of the industry's competitive problem.

Then the major transformations that have occurred in the structure of the automobile industry will be analyzed in three case studies. Specifically, the first case pertains to the problems of organizing the production chain through the means of corporate hierarchies. Recent developments seem to encourage a reduction of the vertical integration in favor of an expansion of market relations in the coordination of the parts production. The current attempts to modify these market relations through closer cooperation, mainly via interorganizational networks, will be object of the second case study. The third case addresses the attempts to substitute the former contractual, "adver-

sary" labor relations through more informal, consensual exchanges.

Finally, the case studies' findings will be related to the guiding hypothesis, i.e. that a change in these structures has to be understood in the context of the crisis. This study will end with a brief outlook on the current structural trends in the U.S. auto industry.

II. The Causes of Decline

The crisis of the U.S. automobile industry became evident when the second Mideast oil restriction was met with a deflationary policy of extremely high interest rates and an over-valued dollar. Its major companies reported losses that were records in the history of U.S. business. The beginnings of this crisis, however, can be traced back to the first oil price shock in the early 1970s when a dramatic increase in the demand for small cars coincided with the closing of the productivity gap between U.S. and Japanese auto makers. This shift in consumer preferences and the intensified international competition represent the new environment for the domestic car industry.

II A. Shifts in Consumer Preferences

Until the oil embargo of 1973/74 consumer preferences were surprisingly predictable. The annual face-lifting was in essence little more than a sales incentive in a saturated market. The basic concept and mechanical components remained much the same. Mainly, the American automobiles became only longer (from 1950 to 1974: from 197.5 in. to 222.7in.), heavier (3,145 lb. to 4,389lb.), stronger (216.5 cu in. to 350 cu in.), thirstier (from 1940 - 1973: 15.3

mpg to 13.1 mpg) and more convenient (e.g. automatic transmission, air-conditioning) (OTA 1979: 304, 307).

General prosperity and declining prices for gasoline[1] have contributed to these fairly steady increases in size and performance. This product continuity allowed the manufacturers to perfect their system of standardized mass production. On an incremental basis, without radical innovations in the production technique (Abernathy 1978: 145), it was possible to achieve relatively steady gains in labor productivity (yearly 3.4 % from 1957 to 1979, Bureau of Labor Statistics, 1982). However, the slow market growth did not allow for many new production facilities. The implementation of new technology was therefore only possible under the less favorable conditions of a "brown-field modernization" (see steel part 5, p.5, and Abernathy 1978: 86-114). An exception was the production facilities for the "compacts" and "sub-compacts", which were build on greenfield sites (e.g. Lordstown).

The first Mideast oil restriction which caused rapid increases in gasoline prices[2] and a temporary rationing of the gasoline supply in the spring of 1974 shifted the consumers' attention from the sticker prices to the costs of operating an auto per mile. While keeping their expenditures for individual transportation relatively constant, private households postponed their new car purchases and turned to energy-efficient small cars (Goldschmidt 1980: 4).

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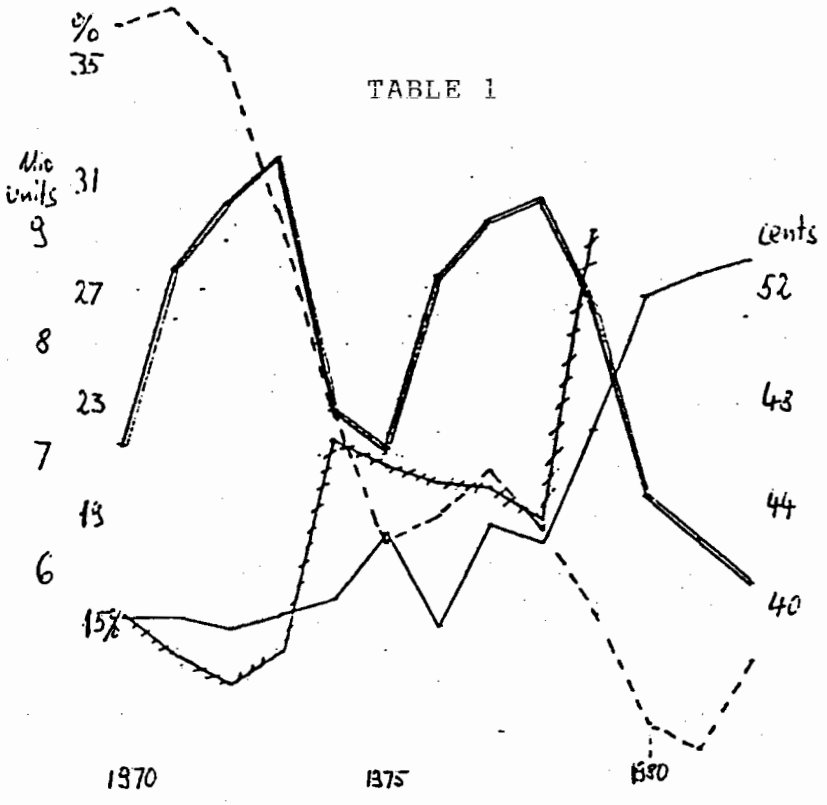
[1] Average gasoline prices in constant (1972) dollars declined from 44.4 cents in 1960 to 37.8 cents in 1972 (Auto Situation 1980: 14).

[2] Measured in constant (1972) dollars gasoline prices rose from 38.9 cents in 1973 to 46.5 cents in 1974 (Auto Situation 1980: 14).

TABLE 1



- - - U.S. "Standard" sized car retail sales in percent of total sales.
═══ Domestic retail passenger car sales in million units
——— Import car retail sales in percent of total sales
Average gasoline prices, constant (1972/dollars)
Source: MVMA, Auto Situation.

The increasing demand for small cars placed the American producers in a difficult situation. On the one hand their capacities for small car assembly were not sufficient to meet the rising demand (Auto Situation 1980: 13), but on the other hand this market segment provided for only slim profit margins. Furthermore, the temporarily regained popularity of large cars made the necessary adaptations difficult to calculate (Table 1 shows the volatility in the demand for the standard sized American car as well as for all vehicles since the early seventies). A swift reaction to these sudden shifts in consumer preferences necessitates a more flexible organization of the production process. Flexibilization, however, is at odds with the economies-of-scale of standardized massproduction (Dohse et al 1984: 3).

II B. The New Global Competition

The attempts by other domestic automobile manufacturers to establish themselves as serious competitors of the "Big Three" failed in the first postwar years. The large financial requirements for an efficient mass production and the substantial economies-of-scale in the organization of sales and services proved to be prohibitive (Lanzillotti 1971: 263-265).

The first large scale entrance into this tight oligopoly is attributable to the VW-Beatle. Small, sturdy, and cheap the Beatle successfully carved out a niche in the lowest market segment.[3] The domestic producers did not respond at first (presumably to wait if this market segment became sufficiently large for profitable mass production, White 1971: 184), but later they introduced, with quite considerable success, their own "compacts" (e.g. Chevy Corvair). The same procedure was repeated during the second wave of imports at the end of the 1960s: with the help of the "subcompacts" (e.g. Ford Pinto) the market share of imports was stabilized at about 9 per cent. From 1970 on, however, fueled by the two oil shortages imports conquered ever increasing market shares, until they reached 27 per cent in 1981. These high levels of import penetration, which were not compensated by a equal number of exports, profoundly destabilized the traditional market arrangement. While at first these new competitive conditions only governed the lower market segments, today foreign products compete successfully in all markets except for the specifically American "standard". In the luxury segment European automobiles set the trend (New York Times 11-1-1984).

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[3] Extremely important for its success was Volkswagen's emphasis on an efficient sales and service network (Rae 1984: 120). FIAT and Renault may have failed to penetrate the U.S. market because they did not develop such a service organization.

Increasingly the competitive lead of the imports derives from better workmanship and superior driving abilities (Auto Situation 1980: 47). But while these product qualities incur high costs in Europe, the Japanese producers manage to combine quality with substantially lower production costs. Although the various studies on cost differentials have to be treated cautiously since they display many methodological inaccuracies (Flynn 1983: 83), no doubts exist that the Japanese enjoy a substantial cost advantage. The production cost advantages ascribed to the Japanese vary from $ 1,300 to $ 2,200 (ibid.).[4] The following factors are generally mentioned as explanatory variables:

Wage costs: Hourly compensation costs in Japan rose from 38 percent in 1975 to 44 percent in 1981 of the American average (Altshuler 1984: 208).[5] The studies cited by Flynn display a variation between 40 percent and 60 percent for various years (Flynn 1983: 94).

Organization of the labor process: The Japanese developed a new system of the division of labor that combines the functions of production, quality inspection, and repair in one job. Considerable savings of indirect labor derive from these practices. Accordingly, using comparable production technology Japanese producers are able to achieve higher levels of productivity without jeopardizing quality (Dohse et al 1984: 9). In numbers, the Japanese producers needed only about 65 percent of the labor

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[4] The International Automobile Program estimates that the U.S.-Japan production cost difference on a typical smaller car exceeds $1,500 (at 215 yen = $ 1) (Altshuler et al 1984: 155).

[5] During the same time the dollar lost 35 % against the Japanes yen.

required in the American industry to produce a comparable product in the early 1980s (Altshuler 1984: 159). Flynn's studies estimated a range of 40 % to 85 % (Flynn 1982: 48).

Capital costs: According to MIT's international automobile project Japanese producers seem to require much less plant and equipment per unit produced. Major advantages result, however, from lower in-process inventories (Altshuler 1984: 161). These saving are achieved by means of "Just-in-Time" production scheduling (see section IV B).

General conditions of production: Japan's lower wages and higher labor productivity are not achieved at the expense of labor peace, but are accompanied by lower levels of absenteeism and less frequent strike activities.[6]

Another keystone for Japanese success seems to be the especially tight forms of cooperation between the assemblers and their suppliers. Legally separate, but financially linked through minority stock holdings, hundreds of suppliers are clustered around the major assemblers. These networks, or industrial groups, promote a close operational coordination that increases flexibility and innovative capacities. Furthermore, the legal separation of the component producers allow for wage differentiations (Altshuler 1984: 147). Similar close relations to the financing sources are supposedly instrumental for strategic, long term planning (ibid. 151, Edmonds 1983: 95). All of these private arrangements seem to be reinforced by government policies (e.g. through manpower programs; Friedman 1983: 385).

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[6] Inthe U.S. unscheduled absenteeism ranged from 7-11 % in the late 1970s, whereas in Japan the number was only 2 % (Harbour 1980: 29). For a critical discussion of the post war industrial relation system in Japan and the defeat of independent unions at Toyota see, Shirai 1983.

Together with the unsaturated domestic demand for automobiles in Japan[7] these advantages resulted in a virtuous dynamic for Japanese automakers - (A dynamic that not only provided for the financial means to implement the latest technology, but also enabled them to move from market followers to market definers in many classes of automobiles).

In contrast, the loss of market shares by the "Big Three" caused low levels of capacity utilization that limited their potential productivity gains as well as their financial resources to modernize their production capacities. If this vicious circle were to be overcome, however, the domestic producers would have to alter their production and organizational techniques radically.

III. Case Studies

In the preceding section four major areas have been identified in which the domestic producers suffer a comparative disadvantage: labor relations, production organization, supplier relations, and financial resources. The recent attempts of the domestic producers to overcome their deficiencies in three of these areas will be the subject of the following case studies. The first two cases will analyze the "Big Three's" plans to revamp their entire approach to parts sourcing. They want to carry out a three dimensional attack on the previous structure. First, they are seeking to reduce their level of vertical integration. Secondly, they intend to deal with fewer outside vendors, and thirdly the nature of the relationship with these fewer suppliers will be reformulated. The third case will cover

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[7] 203 automobiles per 1,000 persons in Japan versus 537 in the U.S.A. in 1980 (Altshuler 1984: 108).

the attempts to eliminate the rigidities of the system of industrial relations in the auto industry.

III A. The Move Towards Outsourcing

In the beginnings of the automotive industry the majority of car makers were actually only assemblers of parts (Katz 1977: 253). In the twenties the major producers started to manufacture components on an increasing scale in-house either through acquisitions of already established parts manufacturers or through internal development (White 1982: 143). In the post-war period the remaining automobile producers had achieved a high level of vertical integration. In 1963, about 78 percent of all parts shipments[8] originated from plants owned by these vehicle manufacturers (Nelson 1970: 25). The industry's leader, GM, has historically bought 10 to 15 percent of standard components outside and produced the rest in-house. Ford used outside vendors for 40 to 50 percent of its parts requirements (Hunker 1983: 31), and Chrysler for about 70 percent (Purchasing 7-25-85).[9] AMC has remained much less integrated (White 1971: 86), and has bought many "mandatory" components (e.g. catalytic converters) from GM (Schnapp 1979: 123). For a number of parts, the auto companies have relied both on in-house production and outside sourcing. This practice is called partial or tapered integration (White 1971: 80,83). When measured on the basis of the Adelman-index (ratio of value added to sales) the industry's vertical integration was only at or

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[8] Other than electrical items, pistons, piston rings, springs, carburetors, valves and lamp bulbs.

[9] "... sometimes producing 100 percent inhouse, sometimes depending entirely on outside suppliers" (Hunker 1983: 31).

below average for all manufacturing.[10] The Adelman-index, however, does not catch the multitude of processes and components that go into an automobile.[11] There are thousands of possibilities to replace real market transactions by internal transactions (Chrysler used to employ 70,000 different parts).

Reflecting this multitude of parts, the assemblers are served by about 2,500 primary U.S. suppliers (Business Week 10-14-1985: 94). In addition they purchase from many thousand more companies, who are not primarily auto parts producers. Chrysler, for example, buys from 15,564 suppliers, of which 500 vendors supply about 80% of its requirements (Purchasing 7-25-85). Among the primary suppliers some companies belong to the Fortune 500 and are technological leaders in their field, holding extensive patent rights.[12] The overwhelming majority are small or medium sized companies, of which again some are high-tech specialists. Many other are very dependent on the major assemblers or the principal suppliers.[13]

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[10] In 1978 (figures for 1955 in parentheses), the ratio was 48.5 (40) percent for GM, 39.0 (35) percent for Ford, and 33.2 (30) percent for Chrysler, compared with 43.1 percent for all manufacturing in 1976 (White 1982: 414; for 1955 Katz 1977: 254).

[11] For a discussion on measuring methods that are based on the Adelman-index, see Dirrheimer 1981.

[12] For example: "The Gemmer Manufacturing Company and Bendix controlled the key patents on power steering. Kelsey-Hayes and Bendix developed power brakes, and Bendix and Budd, disc brakes" etc. (White 1982: 417).

[13] A Bureau of Labor Statistics survey of 852 parts suppliers shows that establishments in the category of 50 to 249 employees employ 33 percent, the one's in the category of 250 to 499 about 25 percent, and the one's in the category of 500 or more about 42 percent of the total 170 thousand production workers (calculated, Monthly Labor Review 5-85: 40).

So far, the Big Three were already successful in decreasing their vertical integration. About 47 percent of their parts were bought from outside in 1985, and for 1990 this percentage is supposed to increase four points (Arthur Andersen & Co. as quoted by Business Week 10-14-85: 94). GM has increased its third party sourcing from about 15 to 30 percent, and plans to buy 80 percent of the parts for its new Saturn car from outside suppliers (New York Times 5-8-85: IV,5). At the same time the Big Three want to drop 20 percent of their direct suppliers, i.e. those who ship directly to the auto assembly plants (Business Week 10-14-85: 94). In 1982, for example, GM announced that it will cut the number of its suppliers in half within a couple of years (Automot Ind 12-82: 34). This apparent contradiction unravels in light of the push for "modular" assembly. The concept of "modular" assembly implies that the supplier engage in the subassembly of car sections, such as instrument panels and suspension systems, so that fewer and larger sections of a car are joined together in assembly plants of the vehicle manufacturers. The result will be a pyramid of assemblers, where the top will be occupied by a few large companies that will deliver the subassembled modules to the final assembly process. These companies will be supplied with the discrete parts by second-tier vendors, which in turn may be served by even lower-tier suppliers (New York Times 10-5-85, Business Week 10-14-85: 94). Until this futuristic model becomes reality (the high amounts of sunk investments will ensure a slow pace of transformation) it is quite likely that while more components will be subassembled previously to final assembly, the "Big Three" will continue to deal with many small suppliers. In fact, specialty work in machine maintenance and repair as well as engineering designs are handed out on an increasing scale to small contractors (McCosh 1984: D1-D2).

How can this transformation of the traditional balance between corporate hierarchy and market transactions be explained? A leading observer of the industry, after having listed all the pros and cons for vertical integration, found it "hard to predict on a priori grounds exactly what the pattern of integration and supplier relations will look like in the auto industry" (White 1971: 81f). Since then, however, a theory has been developed for the optimal degree of vertical integration (compare Williamson 1975: 253-258, Teece 1976). Its basic theorem is that economic transactions, regardless of whether they are executed internally or through market coordination, create costs. As follows from equilibrium economics, the optimal degree of vertical integration exists, if the marginal costs of internal coordination equal the marginal costs of coordinating within the market. But what are those costs and how can they be measured? Market transactions are said to become relatively inefficient where prices are not "sufficient statistics" and uncertainty is substantial. This is due to the limited capacity of the human mind to identify future contingencies (bounded rationality) and the opportunistic nature of human beings (i.e. the tendency of suppliers to charge premium prices if they are not challenged by competition). The bounded rationality makes it very costly to assess all possible contingencies and opportunism poses great risks to trading partners if they cannot obtain competitive (large-numbers) exchange relations. In short, markets will be supplanted for internal transactions if the level of uncertainty is perceived to be substantial and if the risk for being cheated by one's trading partner is high (Williamson 1975: 20-40).

Although this theory's elegant simplicity may at first appeal, especially to any neo-classical economist, the differences in the vertical integration of the "Big Three" should disturb its authors. Unless one argues that the

size of a company is positively correlated with the diminishing of bounded rationality and/or of opportunism, it appears odd that the major auto producers should have been exposed to so vastly different configurations of bounded rationality and opportunistic behavior. This theory's basic weakness seems to be that it cannot provide a yardstick for the measurement of uncertainty and risk perception. As the author concedes himself, the danger is that "if transaction costs of a frivolous kind are blown out of proportion, the resulting 'conclusions' are of dubious weight" (ibid. 193).[14]

To a certain degree this seems to have happened in a study Monteverde and Teece (1982) conducted on the question of vertical integration in the U.S. auto industry. Within the framework of the transaction cost theory they tested and confirmed the hypothesis that "assemblers will vertically integrate when the production process, broadly defined, generates specialized, non-patentable know-how" (ibid. 206). Their correlation test, however, displayed large residuals, for which they tried to account with the dummies called "COMPANY" and "ELECTRICAL". "COMPANY" indicates that GM is more integrated into component production than is Ford - a fact not unknown before and still without explanation. The variable "ELECTRICAL" reports that the two companies produce many electrical components themselves although their production does not require specialized, non-patentable know-how. Again the authors do not provide their readers with a clue to this phenomena. A plausible explanation, however, can be found by White. He argues that the higher profits in the replacement market for electrical parts has spurred Chrysler's and Ford's develop-

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[14] Alford and Friedland (1985: 45) criticize Williamson for his assumption that the state is a stable environment within which firms can freely decide whether or not to buy each other out. He rejects power as an explanation of the firms' decisions.

ment of their own electrical equipment capabilities in the 1950's following GM's earlier move (1971: 83).[15]

Despite these shortcomings, I believe that the transaction costs theory, stripped of its exclusive pretensions, can provide some guidance into an inquiry of the causes of vertical integration.

The timing and the scope of the proposed changes in the assembler-supplier relationship seem to be dictated by the competitive pressures the U.S. auto industry faces nowadays. As the industry's survival is at stake, drastic measures are required to eliminate the substantial cost differential between domestic and Japanese vehicle production. Without this pressure potential changes in bounded rationality or opportunistic behavior probably would not have warranted a complete new assessment of the existing balance between corporate hierarchies and market relations.

At the same time this international competition provides the assemblers with the tools to reorganize these relations. The emergence of a number of highly efficient foreign auto industries not only provides the U.S. public with more car makes to choose from, but also increases the numbers of components suppliers the domestic assemblers can order from. In the language of the transaction cost theory, the possibility of international sourcing reduces the exposure of the automakers to opportunism of their domestic suppliers. In addition the U.S. parts vendors' own precarious position in the world market makes them more dependent on the "Big Three" (Financial Times 4-4-86: III). As these market forces shift the balance of power even more in favor of the final assembler, the risks of exploitation by a supplier are substantially reduced.

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[15] This argument has been made originally by Crandall (1968).

The possibilities for "cooperation in the context of competition" (Altshuler et al 1984) are further enhanced by technological advances. Computer aided design and manufacture methods (CAD/CAM) in combination with electronic data exchanges diminish the traditional information disparities between the assembler and the supplier. Obviously, better communications simplify the difficult task of coordinating the complex process of joining thousands of parts together. Again, this reduces the inherent risks and, therefore, the costs of market coordinated transactions.

Although no quantitative data on the changes in the transaction costs of markets are available (and are probably extremely difficult to calculate), it appears that these changes in the competitive and technological environment of the auto industry are resulting in an assimilation of the coordinating properties of hierarchies and markets. As a consequence vertical integration and market relations become more interchangeable as mechanisms for the coordination of the production chain. Therefore, the costs of vertical integration have to be reassessed. Vertical integration converts variable costs into fixed costs. It commits more capital to the success of the firm. The emergence of the foreign low-cost producers has certainly increased the risks for the "Big Three". It frees capital for strategic investment in their main activity, the final

assembly of a car. From this it does not necessarily follow that the market will be favored as much as the recent announcements of the auto companies suggest. For the envisaged dramatic reorganization these changes may be a necessary but not sufficient condition.

The sufficient conditions may be found in form of production cost differentials. While previously cost differences resulted from economies-of-scale, in the current period wage differentials seem to gain in importance. The vast sales volume of GM justified in many instances in-house production of parts that require large production runs for optimal cost degressions. Chrysler's and especially, American Motor's parts requirements were, in contrast, more often too small for efficient in-house production (Katz 1977: 255, 280-283). These differences in economies-of-scale plausibly seem to explain the varying degrees of vertical integration among the domestic producers. Whether the economies-of-scale in the production of parts have changed as to warrant the current attempts to replace the corporate hierarchy as the dominant coordinating mechanism remains uncertain.[16]

A trend towards greater wage differentials, however, can be documented. The gap between the average hourly earnings in the motor vehicle manufacturing segment and the motor vehicle parts segment of the domestic automobile industry

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[16] The great variety of parts will prove to be a major obstacle to an assessment of the changes in economies-of-scale. Interestingly, in the case of engine plants whose optimal capacity for one line of engines exceeds in many instances the differentiated market demands the automakers frequently resort to joint ventures instead of outright outsourcing (Abernathy 1978: 111; Altshuler 1984: 191).

has become wider in recent years.[17] While in 1963 the premium for vehicle assembly work was on the average about 12 percent, it increased to 24 percent in 1974, and hit a record of 48 percent in 1983 (Williams 1985: 38).[18] At the same time the wages in the parts segment display a considerably higher degree of dispersion than in vehicle manufacturing (ibid. 38;39). This diversity corresponds to the lower degree of contract coverage in the parts segment. Only about 58 percent of the workers in the establishments surveyed by the Bureau of Labor Statistics were covered by a collective bargaining agreement, down from 80 to 84 percent in 1974.[19] In the motor vehicle segment, in contrast, nearly all the workers were organized by the UAW. An illustration of this hierarchy of wage rates provides the case of the production of wiring harnesses. At GM's Packard Electric plant in Warren, Ohio, hourly compensation, including fringe benefits, amounted until recently to $19.60. Domestic non-union competition paid about $6 per hour and at GM's Mexican plants hourly compensation did not exceed $2 (Business Week 8-29-1983, New York Times 8-24-1983).

This increase in wage rate differentials represents a strong incentive for the domestic assemblers to switch their procurement sources. Especially in-house suppliers involved in labor intensive production processes had become

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[17] The segment of motor vehicle manufacturing includes all automotive operations - including motor vehicle parts manufacturing - of the major passenger car manufacturers. The motor vehicle parts industry includes establishments that manufacture a wide variety of parts and accessories for motor vehicles (Williams 1985: 38;39).

[18] For the years 1963 and 1974 the premium was calculated on the basis of Bureau of Labor Statistics (1963: 1;11) and (1976: 1;14).

[19] For 1983 calculated on the basis of the data provided by Williams (1985: 40). For 1974, see Bureau of Labor Statistics (1976: 15).

non-competitive vis-a-vis non-union suppliers or other independent suppliers who enjoyed more favorable collective bargaining agreements.[20] In many instances in-house products were not only more expensive but also of poorer quality for reasons explained in part III C. In the "Big Three's" pursuit of new supply sources four different strategies can be identified besides the already described process of farming out to low cost domestic parts manufacturers:

(1) The "Southern Strategy": This strategy implied the systematic shift of parts production from Northern, Midwestern plants to newly built plants in the "right-to-work" South.[21] Although pursued most aggressively by the cash-loaded GM, which even opened a non-union new assembly plant in Oklahoma, this strategy provided only for a brief period of "relief". In 1979 the UAW managed to obtain an agreement with GM concerning the automatic certification of the UAW at all new production facilities which were related to the production of automobiles. In 1982 GM agreed also to recognize the UAW as the exclusive bargaining agent where ever 51 percent of a bargaining unit had signed NLRB cards (GM-UAW 1982: 1). By 1984 all of GM's "Southern Strategy" plants were organized by the UAW (Ward's Automotive Report 5-14-1984: 155).

(2) The "in-bound" strategy: The extremely low wages in Mexico attracted many American companies to set up plants just for the purpose of supplying the US-market. GM alone

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[20] Although the UAW enforces a homogeneous wage level among the assembler and the major supplier companies through pattern bargaining, many suppliers enjoy contracts with lower wage rates (Köhler und Sengenberger 1983: 415).

[21] The Southern and the Mountain states incereased their share of total domestic employment in the automobile industry by about 50 % between 1973 and 1980 (calculated on the basis of MVMA 1981, 1974).

operates ten such plants along the Mexican border, employing about 8,000 workers (IV Deeds 9-9-1983). Low work intensity, political instability, high transportation costs, quality problems, and the advantages of just-in-time production (see below), however, limit the future growth prospects of these so-called "in-bound" plants (Dombois 1985).

(3) Foreign sourcing: On an increasing scale the domestic producers scour the globe in search of new supply sources. In 1985 the industry imported approximately 18% of its parts and is expected to increase this volume to 23% by 1990 (Business Week 10-14-85: 94). Some of these parts originate from subsidiaries of the major domestic producers. The reasons for these captive imports extend beyond costs differences on the basis of lower wages. The benefits of economies-of-scale in combination with local content requirements seem to be of equal importance (Dohse and Jürgens 1985: 38). In regards to independent foreign producers, costs, and to a lesser degree, quality considerations are of great significance. The "Big Three" will decide in favor of a foreign supplier only when cost savings of at least 15 percent can be achieved. Accounting for shipping and handling costs, the production costs must then be about 30 to 40 percent lower than in the U.S. (Hartley 1984: 29).
The future prospects of foreign sourcing are, thus, closely related to the development of the dollar exchange value.

(4) "Outsourcing" as a threat: Katz reports that workers facing the threat of outsourcing responded in many plants by supporting major changes in local work practices (1985: 66f). The press also reported on instances when workers conceded to wage reductions, although in most cases wage reductions were only agreed upon for new employees. Two cases are especially illustrative: At the already

mentioned Packard Electric plant in Warren, Ohio, the membership of the International Union of Electrical Workers Local 717 voted for a two-tiered wage system in December of 1984. The contract guarantees the then existing employees virtual lifetime income and job security, but new employees were only entitled to 55 percent of the base rate in the first year. This vote came about after approximately 4,600 jobs had been eliminated and further job losses were threatened (Russo 1985: 5). The neighboring Chrysler plant soon followed suit (Monthly Labor Review Aug. 1985: 49). Another case was GM's Hyatt Roller Bearing Plant in Clark, New Jersey. Faced with a plant closing announcement, its workforce bought out GM. On the basis of substantially reduced fringe benefits and liberalized work rules they continued to supply GM, which continued to hold a sizeable amount of stock in the new company (Singer 1985: 13-16).[22] A necessary condition for forcing concessions on workers is that the threat to close a plant is real. And in a number of instances, the refusal of workers to concede work rule changes and pay reductions was met with immediate plant closure (Easterbrook 1983).

While the wage premiums for UAW members represent an incentive for outsourcing,[23] the union's strength has been a potential barrier to a further reduction in the degree of vertical integration. Outsourcing became a top priority issue with the UAW (Buss 1984). Although with uncertain success, the UAW has tried to curb this practice through its collective bargaining agreements. One effort has consisted of a JOB-Bank that has protected all jobs lost due to outsourcing. Workers in this "Bank" have received

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[22] For an interview with one of the principal architects of the worker buy-out, see May 1985: 25-35.

[23] About 37 % above the average for manufacturing wages, excluding fringe benefits (calculated on the basis of DOL 1985: 81 and MVMA 1984: 67).

retraining or new assignments. This measure, which only aims at making the decision to outsource more expensive, has been supplemented by local "Sourcing Committees". Notified at least 60 days in advance of any contemplated outsourcing decisions, these committees have had the right to propose alternatives which the corporation has to consider seriously.[24] Due to this rather weak contract language UAW workers have often found themselves between a hard place and a rock, i.e faced with the choice of loosing their job or having their standard of living reduced.

III B. The New Assembler - Supplier Relationship

As numerous studies have pointed out, a substantial part of Japan's productivity lead has stemmed from their superiority in operating their production processes at a high level of product output over extended periods of time. Japan's superior "process yield" was given unanimously top billings by a panel of distinguished practitioners and scholars of the automotive industry. This higher yield was said to be the product of a carefully orchestrated interaction of the material control system, maintenance practices, and employee involvement (Abernathy et al 1982: 104).

The main feature of the Japanese material control system is the concept of "just-in-time" (JIT) production. Its primary goal is to reduce inventory stocks through tight delivery schedules. Materials, parts, and components are scheduled to arrive at the point of assembly just before

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[24] For more details, see UAW-GM Report, September 1984 pp. 1-6, and UAW-Chrysler Newsgram, October 1985, pp. 5-8.

they are needed.[25] The resulting smaller buffer stocks save on inventory carrying costs, on plant size requirements, and on material handling personnel. For reasons that will be explained later, JIT proves also to be valuable for the quest for higher quality standards (Schonberger 1984; Garvin 1984).

In learning from the Japanese, U.S. auto producers began to introduce the JIT principle at new plant sites. For example, for the new GM-Buick assembly plant in Flint, Michigan, the JIT principle was incorporated at the design stage. The savings achieved in inventory levels were quite impressive, e.g. stocks of axles were reduced from five days to six hours, of engines from three days to four hours, and of tires from six days to one and a half days (Spinella 1983: 26). By 1985, most of the Big Three's production facilities had adopted the JIT delivery system (Automot Ind 1985: 23ff). With the adoption of the JIT principle, the auto producers undertook a complete overhaul of past practices on the shop floor and in relationships with suppliers.

The tightly scheduled continuous flow of parts imposes new requirements on outside vendors and in-house suppliers:

- Without inventory buffers a disruption of supply or late delivery may lead to the shut down of the whole assembly process. Suppliers must, therefore, organize their own production accordingly. They either have to carry the inventory the car companies would have carried in the past, or they have to adopt the JIT principle themselves. Furthermore, they have to minimize the risk of transportation disruptions by locating their production facilities or

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[25] For a detailed description of the JIT system in Japan, see Monden 1981; Sugimori et al 1977.

their warehouses in the vicinity of the assembly plants.[26]

- JIT does not allow for extensive inspection of incoming parts. Suppliers must, therefore, achieve high quality standards consistently and reliably (Abernathy 1982: 105).

In order to meet these requirements, which in most cases involve substantial amounts of capital for the redesign of operations, the suppliers in turn need a long-term commitment from their assemblers. In the past most supply arrangements were under semi-annual or annual blanket orders, i.e. suppliers were awarded contracts annually and without exact specification of the amounts to be delivered. Usually contracts were awarded to the lowest qualified bidder. This competitive bidding procedure left prices as the major influence in the buying decision. Although one can assume that most contracts were renewed repetitively, smaller suppliers which were heavily dependent on the original equipment market (OEM)[27] had to be cautious regarding long-term investments. These uncertainties were compounded by the practice of multiple sourcing. For supply protection or competitive reasons, plant managers kept two or more vendors for the delivery of identical parts (White 1971: 85).

Both practices, multiple sourcing and annual bidding, by the mid 1980s were being gradually abandoned. Increasingly

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[26] GM actually asked its supplier to locate near its assembly plants. Besides the transportation concern, this proximity is expected to facilitate the introduction of electronic communication (Iron Age 9-6-85).

[27] Parts supplier to the automotive industry are divided into two main categories: companies primarily serving the original equipment market, i.e. supplying the assembler, and those selling replacement parts to dealers, mechanics etc.

parts were being single sourced under long-term arrangements. Again, new assembly plants took the lead.[28] The benefits of these changes have extented beyond the accommodation of the supplier firms. First, it has allowed the assembler to reduce the number of its suppliers, and thereby also its own purchasing staff. Single sourcing, however, does not mean that the far flung empires of the Big Three have been served by only one company for every part they buy. This concept only applies to the individual plant level, where the deployment of two vendors would interfere with the efficiencies of JIT.[29]

On the basis of long-term commitments, inter-firm communications can be improved. Under the leadership of GM, the industry has been in the process of introducing an electronic communication system that largely substitutes for the use of mail, telex, and telephone dictation. The standards for both hardware and software has been worked out by the Automotive Industry Action Group (AIAG), which includes representatives of all car makers and many suppliers (Automot Ind 12-84: 74, Hayes 1984: 41). Once adopted by

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[28] At GM-Pontiac's Fiero plant every part was single sourced by the early 1980s, and more than fifty percent were sourced without bids (Purchasing 6-13-85: 82). GM's Chevrolet-Pontiac-Canada (CPC) division had ninety-seven percent of its chassis parts single sourced (Automot Ind 7-85: 24). More than fifty percent of Chrysler's purchasing was in long-term agreements that averaged five years, and nearly ninety percent was single sourced (Purchasing 7-25-85: 43). Ford expected that eighty-five percent of its contracts would run for more than five years by 1990. By 1985, this proportion was about fifty percent (Business Week 10-14-85: 96).

[29] Single sourcing of steel will allow the recycling of all the scrap produced in one stamping plant directly back to the steel mill. The mill will then know what is in the scrap (Iron Age 7-5-1985).

all participants Roger Smith's dream of a "paper less company" will have come true (Fisher 1985: 36).[30]

Furthermore, a more lasting relationship between the "Big Three" and their suppliers will encourage closer collaboration on technical problems. Previously, parts were built either according to the assembler's specifications or on the basis of the supplier's patents. In both cases the suppliers had little insight into the final application of its product. Through a "unified, systems approach" (Smith 1985: 14) the assemblers plan to involve the suppliers at the earliest stage of product design. In other words they want to tap the engineering know-how of their suppliers.[31]

In the past outsourcing carried the risk of falling behind in the technological development of parts. Monteverde and Teece argued that - given specific transaction costs in the area of "human capital", i.e. the costs of transferring the knowledge of real-life persons between separate companies - the development of new technologies is strongly encouraged by vertical integration (1981). An opposite view was taken by Hayes and Abernathy, who argued that the high costs of product development and special purpose machinery made the integrated companies captives of their own designs - i.e. vertical integration impeded the adoption of the latest innovations (Hayes and Abernathy

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[30] The smaller vendors are expected to join clearing houses for their communication needs with the assembler (Automot Ind 12-84: 74). Roger Smith was president of GM in the mid 1980s.

[31] For the new Pontiac Fiero sports car over 70 percent of the parts were sourced two years earlier than previously common, in order to involve the suppliers in the product engineering process (Purchasing 6-13-85: 82). On this issue see also Hayes 1984, Hervey 1982.

1980: 72).[32] Both arguments seem to be plausible as they point out the inherent contradictions of the respective coordinating mechanism. The supplementation of the market through formal or informal networks may prove to be a way out of this dilemma. The assemblers may gain flexibility without loosing the benefits of close coordination that are usually associated with the executive fiat of corporate hierarchies.

In this new supplier-assembler relationship the coordinating power of prices is waning. Similar to the organization of production under a corporate hierarchy the selection of the parts supplier will be made on the basis of production costs. This is perhaps best illustrated by the statement of D. Porter, Director of Materials Management at GM's Buick-Oldsmobile-Cadillac division: "The kind of supplier that will be retained is the supplier who has the capability to do it right the first time and ship it right 100% of the time at a competitive cost. I didn't say a competitive `price' even though we'll still be using prices. Our commitment is to work with our suppliers on a mutual cost so that the price generates out of that relationship" (as quoted in Automotive Industries 7-85: 24).[33]

As it is true for corporate hierarchies, the lack of the disciplinary force of the market in this new relationship calls for substitute incentives that elicit continuous

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[32] For a discussion of this controversy, see Dirrheimer and Hübner (1982: 15-28).

[33] Although as late as 1982 one representative of the supplier industry was complaining that, due to tight budgets at the vehicle manufacturers purchasing departments, decision making is often "simplified" to price buying (Hervey 1982: 116). Apparently the talk about the new collaborative relationship is still more propaganda than fact.

collaboration. Not surprisingly groups and committees were being set up by the assemblers for the purpose of courting the active support of the suppliers for their plans to transform the entire industry. The activities include huge conferences on the new shape of the industry,[34] the establishment of a supplier council called "Partners in Conformance", where the suppliers are invited to air their problems (Iron Age 9-6-85),[35] and the creation of joint study groups such as the AIAG. The assemblers also rely on the industry's trade journals, which generally supports the envisaged changes in the name of improved competitiveness vis-a-vis the Japanese challenge. Automotive Industries, the oldest trade journal, for example, co-sponsors roundtable discussions to smooth out differences between various sectors in the auto industry.[36] Together these activities constituted a multi-faceded network that was designed to overcome the inherent deficiencies of markets and hierarchies.[37] Although a strong collective commitment for more efficiency in the production process can be detected, the

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[34] GM has invited about 2000 supplier to come to Detroit in April of 1986 (Iron Age 9-6-85).

[35] GM's BOC division plans to form a supplier council of 12 key suppliers and 12 other suppliers who will be rotating in their office (Sorge 1985: 8).

[36] At the 1984 roundtable the trade organization of the steel service centers, the Steel Service Center Institute, squared off with the AIAG on the issue of schedule stability. For their own supply schedules the steel service centers called for more predictable demand levels at the car makers. Both groups were extremely critical of the lack of support that comes from the steel mills in JIT implementation (Automot Ind 9-85: 61-62).

[37] The increased possibilities for closer collaboration also depend on changes in the anti-trust enforcement. In the past anti-trust charges have been pressed against certain practices between suppliers and assemblers (Nelson 1970). Under the Reagan Administration the Department of Justice began to encourage joint ventures and joint R&D activities (NYT 2-16-84).

asymetrical distribution of power in favor of the assembler justifies the term "forced network" (Benson 1975).

At Ford, for instance, the spirit of cooperation has been supplemented by a penalty system for defective parts. In addition to the customary reimbursement for defective parts a supplier was required to pay up to $ 5 per part, if more than two percent of his delivery did not find the approval of Ford's quality inspection (Purchasing 31-1-85: 36E1). On the other hand, Ford's quality suppliers have been honored with the "Q 1 Preferred Quality Reward" (Automotive News 11-26-1984: 22). Not surprisingly, there was still a great deal of mistrust on the part of suppliers toward these efforts of the assemblers to change the traditional relationship (Cole 1983: viii; Hayes 1984).

While the implementation of the JIT principle requires a closer collaboration between the suppliers and the assemblers, it also presupposes cooperative industrial relations. A strike even at a small supplier has the potential of shutting down an entire assembly plant.

The strategic position of individual supplier plants became evident in the Twinsburg incidence of November 1983. Within two days after the UAW Local 122 went on strike, four of Chrysler's eight assembly plants had to be closed down (International Herald Tribune 11-4-83). Another case was the strike of the Canadian UAW branch in 1984. This nine day walk-out of about 36,000 workers caused the lay-off of 40,965 workers at 30 GM plants in the U.S.A. (New York Times 10-27-84: I,9:5). The UAW's first use of selective strikes in the 1984 negotiation (New York Times

9-24-1984: II, 9:2) may reflect this dependency of the automakers on few components plants.[38]

The geographical aspects of Just-In-Time production furthermore strengthens potentially organized labor. The requirement of proximity of supplier to assembler favors the traditional regions of the automotive parts industry and thus the old strongholds of the UAW. In recent years new assembly plants were again built in those areas, especially in Michigan and Missouri, reversing the trend of the seventies.[39] This renewed interest in the Great Lakes region is of course not solely induced by the implementation of JIT. Other factors include the failure of GM's "Southern Strategy", the high import penetration of the coastal markets, which therefore no longer support large assembly capacity,[40] and finally the decline of freight rates.[41]

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[38] In the Federal Republic of Germany the recent change in the law for unemployment compensation (the paragraph 116) can be interpreted as a response to the increased vulnerability of the automobile industry to selective strikes due to the implementation of JIT (Klebe and Roth 1986).

[39] GM opened new plants in Wentzville, MO, Orion, MI, Hamtramck, MI, Flint, MI, Fremont, CA, and the Saturn project in Spring Hill, TN. Chrysler built a new plant in Sterling Hights, MI, and Mazda in Flat Rock, MI. On the fringes of these areas one finds Honda in Maryville, OH, and Nissan in Smyrna, TN (McElroy 1985: 49).

[40] The reduced size of the market for domestic products bring the "economies-of-scale" in conflict with the "economies-of-distribution". It is therefore cheaper to serve the Western markets from Detroit than from local assembly plants (Verway 1983: 2).

[41] Cheaper rail road tariffs, together with smaller car sizes, are supposed to have reduced overall transportation costs for automobiles (IV Luria 8-31-1984). In trucking, deregulation was beneficial for a centralization of production (Spinella 1983: 26).

It is not difficult to imagine what this increased leverage for organized labor would have meant during the period of shopfloor militancy. In fact, labor's militancy was one of the reasons why automotive manufacturing became geographically more decentralized in the postwar period. While GM, as a conglomerate of different car manufacturers, has always been more decentralized, Ford's and Chrysler's plants were heavily concentrated in the Detroit area. Ford's River Rouge complex may even be called the grandaddy of "Just-In-Time" production: it concentrated all aspects of Ford's auto production, from steelmaking to final assembly, in a single location. Lacking today's computer sophistication, the different production steps were, of course, not as nicely brought in tune as in current JIT plants. At its peak this huge complex employed 87,000 workers (Babson et al 1984: 104) It was also the home of the UAW local 600, which was renown for its militancy (Meier and Rudwick 1979: 64). Former chairman of Ford Philip Caldwell speculated that the post-war decentralization was a deliberate strategy to keep the newly unionized workers dispersed as much as possible (Business Week 6-21-1982).

Today, management apparently rules out a resurgence of union militancy. Although the application of the JIT principle increases the bargaining power of the union, management holds most of the cards in current labor relations. If the UAW does not cooperate, the jobs of its members will even be more threatened by foreign imports. And, although JIT bears many advantages for the auto producers, it is not without alternatives. The cost savings of JIT can be substituted by the international wage differentials, especially in relation to newly industrializing countries. In fact, at the same time the Big Three introduce "Just-In-Time" at their domestic plants, they increase their foreign sourcing of parts or even of fully

assembled cars. Even before the Voluntary Export Restraints were lifted, the Big Three, with GM in the lead, started to arrange for the marketing of foreign made cars under their own nameplate.[42] Management seems to be well aware of the value of its foreign pursuits for its bargaining strength. Both suppliers and workers are constantly reminded of this alternative to doing "business" with them. This use of foreign sourcing as the big stick also extends to the labor force of its suppliers. When the attempts of the steel companies to renegotiate the 1980 basic steel contract failed twice in 1982, GM threatened to use foreign steel for the next model year, if the two bargaining parties would not settle before the contract expired. According to some local presidents of the United Steel Workers this threat proved to be very effective in convincing them that they had to agree to massive contract concessions (Labor Notes 1-27-83: 9).

III C. The Demise Of Job Control Unionism

The specific form of the industrial relations in the auto industry can be characterized as job control unionism (Piore 1982). In the voluntarist tradition of American industrial relations the state regulates only marginally the content of the collective bargaining agreements. The low levels of social security provided by the state furthermore enlarges the scope of possible bargaining issues between the union and the employer. Although management is free to make basic entrepreneurial and managerial decisions, its discretionary power over the allocation of labor and the conditions of employment were

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[42] U.S. automakers have lined up sources to import about 750,000 small cars annually (Business Week 4-29-1985).

severely restricted by the three pillars of job control unionism, i.e. legalistic conflict resolution, detailed job classifications, and a comprehensive seniority system (Katz 1985). In other words most aspects of the labor relations in the auto industry were governed by the collective bargaining agreement.

The system of job classifications specified in quite some detail the individual tasks within the production process.[43] It derived from the taylorist division of labor. It therefore does not contradict this management principle, but nevertheless restricts the allocative flexibility of management. Under this system a qualitative change in the workload required the approval of the local union. Workers were therefore protected against arbitrary new assignments (Dohse et al 1984: 12ff).

The absence of such restrictive job classifications allows the Japanese management more flexibility in assigning workers to different jobs. The savings of integrating certain maintenance and quality control functions in the job assignments of production workers have been quite substantial.[44]

Among skilled workers demarcations between about 58 crafts correspond to these rigid job descriptions in the "non-skilled" segment (ibid. 18). The individual crafts guard their specific jurisdictions carefully. Crafts that have become obsolete through technological changes try to protect their share of jobs through an extension of the

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[43] A large assembly plant may have 50 to 100 non-skilled job-titles (Parker 1985: 28).

[44] Apparently only 1.8 hours of inspection and repair personnel are required per automobile produced in Japan. This compares with about 4.1 hours in the U.S. (Dohse et al 1984: 19).

demarcation lines to new tasks. The inevitable conflicts between the crafts in response to these attempts result in very elaborate and detailed lines of demarcations (ibid. 15).

The inefficiencies of the craft demarcation lines are well illustrated by the following example. The maintenance of an automated welding apparatus required up to five different crafts: Electricians for programming, pipefitters for the hydraulic, general welders for welding, gun welder repairmen for the welding electrodes, and machine repairmen for all other mechanical aspects (ibid. 15). Management is particularly concerned about the problems associated with coordinating all these skilled workers for the repair of one machine (IV Deeds 10-10-1984).

The better known seniority systems, which regulate the lines of succession in regards to hiring, firing and internal promotions according to the length of service, further limit management's allocative powers. Since job positions are not allocated according to merit or performance, workers have no incentive to compete for job opportunities. Without the possibility of rewarding quality-conscious workers with tangible benefits management faces severe difficulties in motivating the workforce to deliver on quality.[45] On the other hand the use of the seniority principle offers many advantages for management. Most importantly it guarantees the smooth adaption of manning levels to changes in business volume, since the

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[45] Management's past inattentiveness concerning quality issues certainly does not help to motivate the workers (Abernathy et al 1982: 100).

criteria for the selection of those to be laid-off is accepted by all sides.[46]

Through the legalistic enforcement of these rules by means of the grievance procedure, management was further locked into the rigidities of these practices. In the past, when all suppliers of the U.S. market faced similar restrictions and long production runs were common, job control unionism did not represent a major threat to the economic prosperity of domestic manufacturers. It had proven to be a workable mechanism for coordinating the different interest of capital and labor. The new competitive environment has made management increasingly impatient with these trade union structures and modes of work control.

Beginning in the early seventies some of the automakers started to experiment with Quality Circles and team work approaches. The crisis of 1981/1982 led to an intensification of the efforts to redefine industrial relations, but so far a complete overhaul of the traditional system has yet to be achieved.

The resistance to change originated in many quarters. Foremen are anxious not to loose their old prerogatives (Drucker 1983, Cole 1985: 106), plant supervisors are quite often tempted to revert to the old way if short-term gains look promising, and of course the workers and their union feared to loose their hard-won rights. Accordingly the story of reorganization of industrial relations in the American automobile industry is one of halting beginnings followed, and often disconnected, experiments by firms and plants.

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[46] For a discussions of the pros and cons of seniority system, see Doeringer and Piore (1971); Medoff (1979: 380ff); and Köhler and Sengenberger (1983).

The major problems that this transformation towards more flexible and participatory industrial relations face seem to arise from a) the lack of institutionalization both in and throughout the political system under which American unions suffer (Erd and Scherrer 1984: 83-87) and b) the combination of cooperative with distributive modifications (Altshuler et al 1984: 281).

a) The institutional relations between capital and labor established in the U.S. in the 1930's distinguish themselves from those in Europe and especially West Germany, by their high degree of decentralization and fragmentation. Because of the pronounced resistance of American capital to macro-economic conceptions - i.e. the recognition that union play a socially useful role - as well as the liberal, anti-interventionist tradition of the state and their own voluntarist tradition, American unions have been only rudimentary institutionalized in the political system. From this follows the fact that labor cannot compensate for changed labor market conditions with political mobilization. Even under President Carter the unions were no longer able to reverse the progressive weakening of their legal rights which had been occuring as a result of judicial interpretations. The battle for a labor law reform was lost in 1978 (Piore 1983: 10). In fact, American unions seem to enjoy only minimal legal protection against the attempts of employers to exploit the new balance of power in the market place for cancelling collective bargaining agreements unilaterally. Under these conditions organized labor in the U.S. lacks the ability to influence the restructuring of a particular industry through the state which can be found among their European counterparts (Ross and Gourevitch 1984).

Since unions depend heavily on their shop floor control for their power and legitimacy, changes in shop floor relations

bear the risk of endangering the survival of their organizations. If, for example, a union agrees to the broadening of job classifications and to a less rigid enforcement of the lines of demarcation its members might no longer feel protected by its apparatus. If, then, the workers complaints are handled by company or jointly selected "team leaders", shop stewards might become dispensable in the eyes of the union members. The same holds true for loosening the seniority system in exchange for more job security. In the absence of legally mandated codetermination structures the union faces the risk that once cooperation has undermined its legitimacy, management will try to get rid of it all together (Mroczkowski 1984: 56). In sum, while more clan-like labor relations seem to require for their stability some support through the state hierarchy, the American political system denies the unions institutional safeguards. The skepticism of American unions against more flexible forms of industrial relations seems to be justified from this perspective.

b) Forced to act quickly by the severe recession of 1981/1982, the automakers tried to combine the introduction of more flexibility into human-resource allocation with a reduction in wage levels. Obviously the strategy of taking dollars from the pockets of workers contradicts the attempts to elicit their cooperation for a more efficient design of the labor process. Given the strength of the UAW, particularly in assembly, this "strategic confusion" (Katz and Sabel 1985) led generally to giving priority to temporary wage reductions at the expense of institutional changes in the labor relations. Despite unprecedented levels of lay-offs,[47] the companies extracted mainly monetary concessions on the national level. In the ensuing

[47] The employment of production workers in the auto industry dropped from a peak of 802,800 in December 1978 to 487,700 in January 1983 (Altshuler et al 1984: 275).

recovery, the UAW managed to restore most of its monetary concessions except for the Annual Improvement Factor (AIF) which apparently has been given up for good in exchange of profit sharing schemes.

Nevertheless, confronted with the "logic" of the market place, battered by a severe recession, and lacking the political might to close the borders to foreign producers, the UAW-leadership and probably the majority of its members have consented to cooperate with management's drive for efficiency. Although the leadership resisted company-wide adoption of new personnel practices, they have actively promoted experiments at the local level. Besides giving their support for Quality of Work Life programs (Bluestone 1983), the International has given its blessings to local work rule changes. Since 1982 the national contracts allowed for "any local deviation from the Collective Bargaining Agreement that might make it feasible for the company to continue to produce without being economically disadvantaged" (Ford-UAW 1982: 39).

This departure from "connective bargaining" (Katz 1985)[48] opened the door for management to experiment with new forms of work organization. Points of entry were those plants whose workforce were in a weak bargaining position either because a plant shut-down looms due to low levels of demand or because plans for outsourcing exist. When the workers of GM's plant in Arlington, Texas, were "suddenly getting more cooperative with the company" after GM decided not to continue its present model there, "hoping that GM will include them in some other future car program" (Wall Street Journal 2-14-86). However, the fact that these changes usually come about only at "gun point", clouds their fate if conditions change. Not surprisingly, workers at GM's

[48] i.e. the practice of linking local agreements to the national contract.

Flint plant stopped participating in a two-year-old quality program to protest the planned layoff of 1350 workers (International Herald Tribune 11-9-1983).[49] Although recent research suggests that more cooperative labor relations can have a major impact on productivity and cost competitiveness, the institution of quality circles does not automatically result in an end of the traditional adversary relationship between labor and management (Katz et al 1983: 15). Without a corresponding new comprehensive industrial-relations model, a quality circle is an "unstable organizational structure that is likely to self-destruct" (Lawler and Mohrman 1985: 64). The reluctant acceptance of the new organizational forms at the local level corresponds with the narrow votes on the concession contracts,[50] as well as the demonstrated willingness of the Chrysler workers to strike for a restoration of homogenous wage rates among the "Big Three". In the words of Cole: "Beating employees over the head with information on the loss of American markets and jobs to foreign companies simply won't get us very far" (1985: 108).

More promising for a permanent alteration in labor relations seem to be experiments in new plants. At the New United Motors Manufacturing Inc. (NUMMI), the Toyota-GM plant in Fremont, CA, and for GM's Saturn project the union has agreed to quite revolutionary labor relations practices in exchange for the recognition as the sole collective bargaining agent (Altshuler et al 1984: 280, Fisher 1985: 44f).

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[49] For more examples, see Parker (1985: 63-67). Slaughter lists cases in which plants were closed despite of extensive concessions (1983: 57-58).

[50] At GM the vote for accepting the company's offer was only 52 per cent (Balance and Sinclair 1983: 93).

Insulated from the crushing weight of habit the Saturn project encompasses many features that are supposed to introduce more flexibility and cooperation into human-resource allocation. Job classifications are abolished, the different crafts are combined in two general classifications, and wages are tied to performance. Although the union will retain the right to strike, it has agreed to decision making based on consensus instead of formal bargaining. Therefore GM's old hierarchy of bosses will give way to management-union committees on all levels of decision making (Business Week 8-5-1985: 65f).

Concessions at these new plants will put pressure on the UAW to allow for similar procedures in other plants (Hill 1983: 8). Already the union has been approached by Ford and Chrysler to agree to comparable labor relations for their respective new projects "Alpha" and "Liberty" (Marcello 1985: 14).

The features of these new forms of labor relations resemble closely the list of Ouchi's theory Z personnel policies (1981: 48f). Theory Z stands for the concept of an all embracing-clan solidarity at the level of a corporate hierarchy (Mroczkowski 1984: 58). Clans, however, imply the existence of extra-economic ties, while the new cooperative attitude is exclusively the result of market forces that threaten management and labor alike. As circumstances change, the collaborative commitment is likely to fade. The ultimate power still rests with management who controls the financial means of the organization. More aptly the new labor relations can be described as an expansion of the reach of corporate hierarchies into formerly contractually protected union territory by means of a carrot (sharing of some management prerogatives) and the stick ("outsourcing").

IV. Discussion and Outlook

The discussion of the competitive disadvantages of the American automobile industry proves that its traditional structure is not compatible with the new competitive environment. This fact has been recognized by the executives of the auto companies. On their initiative, as the evidence presented in the three case studies clearly demonstrates, tremendous efforts are under way to transform the character of the relations among the main agents in the industry. Principally, the relationship between assemblers and suppliers as well as between employers and workers are the focus of these endeavors. Suppliers and workers, however, are reluctant in following the course laid out by the management of the automakers, especially since distributive issues are also at stake. The mechanisms to elicit the cooperation seem to be routed in the same processes that make these changes necessary. The possibility to source globally, the potentialities of new technology, and the eventuality of economic disaster if the necessary changes are not made, force upon all agents the need to join together in the pursuit of higher productivity, better workmanship, and lower costs.

Interestingly, this "cooperation in the context of competition" is organized mainly independently from the political system. Privately established networks (e.g. joint committees, participation teams, action groups, and councils) represent the vehicles for change. They replace or supplement the more legalistic forms of economic coordinations, i.e. corporate hierarchies and markets, that were previously prevalent in the auto industry. But despite the rhetoric of mutuality that accompanies these networks, they are marked by a crass asymmetry of power. Although the assemblers have to rely on the active cooperation of their suppliers and workers for the smooth opera-

tion of their production process organized around the just-in-time principle, these two groups can only exert a more or less self-defeating, obstructionist pressure. The ultimate authority rests with the management of the assembler through their unchallenged control over capital. Unless restrained by the state, they are free to source from abroad.

In its crisis intervention, the state has left management's prerogatives untouched. Local and state governments have scrambled to offer the automakers, foreign and domestic, sweet deals (Business Week 4-1-1985: 26; LeRoy 1985). The Federal Government bargained for Voluntary Export Restraints with Japan and relaxed slightly its Corporate Average Fuel Economy standards and its anti-trust rules (New York Times 2-16-1984). A slight deviation from this pattern may represent the loan guarantees for Chrysler. The Chrysler Corporation Loan Guarantee Act of 1979 placed the company under the supervision of an independent board and required the sale of assets as well as concessions from Chrysler's banks, suppliers, and employees (Public Law 96-185, 1980). Although the Act gave the government veto power over most management decisions, the company was factually free in its investment and product decisions (Reich and Donahue 1985: 5). Though the rescue was publicly justified as an attempt to save jobs, it did not even make the guarantees conditional to the preservation of a specific level of jobs (ibid.: 296). Instead the Act helped to open the UAW contract and thereby established the precedent for labor concessions throughout basic industry (Slaughter 1983: 10).

In assessing the future potential of the cooperative efforts in the U.S. automobile industry, the role of the state seems to be of crucial importance. In the absence of government legislation to institutionalize or support

mechanism of flexible adaption, voluntary programmes are likely to be subjected to the vagaries of shifting balances of power. Given a track record of short-range planning, it remains to be seen whether the auto management can sustain a cooperative momentum over a longish period. Workers have reasons to be skeptical. As long as the managers of corporate hierarchies retain complete control over investment decisions, the present shift away from hierarchical order might turn out to be just a fad.

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