From "Beetle Monoculture" to the "German Model": the Transformation of Volkswagen, 1967-1991

Steven Tolliday
Department of Economic and Social History, University of Leeds, UK

The German automobile industry, and particularly the Volkswagen company (VW), has been a crucial part of Germany's post-war manufacturing success story. In the 1980s, VW is often cited as an epitome of the success factors in this area. Writers such as Wolfgang Streeck, Lowell Turner, and Kathleen Thelen have examined its institutional relationships as embodiments of "microcorporatism," "social partnership," or "co-operative conflict resolution"[Streeck, 1989; Turner, 1991; Thelen, 1991]; others such as Ulrich Jurgens, Thomas Malsch and Knuth Dohse, and Ben Dankbaar, have examined its use of automation and new forms of work organization in the context of a relatively successful alternative form of production organization to the Japanese or "lean production" models [Jurgens, Malsch and Dohse, 1993; Dankbaar, 1993]. What is less clear in these writings (which are not primarily historical in focus) is the extent to which the "model" caused the success. This article is a preliminary exploration of some of the issues involved in such an analysis.

The starting point is that the institutional and production structures of VW have not evolved smoothly and continuously through the postwar years. In fact, there have been two periods of institutional and productive success and stability, with a period of crisis and transformation in between. From the late 1940s to the late 1960s, VW succeeded on the basis of relentless mass production of a single-model ("Beetle monoculture"), in a manner that made the company almost "more Fordist than Ford." The factory was organized

BUSINESS AND ECONOMIC HISTORY, Volume 24, no. 2 Winter 1995.
Copyright ©1995 by the Business History Conference. ISSN 0849-6825.

along the lines of a minute Taylorized division of labor, paced by the assembly line. Model variety was rigorously eschewed and innovation neglected. Labor was generally co-operative but clearly subordinate, content to take its share in the fruits of prosperity. And, with a few exceptions, cars were made in Germany and exported to other markets [Tolliday, 1995]. From the late 1970s, the second wave of success came under very different conditions. The company produced a range of models, featuring quality, high technology and innovation. Work organization combined features of high automation and a highly skilled workforce. Labor was involved with a powerful voice in all levels of corporate decisionmaking ("microcorporatism"). And VW became a complex global multinational with several important international production bases. In other words, VW success in the two periods was based on two very different institutional and production systems. What drove the transition? Did the new "German model" produce the successes of the 1980s, or was it co-produced by the success itself?

The Crisis of Beetle Monoculture, 1966-75

VW thrived during the 1950s and did not experience significant direct competition in the domestic market until the 1960s when demand began to move towards larger and more comfortable cars where Ford of Germany and GM-Opel were well-entrenched and investing heavily. Then, from the mid 1960s the continuously expanding seller's market came to an end as car sales failed to increase in 1966 for the first time since the War and thereafter advanced much more slowly [Ludvigsen, 1975, pp. 69-71]. VW had to adjust to rapidly changing circumstances. In particular, its commitment to a single-model policy, the source of so much of its success since the War, became a major liability. As late as 1960, 92% of VW production was Beetles and it was still 68% in 1968. VW's domestic market share slipped from 45% in 1960 to 33% in 1968 and 26% in 1972. VW became precariously dependent on export sales to sustain its volume. In 1968 VW sold 70% of its output abroad, 40%

in the United States. Franz-Josef Strauss publicly accused VW in 1967 of having "too many cars and too few ideas" and asked "what happens when the Americans stop being amused by the Beetle?" [Nelson, 1970, pp. 272-82].

The company did not develop any clear response to these changing circumstances. Initially Heinrich Nordhoff, the Managing Director of VW, simply tinkered with the Beetle, introducing more powerful versions or facelifting it, while US safety regulations also forced extensive (and costly) modifications on the Beetle. The result was a plethora of confusing engineering changes. This was carried so far that the authoritative catalogue of Beetle design-changes states that only one detail of the original Beetle avoided modification - the cross section of the metal channel that holds the rubber strip to seal the bonnet and boot [Etzold, 1988, p.6]. One result of this was that the Beetle became increasingly complex and costly to build.

Attempts to graft new models on to the Beetle design formula, such as the 411 or the Super-Beetle, were not successful. The 411 has been described by critics as a "grotesque symbol of VW's fumbling inability to replace the Beetle"; others called it the "deformed son of the Beetle" [Brenner, 1989]. It was completely inadequate to confront its contemporary rivals such as the Renault 16, Opel Rekord, or Austin Maxi. The Volkswagen engineers seemed to have lost their touch. One road test at the time noted that the location of the engine was so bad that the car could have its oil changed "only by an asbestos-coated octopus" ["Road Test," 1968]. Only 226,000 were sold in four years before it was withdrawn. By the time of Nordhoff's resignation because of ill health in 1967, there was little sign of anything better on the way. When Kurt Lotz joined the company as vice-chairman in 1967 he "asked for new developments which were in the drawers.....To my great surprise the drawers were empty. In addition, new technical conceptions were not even in discussion" [Lotz, 1978, p.97].

VW's position in the US market was the decisive point of the company's fortunes. From the mid 1960s there was a looming threat that the American public's long love-affair with "the bug" might come

to an end. It had been pilloried for its safety defects by Ralph Nader who dubbed it "the most hazardous car currently in use" on American roads, "so unsafe that it should be removed from the roads entirely" [Nader, 1971, pp. i-vi]. At the same time its previously unique market segment was attacked by new Japanese challengers, especially Toyota and Honda, who targeted VW head-on and offered a variety of distinctive and innovative models in this segment [Rader, 1980, pp. 37, 42, 76]. The true vulnerability, however, became fully apparent once the traditionally undervalued Deutschmark began to be forced upwards from 1969. In 1969 the exchange rate was DM 4 to the $; by 1975 it had moved to DM 2.5. Revenue per car plummeted. In 1974 VW lost money on every car sold in the United States (a loss of DM200m on its US operations) [Thimm, 1976, p. 100]. Plunging sales raised the possibility of a break-up of VW's distribution network in the US as dealers defected, particularly to Japanese firms [Streeck, 1984, p.82].

Volkswagen sales in the United States fell from 570,000 in 1970 (35% of all VW sales) to 334,000 in 1974 and 203,234 in 1976 (16% of total sales). Sales of the Beetle melted away from 354,000 to 27,000. Largely as a result of the disasters in the USA, Volkswagen's global ouput fell from 1.6 million vehicles in 1971 to 1 million in 1975. Volkswagen's crisis in face of the appreciation of the Deutschmark and changing markets at this time were a striking contrast to the performance of most of the rest of German industry which generally met rising costs through increased productivity and innovation, with the result that the overall German trade surplus increased from DM 16 billion in 1970 to DM 37 billion in 1975.

In the early 1970s Volkswagen's deteriorating position looked almost irretrievable. Profits tumbled and, despite being able to draw on reserves, the company recorded losses of DM 807m in 1974 and DM 157m in 1975. Nor was it apparent that VW had the capability to turn itself around. The company had no track record of successful model development, its corporate decision-making structures appeared cumbersome with the unions powerfully ensconced, and its dependence on an undervalued Deutschmark was painfully exposed.

It was by no means obvious that VW was more likely to recover than, for example, British Leyland, another major European company undergoing a severe crisis at the time. BL at least had a strong tradition of product development and innovation; in the past fifteen years it had brought to market both the Mini and the Maxi, each of which had pioneered new market segments and product configurations. BL also had much more explicit commitments from its government to fund recovery than VW had. Yet twenty years later BL had disappeared as a major player from the auto industry while VW had advanced to number one in Europe. How did this come about?

The comparison with BL should not be overdrawn. Firstly, Volkswagen had certain residual strengths which BL lacked. Long years of uninterrupted profitability gave them a financial cushion and resources to fund change that BL lacked. They also had high quality factories and capital stock which could be adapted to new uses. And they had a further income cushion in revenue flows from their overseas operations, which helped to buffer them in the early 1970s. But in the mid 1970s they had to go through a major transformation which involved the development of new products and production processes, the reconstruction of top management, major workforce reductions and a new orientation to overseas investment and production - and to do all this without losing their valuable co-operative relationship with their workforce.

The Transition to a New Model: Product Development

Probably the most crucial element of the turnaround was Volkswagen's ability to successfully renew its product range and to move from its narrow dependence on the Beetle to its deployment of the broader and more diverse Golf/Jetta/Passat range on which it has founded its success since the mid 1970s. This transition required a fundamental break in the company's "etched-in psyche" of the Beetle era focused on an engineering tradition of incremental improvements to a 1930s design [Wood, 1983, p. 47; Lotz, 1978, p. 109]. As we

have seen, the first steps with the 411 and Super-Beetle were not auspicious. But between 1968-74 a total reconstruction of the company's product portfolio was carried through.

The untidy and contradictory history of product development in this period is crucial. Early strategic decisions had a profound impact. Right at the beginning of the process, the new Chairman, Kurt Lotz, decided to make a fundamental shift from an air-cooled rear engine to a water-cooled front engine as the basis for a modern, lightweight, compact, and fuel-efficient range of cars for the 1970s, a configuration that did in fact become the standard for European small and medium cars in the 1970s and 1980s. He also decided to position the Beetle replacement as a middle-sized rather than, as many preferred, a small car to compete against the Fiat 500, Renault 4, and Citroën Dyane. Volkswagen's planners decided that this segment of the market would remain relatively small and intensely competitive compared to a medium-sized car, and that a small car would not thrive in the United States. Lotz and his planners decided to develop not just a single car but an integrated range of cars which would be simpler to build than the Beetle and which would reduce costs by use of common components across the range [Lotz, 1978].

But the development of this wholly new product line would take at least four to five years, and the Beetle and its derivatives would be dead in the water before then. Lotz was haunted by the mistakes that Henry Ford had made with the Model T in the 1920s, when the best-selling car in history had been rejected by the market and Ford had found itself without a successor product. In the 1920s Ford had to go through a traumatic process of closure, loss of market share, and restart to introduce its successor model. As Lotz later described it "in order not to make the same mistake (as Ford) we pursued a 'double strategy'." On the one hand the company would continue to improve and develop the existing range of Beetle-based vehicles, even though this would result in a number of short-lived cars which would have to be written off very quickly [Lotz, 1978, p. 101]. Simultaneously, the company worked intensively on the development of its new model range.

In pursuit of radical product innovation the company set up three independent design teams to work simultaneously on different and possibly rival product configurations. Volkswagen engineers at Wolfsburg would explore front-engine, rear-wheel drive configurations; engineers from the newly-acquired Audi subsidiary would develop front-engine, front-wheel drive projects; and Porsche engineers, working under contract, would develop mid-engined projects. This did not exhaust the range of product development. Lotz also rushed a new car from NSU (another newly acquired subsidiary), the K-70, through design and development as a further independently engineered middle-sized car with a water-cooled engine "in order to get the public used to this change of technology at Volkswagen" [Lotz, 1978, p. 105]. The car had numerous problems and never sold well and it resulted in heavy losses because it had been put into a new plant at Salzgitter specially constructed for it (partly under government pressure for regional employment creation).

This proliferation of development projects was very costly, requiring a peak financing of as much as DM2 billion in a single year, and cut into profits. Senior management recognised that even if the domestic market remained strong *and* US profits held up, profits would shrink almost to zero before the new models could be launched around 1974. In fact, actual profits collapsed to a loss of DM 807m in 1974 [Volkswagen, 1974].

Many in the company saw Lotz's "double strategy" simply as confusion and lack of direction. Serious quarrels broke out with factions forming on the Executive Committee and the Supervisory Board and in a confused episode Lotz was fired in September 1971 after only two and a half years in office, amidst allegations of an "excessively authoritarian attitude" [Thimm, 1976, p. 98]. Rudolf Leiding came in as CEO and proceeded to reduce and channel Lotz's multiple projects. He cancelled the Porsche project and put the independent NSU work (which later formed the basis of the Audi 50 and Polo) on hold. At the same time, he backed off from the idea of a wholly integrated model program because of the huge costs of simultaneous development. Instead of an all-new larger version of the

Golf the company introduced the Passat, based on the Audi 80, which eased development problems but compromised the commonization program and, to some extent, cannibalized Audi 80 sales. Bowing to financial constraints and bottlenecks in the supply of tooling and assembly equipment, Leiding also retimetabled the program to avoid introducing more than one all-new model in any single model year. Most importantly, Leiding (a former chief of Audi) decided to focus on the project for the front-engined, front-wheel drive car that Lotz had placed in the hands of the Audi engineers. This project had been only one of many under Lotz but was now brought to center stage for the whole organization.

The outcome of this complex and confusing process was the introduction of the Golf-Jetta range of cars from 1974.[1] The range embodied some fundamental design and engineering innovations and essentially created a new paradigm for car design for a decade or more. The leadership of the Golf was based on three design cornerstones. The Golf was one of the first cars to take advantage of computer-stressing techniques which enabled designers to exploit the full weight-saving potential of front-wheel drive [Daniels, 1985]. Secondly, the engine was modern and efficient. It was basically an adapted Audi 80 engine. It was a relatively sophisticated engine for a medium size volume car, with great potential to be stretched or adapted. One result was that in the late 70s VW could take advantage of this to carve out a new market segment of "hot hatchback" Golf GTIs (which for example made up some 40% of all Rabbit sales in the US) [Hutton, 1985, p. 19]. Thirdly, its suspension was simple but advanced, embodying important innovations developed at Audi.

In all of these features one crucial factor was the transfer of technology from the up-market Audi range into Volkswagen's volume cars. The product renewal would hardly have been possible without this. Audi had been acquired by Nordhoff in the late 1960s as an up-

[1]VW cars were sold with different names in the USA: Audi 80 = Fox; Passat = Dasher; Golf = Rabbit. The Audi 50/Polo was not sold in the USA.

market marque to begin the process of extending Volkswagen's model range, but it had had few links with the main body of the company at first. The transfer of technology that did take place was not as simple and obvious a process as it might appear. In BL, for example, the transfer of technology from up-market ranges, such as Rover and Jaguar in the 1970s, into the volume cars was never seriously considered. In fact, it was not believed that the sorts of technology required in the two segments could be compatible or that transfers of elements of technology from the one to the other could be done cost effectively. It was also feared that transfer would lead to homogenization and debasement of the up-market product. In the Volkswagen case the transfer was successfully achieved, yet in the process Audi retained its identity (and a significant degree of autonomy within the Volkswagen organization) and, despite periodic problems in relation to larger Volkswagen cars, the identity of the Audi marque has been successfully preserved.

The Transformation of Governance

The development of new models did not come quickly enough to avert a severe financial crisis in 1974-5. The Golf and Passat were launched in 1974, but they made a slow start because of the oil shock and recession, while sales of the old models continued to slump. Hence, product-led recovery did not really get under way until the Spring of 1975. In the meantime, a major crisis of management organisation, governance, and labor relations came to a head. Product renewal had come almost *despite* internal management crises and faction-fighting. But the crisis of the early 1970s also provided the occasion for a fundamental reform of VW management.

Before the crisis, the defects of the structure of decision-making in the company had been badly exposed. Under Nordhoff, whether the company had been state-owned or partially privatized, ultimate control of the company rested in the hands of the government. But after various vicissitudes in the 1950s, the government for the most part was content to allow Nordhoff to act on

its behalf in a quasi-trustee role [Tolliday, 1995]. Nordhoff's demise, however, triggered a rancorous and factional period. From 1969, when the Lower Saxony state government was captured by a Socialist-Liberal coalition, the Supervisory Board had an effective 12:9 majority of Works Councillors, trades unionists, or delegates of SPD-led federal and regional governments closely allied to the unions. The press commonly described this as a "red" majority or spoke of "over-codetermination" at Volkswagen [Thimm, 1976, p.95; Streeck, 1984, p. 44]. The Supervisory Board did little to avert the Beetle crisis in the late 1960s. Instead it became an arena for "politicized intriguing" and horse-trading, particularly centered on IG Metall's strategy to use VW as a pacesetter for wages between 1968 and 1971 as it began, for the first time since the War, to bargain more aggressively to win a share of German prosperity for its members. The wage question brought sharp clashes between both Lotz and Leiding and the unions, and, in part to repair this damage, Lotz agreed to build a costly new plant for the NSU K-70 at Salzgitter, which supported employment in the region.

By December 1974 the company was in financial crisis and Leiding was deadlocked with IG Metall and the Volkswagen Works Council. The program of new investment was largely complete, the Beetle was rapidly being phased out, and the new models were coming on stream. But it seemed quite possible that recession and cash-flow crisis could bring the company down before the long-term program of product-led recovery could take effect. Short-term survival and cost cutting seemed to require drastic workforce reductions and it was clear that Leiding had little chance of carrying through such a program without acute conflict with the unions.

In this situation of internal paralysis it was direct intervention by the government that provided a way out. The Federal government was both the largest shareholder in VW and was also acutely aware of the significance of events at VW for its wider political and economic policies. A major crisis at VW could damage the wider economy seriously and involve massive subsidies and disrupt the government's wider promotion of "social partnership." The Finance

Ministry, acting in concert with the big banks, therefore used its power to reshuffle the Supervisory Board and bring in a new Chairman of the Supervisory Board and a new Managing Director, Tony Schmucker, who had acted for the government in the rationalization of the steel industry but who also had the strong support of IG Metall [Streeck, 1984, p. 65].

Schmucker's installation was a highly visible signal that the company would be managed in consultation and co-operation with IG Metall and the Works Council, a rejection of the approach of Lotz and Leiding. The Supervisory Board, which was the level at which the unions had their greatest influence, became in effect "the central policy-making body of the company, acting on matters which in other companies the management would have been careful to reserve to itself" [Streeck, 1984, p. 67]. Coming at a time when major national legislation for extended co-determination was under discussion, these developments at VW were a significant response to traditional union demands and ran into much criticism from business interests. On the other hand, precisely because of their political salience, IG Metall was at first very anxious to use their new power "responsibly" so as not to jeopardise wider political advances.

It was one thing for the government, the unions, and top management to embrace the principle of co-operative management; it was another to find solutions that both parties would approve. In Britain, the nationalization of British Leyland in 1974 saw the putative adoption of related corporatist ideas, but the principles quickly broke down in face of crises. At Volkswagen the new system immediately faced a very severe crisis and came through it not only intact but actually strengthened.

The crucial terrains of compromise were, firstly, that Schmucker was prepared to guarantee that, though redundancies of some 25% of the total workforce were required, he would only implement them with the consent of the union. In its turn, IG Metall accepted the principal that employment levels should be dictated by the needs of the market and confined the area of debate to what was the minimum level of redundancies consistent with "economic

reality." Wolfgang Streeck [1984] also stresses the importance of the solidaristic strategy of IG Metall. IG Metall's historic orientation was to avoid the development of "sectional" pressures within the workforce which could prove intolerable within its multi-industry structure. Accordingly, they were prepared to reject any "special protection" for particular groups of workers, such as government subsidies to to support VW employment which would be paid for out of the taxes of IG Metall members in other industries.

There is some truth in this in a general sense, yet Streeck exaggerates the role of encompassing and solidaristic elements in IG Metall's policies at this crucial moment. More important was the fact that the proposed redundancies fell largely on the shoulders of relatively marginal groupings within the union. In the 1974-5 redundancies some 40,000 workers lost their jobs (almost 30% of the workforce). But a detailed analysis by Rainer Dombois shows that 67% of these workers were foreign workers, particularly Tunisians and Italians, and that a high proportion of the rest were old workers or young female workers. Employment remained largely stable for male German workers with more than five years seniority in the company who were well protected by contracts, seniority, and the interest representation of the Works Council. The company avoided the use of compulsory redundancies and instead relied on voluntary quits or paid severance contracts, but the structure of pressures and incentives in these contracts was such that they were hard to refuse, especially for the more marginal workers [Dombois, 1982, pp. 432-463]. The result was that the burden was disproportionately carried by those outside the core workforce defended by the Works Councils. In this crisis the continuity of "solidaristic" union policies was made possible, and confrontation avoided, by the fact that under the banner of "no special protection" a large part of the workforce found itself *de facto* outside the protection of the union. In Britain, a different union ideology, not so averse to sectionalism, paradoxically meant that their defence of workers' jobs was much more all-encompassing - a fact that left none of the room for compromise that was so important in the VW case.

The trade-off, however, was very favorable to the residual workforce. After 1975 VW adopted a "middle-line" employment policy, essentially restricting hirings in upturns by using high levels of overtime and thus being able to minimise redundancies in economic downswings. In return the unions continued to offer high levels of internal job flexibility, the absence of local job controls, and co-operative manpower planning. The general trend of this was to encourage intensive rather than extensive use of human resources and force attention to continuous training and the development of workforce skills within the company. Many observers have argued that this pattern of manpower management (external rigidity but internal flexibility) became a major component of VW's effective use of flexible automation in the 1980s, probably a beneficial unintended consequence of the original policy [Kohler and Sengenberger, 1983; Hoff, 1983].

For the company and IG Metall the negotiation of the redundancy crisis became a symbol of "co-operative crisis management." Its path was greatly eased by unexpectedly rapid recovery from the crisis. Within months market revival and the impact of the new product range boosted sales and VW soon faced problems of relative shortages of best quality labor. From mid 1975 to the late 1970s VW enjoyed one of its biggest booms ever and profits soared. Though VW experienced further problems in the early 1980s, market success largely continued through the 1980s. One result was that employment in VW's German operations actually increased over the course of the 1980s [Volkswagen, 1980-90]. Continually growing demand meant that increased productivity did not require the job losses so common elsewhere in the European automobile industry.

The Transformation of Strategy

The rapid recovery of the late 1970s made it easier to resolve the acute situation in the United States. Volkswagen's multinational operations stretched back for many years, and by 1970 12.5% of its

global output of 2.2 million vehicles was produced by its overseas subsidiaries, mainly in Brazil, Mexico and South Africa. As domestic sales and exports to the US declined in the early 1970s overseas production played an important role in cushioning the company. In 1972, for example, domestic production fell by 16% while foreign production rose by 46%. By 1975 37% of VW's global output was produced abroad, and the contribution to cash flow was a vital lifeline for the company [Volkswagen, 1975]. Nevertheless, though foreign investment was extensive (and an important part of Volkswagen's success story which it is not possible to explore in this paper), it involved almost solely investment in markets like Brazil and Mexico that were effectively closed to imports and therefore could not have been sourced from Germany even if the company had wished to do so.

By 1974 Volkswagen management had reached the conclusion that the US market could only be retained by building a plant there to escape the hazards of exchange rate fluctuation. Maxcy calls the decision "the classic case of defensive investment to prevent the loss of a major export market" [Maxcy, 1981, p. 136]. Once the redundancy crisis was resolved and domestic sales were reviving, Schmucker was able to win the agreement of IG Metall to a path-breaking settlement on a major investment in the US, whereby the union not only consented but was drawn into an active role in the development of investment policy [Streeck, 1984]. This was facilitated in part by the catastrophic nature of the decline in sales in the US. There was a broad consensus that though investment in the US might cost jobs in the short-term, failure to invest there would also result in the loss of those jobs in the long-term. IG Metall was therefore prepared to accept the construction of a US plant and negotiate on the basis of improved job security for its German members and an enhanced role for itself in such investment decisions. On the first issue the company was ready to make concessions since, following the redundancies, workforce numbers had been cut back to the core: on the second issue, despite hostility to such an extension of union jurisdiction among other sectors of the German business

community, the extension of involvement for "responsibility" was seen as well worthwhile.

The US investment was, in fact, never very profitable or successful, and the actual decision to invest was probably less crucial for the future of the company than it appeared at the time or shortly afterwards. Perhaps more important was its demonstration and confidence-building effect for later decisions on overseas investment, most strikingly in the case of the acquisition of SEAT in the mid 1980s.

VW and the German Model in the 1980s

Thus, in the space of a few years, both the institutions and the strategy of the company were transformed. Yet, in the late 1970s many commentators argued that German companies like VW would be disadvantaged in international competition by the growing institutional rigidities that resulted. In fact, during the 1980s, while the workplace role of organized labor continued to expand (union density increased from 68% in 1970 to 86% in 1981)[Koch, 1987, pp. 155-165], the German automobile industry prospered. According to Wolfgang Streeck, this success was an exemplary demonstration of the competitiveness of the "social partnership" embodied in the "German model" [Streeck, 1989]. In this view, VW's revival was based on an ability to develop diversified high quality products which responded flexibly and quickly to demand. Crucial to this were co-operative labor/management relations which made possible the maximum utilization of highly-developed labor skills at home, at the same time as permitting the pursuit of global investment strategies. A stable and skilled workforce effectively forced firms like VW into more demanding, and in the long-run, more successful adjustment strategies.

Under Carl Hahn, Volkswagen's CEO from 1982 to 1991, the focus was the so-called "technology strategy." Hahn regarded the introduction of new technology and process automation as the principal route to increased productivity and lower costs (an idea

widely shared in Germany at the time) [Jurgens, Malsch and Dohse, 1993]. Many in the company saw this approach as a distinct and successful alternative to Japanese methods [for example, Dankbaar, 1993], particularly those who interpreted Toyotism simply as a form of speed-up that German workers would not accept [Dohse, Jurgens and Malsch, 1985]. Volkswagen's emphasis on technology and automation was distinctive in the European automobile industry. The focus was on utilizing institutionalized labor/management co-operation to operate a "humanized" Taylorism, running at resonable speeds, and relying on technology-oriented solutions to production problems. Work cycles were longer and the work slower paced, while increased emphasis was placed on hard technology managed by skilled workers to control costs and raise quality [Jurgens, Malsch and Dohse, 1993].

Symbolic of the strategy was the automation of Hall 54 (the huge central trim and final assembly facility at Wolfsburg) and complementary facilities in other plants, linked to the introduction of the Golf II range from 1983-4. Despite its dramatic innovations in automation, the plant remained classically Fordist, focused on a narrow range of products, with minute subdivision of tasks, detailed preplanning and line balancing, and a continuing gulf between skilled indirect and unskilled direct labor. There was little place for team and group-work practices that were increasingly popular elsewhere.

The Works Council played a key role in supporting the "technology strategy" and determining the shape of work organization within it. In particular, they were reluctant to abandon the traditional distinction between highly qualified skilled workers (*Facharbeiter*) usually in indirect areas, and ordinary low-skilled production workers in direct tasks. [This was in sharp contrast to the Japanese emphasis on reducing the distinction between direct and indirect workers and homogenizing skill levels.] Their main priority, therefore, was to create new roles for skilled production workers controlling complex production equipment (the *Anlagenfuhrer*) and to insist on intensive and continuous in-house training. One result of this was the accumulation of "excess" skills in the plant, with young highly trained

workers lacking challenging tasks and further increasing pressure on management to introduce more complex automation to allow them outlets for these skills.

Alongside this, the role of the Works Council was significantly extended and enhanced in the 1970s and 1980s. Earlier agreements were consolidated and extended in a succession of agreements between 1978 and 1981 (known as LODI agreements) which guaranteed high levels of employment security, full pay protection in job transfers, and continuous training and retraining rights [Brumlop and Jurgens, 1986; Brumlop, 1986; Turner, 1991].

These agreements are often described as a trade off of increased job and pay security in return for the more flexible allocation of labor by management. In fact this is only partly true. In comparison to the United States there were few job classification and seniority rules to bind management. However, in practice, after 1979 all new time standards and all work assignments required advance approval by the Works Council. What was most distinctive was not the absence of job controls but the pattern of speedy daily joint resolution and quick implementation of these matters [Turner, 1991, pp. 94-5; Thelen, 1992]

During the 1980s the Works Council extended its reach still further. Most notable were the acquisition of extensive rights to information and consultation on planning in the early 1980s, and the acceptance of co-determination on the introduction of new technology from 1987, which gave the Works Council real influence on plant design and work organization. At the same time, VW continued to be the pacesetter for IG Metall demands on working conditions, not only on training rights where they obtained most of IG Metall's *Qualifikationsoffensive* demands, but also on extended break times, shorter working week, educational leave, and time-off in exchange for overtime [Streeck, 1989; Thelen, 1991; Turner, 1991].

Simultaneously, building on the success of the American plant in the late 1970s and early 1980s, Hahn continued to push forward the process of internationalization of the company, and generally received a high degree of consensus and support from the union in the process.

The Works Council acknowledged that wages and conditions in Germany inevitably meant relatively high cost production. This was, however, to be offset by the quality and flexibility of production and a focus on higher value-added products. With certain reservations, therefore, they accepted that labor-intensive production and bottom of the range models would be shifted to low cost locations outside Germany [Jurgens, 1992]. In the early 1990s the Works Council gradually accepted that effective low-cost production of Volkswagen's smaller and technically simpler cars could only be accomplished outside Germany, even if this involved a substantial relocation of production to Spain and East Germany.

Crucially, however, during the 1980s, the continuous expansion of global sales meant that this could be done without loss of jobs in Germany. As long as foreign plants led to increased sales of German products (via valuable components exported to those plants from Germany) they actually resulted in a net increase in German output.

For a time at least the results of this "model" were impressive. At home management and labor allied behind a strategy for productive success which also allowed a continuing extension of the rights and authority of worker interests in the governance of the company. Abroad, some of the costs of this strategy were absorbed by internationalization and relocation of production which, for a time at least, seemed to have few costs for the German workforce.

But underlying problems gradually asserted themselves. Firstly, the results of the "technology strategy" were disappointing (though they were considerably better than GM's comparable technology-led efforts in the USA at the same time)[Keller, 1989]. Automation did not, in fact, solve the quality problem, and VW's processes needed to be extensively buffered by costly extra labor and rework. Hall 54 was subjected to some of the strongest criticism of the highly esteemed International Motor Vehicle Project (IMVP) study in the late 1980s and early 1990s and was labelled "the fattest production system in the world." According to Dan Jones of IMVP, "the plant was expending more effort to fix the problems it had just

created than Japanese plants required to make a nearly perfect car first time" [The identity of the plants is disguised in Womack, Jones and Roos, 1990; but see Keller, 1993, p. 175 for some less discreet comments]. In particular, the critics focused on the extensive use of craftsmen to fix the defective work of robots.

Moreover, while the German model continued to posit some sort of trade-off between quality and efficiency, during the late 1980s most automobile executives came to be persuaded that "lean production" offered the possibility of combining high quality and product flexibility with low costs and rationalization. The Volkswagen system also implied a notion that markets could be segmented between a high-quality low-competition segment (where the "German model" would dominate) and a low-price high-competition segment which could be left to the Americans and Japanese. But by the end of the decade such notions had become outmoded as a result of rapid changes in quality, costs and product development by US and Japanese companies.

By the late 1980s the underperformance of automation and rising labor costs were creating internal discontent in the company, and planners began to retreat from ambitious automation targets. The depth of the difficulties and the extent of the productivity problem, however, remained concealed by rising market shares until the crisis that struck the company in the early 1990s [Williams, Haslam, Johal and Williams, 1994, pp. 171-5]. The time bomb of rising costs came to a head with the "profitless prosperity" of the early 1990s and the huge losses of 1991-2 during a period of record output. In 1991 Volkswagen lost DM 770m during the biggest car boom Germany had ever experienced [Volkswagen, 1991].

The internal revolution in the company triggered by these events is still playing itself out. It resulted in a proliferation of strategic new departures including a dramatic acceleration of production in low-cost locations (Skoda, SEAT, Mexico, East Germany, China), a rethink about the value of internal "Japanization," and the re-emergence for the first time for almost twenty years of plans for domestic rationalisation, cost-cutting, and even workforce

reduction, symbolized by the replacement of Hahn by the new regime of Ferdinand Piech and his "hard-man" Inacio Lopez, controversially head-hunted from GM. Nevertheless, even these moves have so far been accepted with a high degree of consensus by IG Metall and the Works Council.

Conclusion

VW's recovery from the crisis of the mid 1970s and its successes in the 1980s are often associated with the companies adoption of the "German model." This article has demonstrated that the linkages between the success and the model are not straightforward. In certain respects, broader market, product and cyclical changes provided conditions in which the "model" could thrive for a time despite serious shortcomings which were later to be exposed.

Nevertheless, it would be unwise to write off the Volkswagen approach to production systems as fundamentally flawed and inevitably destined to give way to a superior practice of "lean production" modelled on Japanese lines. Whatever its faults, the "German model" at VW made possible a durable system of conflict resolution between the interests of labor and management (even on issues as sensitive as international location and job control at plant level) that is rare in advanced industrial nations. Attempts to link advanced automation and the accumulation of flexible worker skills have thus far been less successful. But, as Japanese automobile producers begin to experience a new range of difficulties in the late 1980s and early 1990s [Fujimoto, 1994], and as more doubts are cast on the notion that "lean production" represents "the end of history" in the management of production, analysts may well return to VW's "German model" as a subject of continuing interest.

References

Brenner, Richard, "Dogs," *Car*, May 1989.

Brumlop, Eva and Ulrich Jurgens, "Rationalisation and Industrial Relations in the West German Auto Industry: A Case Study of Volkswagen," in O. Jacobi et. al eds. *Technological Change, Rationalization and Industrial Relations* (London, 1986).

Brumlop, Eva, *Arbeitsbewertung bei flexiblem Personaleinsatz. Das Beispiel Volkswagen AG* (Frankfurt, 1986).

Daniels, Jeff, "Technical examination," in Ray Hutton ed., *Volkswagen Golf GTI. The Enthusiast's Companion* (Croydon, 1985).

Dankbaar, Ben , *Economic Crisis and Institutional Change: The Crisis of Fordism from the perspective of the automobile industry* (Maastricht, 1993).

Dohse, Knuth, Ulrich Jurgens, and Thomas Malsch, "From 'Fordism' to Toyotism? The Social Organization of the Labour Process in the Japanese Automobile Industry," *Politics and Society*, 14, 2, 1985.

Dombois, Rainer, "Massenentlassungen bei VW, Individualisierung der Krise," *Leviathan,* 4, 1976, pp. 432-463.

Dombois, Rainer, "Volkswagen in USA. Arbeitsbedingungen und Konfliktregelung in US-amerikanischen VW-Betrieben," in Reinhard Doleschal and Rainer Dombois, eds., *Wohin lauft VW? Automobilproduktion in der Wirtschaftkrise* (Reinbek, 1982).

Etzold, H. R., *The Beetle. The Chronicles of the People's Car. Volume 1. Production and evolution facts and figures* (Newbury Park, CA, 1988).

Fujimoto, Takahiro, "The limits of lean production. On the future of the Japanese Automotive industry," *Politik und Gesellschaft,* 1994.

Hoff, Andreas, "Assessing Medium-Term Investment-Related Manpower Needs. A Case Study from the German Automobile Industry," in Wolfgang Streeck and Andreas Hoff, eds., *Workforce restructuring, Manpower Management and Industrial Relations in the World Automobile Industry: Vol. 2 Case Studies* (Report to the Commission of the European Communities, Berlin, August 1983).

Hutton, Ray, "Inventing the Hot Hatch," in Ray Hutton, ed., *Volkswagen Golf GTI. The Enthusiast's Companion* (Croydon, 1985).

Jurgens, Ulrich, Thomas Malsch, and Knuth Dohse, *Breaking from Taylorism. Changing forms of work in the automobile industry* (Cambridge, 1993).

_____, "Internationalization Strategies of Japanese and German Automobile Companies with special emphasis on Volkswagen," in S. Tokunaga, N. Altmann and H. Demes eds., *New Impacts on Industrial Relations. Internationalization and Changing Production Strategies* (Munchen, 1992).

Keller, Maryann, *Rude Awakening. The Rise, Fall, and Struggle for Recovery of General Motors* (NY, 1989).

Keller, Maryann, *Collision. GM, Toyota, Volkswagen and the race to own the 21st Century* (NY, 1993).

Koch, Gunther, *Arbeitnehmer steuern mit. Belegschaftsvertretung bei VW ad 1945* (Koln, 1987).

Kohler, Christoph and Werner Sengenberger, *Konjunktur und Personalanpassung. Betriebliche Beschaftigungspolitik in der deutschen und amerikanischen Auitomobilindustrie* (Frankfurt, 1983).

Lotz, Kurt, *Lebenserfahrungen: woruber man in Wirtschaft und Politik auch sprechen sollte* (Berlin, 1978).

Ludvigsen, Karl, *Opel. Wheels to the World* (Princeton, 1975).

Maxcy, George, *The Multinational Motor Industry* (London, 1981).

Nader, Ralph and the Centre for Automotive Safety, *The Volkswagen. An assessment of distinctive hazards* (Washington, DC, 1971).

Nelson, Walter Henry, *Small Wonder: The Amazing Story of the VW* (Boston, 1970).

Rader, James , *Penetrating the US Auto Market: German and Japanese Strategies, 1965-76* (Ann Arbor, 1980).

"Road Test," *Car,* November 1968

Streeck, Wolfgang, *Industrial Relations in West Germany: A Case Study of the Car Industry* (London, 1984).

Streeck, Wolfgang, "Successful Adjustment to Turbulent Markets: The Automobile Industry," in Peter J. Katzenstein, ed., *Industry and Politics in West Germany: Toward the Third Republic* (Ithaca, NY, 1992).

Thelen, Kathleen, *Union of Parts. Labor Politics in Postwar Germany* (Ithaca, NY, 1991).

Thelen, Kathleen, "The politics of flexibility in the German metalworking industries," in Miriam Golden and Jonas Pontusson, eds., *Bargaining for Change* (Ithaca, NY, 1992).

Thimm, Alfred, "Decision-making at Volkswagen, 1972-75," *Columbia Journal of World Business*, Spring 1976.

Tolliday, Steven, "Enterprise and State in the West German Wirtschaftswunder: Volkswagen and the automobile industry, 1939-1962," *Business History Review*, forthcoming, 1995.

Turner, Lowell, *Democracy at Work. Changing World Markets and the Future of Labor Unions* (Ithaca, 1991).

Volkswagen, *Annual Reports*

Williams, Karel, Colin Haslam, Sukhdev Johal, and John Williams, *Cars. Analysis, History, Cases* (London, 1994).

Womack, James P., Daniel T. Jones, and Daniel Roos, *The Machine That Changed the World* (New York, 1990).

Wood, Jonathan, *The VW Beetle, including Karmann Ghia* (London, 1983).