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From the law of the jungle to partnership? The bumpy road to new producer-supplier relations in the automotive industry: The example of a bodywork and assembly plant

Abstract

Since around a decade, the automobile industry is undergoing a dramatic turnaround. New strategies for marketing and producing are considered as trigger pulses for the emergence of different inter-firm relations between customers and suppliers in the car industry's production complex. The development of partnership between OEMs and suppliers asks from both sides new approaches, new routines in dealing with each other as well as new modes of thinking and acting. The following study reflects our understandings and experiences, we got by the project „Optimization of the sourcing and production strategies between suppliers and producer". A result is, that you can observe concepts and approaches of re-shaping of communication and co-operation, that reflect the completely different demands in the sourcing and production process. But their potentials can be tested and developed only very steadily. In reality, instruments and procedures of coordination and regulation as well as behaviours are dominating, which ground on obsolete power constellations and are minted by OEMs hegemony. Above all, the intented project's goal „development and testing of partnership in communication and co-operation in the relationships between the car factory and its suppliers" is determinated by centralized decision making-structures and by strategies of the car-company, which are partly contradictionary.

Vom Recht des Stärkeren zur Partnerschaft? Über den schwierigen Weg zu neuen Hersteller-Zulieferer-Beziehungen in der Automobilindustrie am Beispiel eines Karosserie- und Montagewerks

Zusammenfassung

Die Automobilindustrie befindet sich seit etwa einem Jahrzehnt in einer dramatisch zu nennenden Umwälzung. Veränderte Markt- und Produktionsstrategien gelten als Auslöser für die Entwicklung einer neuen zwischenbetrieblichen Arbeitsteilung zwischen Herstellern und Zulieferern im Produktionskomplex Automobil. Die Entwicklung partnerschaftlicher Hersteller-Zulieferer-Beziehungen erforderte von Herstellern wie Zulieferern ein Umdenken, andere Routinen im Umgang miteinander sowie neue Denk- und Verhaltensweisen. Resultat der vorliegenden Studie, die Einsichten und Erfahrungen aus dem Projekt "Optimierung der Produktions- und Lieferbeziehungen zwischen Zulieferern und Hersteller" bilanziert, ist, dass sowohl bei dem beteiligten Automobilhersteller als auch auf Seiten seiner involvierten Zulieferer Konzepte und Ansätze zu einer partnerschaftlichen Neugestaltung der Kommunikations- und Kooperationsformen zu verzeichnen sind, welche die tiefgreifend veränderten Anforderungen im Produktions- und Belieferungsprozess reflektieren. Ihre Potentiale können aber erst allmählich erprobt und entfaltet werden, weil in der Alltagspraxis nach wie vor Koordinations-

und Steuerungsinstrumente sowie Verhaltensweisen vorherrschen, die auf die überkommenen Machtverhältnisse in der Automobilindustrie bauen, also von der unbedingten Dominanz des Kunden geprägt sind. Überdies ist die vom Verbundprojekt angestrebte „Entwicklung und Erprobung partnerschaftlicher Kommunikations- und Kooperationsformen“ in den Beziehungen zwischen der Autofabrik und ihren Zulieferern durch zentrale Entscheidungsstrukturen und durch Strategien innerhalb der Groß-Organisation des Automobilkonzerns bestimmt, die teilweise im Widerspruch zueinander stehen.

Content

Foreword

The present study is the result of the experiences acquired in the course of a joint project, now completed, undertaken with companies in the regional automotive industry. The organisations involved in the project - six component suppliers and a bodywork and assembly plant operated by a major car producer - had set themselves the task of testing new forms of communication and co-operation with the intention of "optimising production and supply relations".

In the course of this joint project, those directly involved worked very hard together to facilitate inter-firm understanding and co-operation in their daily operations. However, it is our intention here to focus rather on the difficulties and limits of this undertaking, since we consider them to be particularly instructive. They have their roots in the complexity and contradictory nature of an industry that, for the past decade or so, has found itself in a period of dramatic change.

So if, in the course of this report, we illustrate as graphically as possible some of the complications that can arise on the road to greater partnership and co-operation, then the examples we have chosen should be regarded as typical of the constraints under which the automotive industry operates. The "goodwill" of the individual actors, which was demonstrated to us on many occasions in the course of the project, is not by itself sufficient to achieve very much here.

We would like once again to thank all those involved very warmly for the commitment they showed to the project, and not least for the trust they placed in us in allowing us to investigate their activities and the difficulties involved in them. Working with them on this project demonstrated to us how sensitive production and supply relations in the automotive industry are to disruptions. In the light of this realisation, we have decided to make this study anonymous by avoiding any reference to real actors.

1 New production and organisation strategies in response to changes in automobile markets. Introduction

Faced with the decision between in-house production and outsourcing that each producer repeatedly has to confront, car producers in Western Europe and North America have, over the past decade, opted to outsource the manufacture of more and more parts. Production systems based on stationary assembly platforms, product modularisation, increasing vertical disintegration and concentration on core competencies are key words that summarise the changes in production strategies which, as elements of *lean production*, have had a considerable influence on the thinking and behaviour of car producers. This change in the production economy of the automotive industry has been the subject of much analysis (cf. Jürgens/Malsch/Dohse 1989; Womack/Jones/Roos 1990 (1991); Sauer/Döhl 1994a/1994b; Meißner et al. 1994; Freysennet/Mair/Shimizu/Volpato 1998; Boyer/Charron/Jürgens/Tolliday 1998).

We regard this shift as a structural change in industrial mass production, the purpose of which is to develop new production and organisation strategies by means of which the competitive advantages of cost-saving mass production can be reconciled with the advantages of customer and quality-oriented one-off or small-batch production. Product diversity and quality combined with price stability or even cost reduction are regarded as the principal management objectives. In order to achieve this objective, the car producers have adopted a strategy of reducing the level of vertical integration within their groups and instead systematically exploiting the development and production know-how of competent suppliers. They have introduced new forms of logistics in the shape of *just-in-time* delivery systems, with the aim of reducing their own storage costs and providing the basis for a differentiated and more flexible system of mass production. At the same time, new forms of quality control have been put in place in order to increase product quality, with the stipulation that "everything should be done right first time" (Lehndorff 1997: 69). In the literature, this structural change is also known as the "third transformation" of the automobile industry[1] (Lamming 1994).

This change is said to have been triggered by a changed market economy that is reflected in the conjunction of two contradictory developments, namely a decline in quantitative growth rates and an increase in the number of suppliers in the same market segments in the North American and Western European car markets. In particular, the Japanese car manufacturers have been able to establish themselves as powerful competitors. At the same time, they have introduced a different understanding of the importance and organisation of producer-supplier relations into the Western industrial world.

[1] According to Lamming (1994), the first transformation was the changeover from artisanal to industrial production and the emergence of mass production for a huge volume market. The second transformation is said to be the modification of mass production for a volume market eager for new variants in the 1950s and 1960s.

1.1 "Partnership" as a core element in changed producer-supplier relations

In order to make it clear just why we speak of structural change in the production and supply relations in the (Western) automotive industry, we will begin by outlining two ideal-typical models: the "traditional model", which we will take as the starting point of the change, and the "partnership model", which we regard as the replacement paradigm. Models are not to be equated with reality. Both the models outlined here are to be regarded as generalisations or ideal types that have been inferred from the reality of industrial mass production in the West or Japan. It is not claimed that they fully capture the actual complexity of either productive system. In order to avoid misunderstandings, it should be stressed that the "partnership model", at least in the form outlined here, does not yet have its counterpart in reality. Both models serve as reference points in the current process of change. According to Lamming (1994), they can be summarised as follows:

The basis of the traditional model was an unsaturated automobile market with sufficient orders for manufacturers and suppliers, which created a relatively relaxed competitive situation. Suppliers were selected by inviting tenders for contracts. The crucial factor in selection was price. This allowed the manufacturers to play a number of direct suppliers off against each other. The manufacturer knew nothing about the suppliers' production conditions and calculations. Price changes were regarded as a traditional purchasing task and were usually the object of fresh negotiations between manufacturers and suppliers. Parts were supplied constantly and in large quantities. The time frame for deliveries was very broadly defined. Continuity of production in the assembly plant was guaranteed by large stocks held on site. Quality control was ensured by setting targets for the maximum number of rejects and by regular inspections carried out by the manufacturer. This gave rise to a very costly and time-consuming complaints process. Lamming (1994) puts it very aptly when he says that the traditional model was based on the assumption that manufacturers and component suppliers belonged to separate, though related industries that came into contact with each other in the marketplace only for the purpose of negotiating on certain specific issues.

This is very different from the partnership model, which is the prototype for or objective of change. The basic idea here is the need to develop and nurture lasting relations between producers and suppliers. In this model, communication and co-operation between assemblers and suppliers acquire strategic value. In the traditional model, the sale price was the decisive factor in the assembler's sourcing decision. In the partnership model, on the other hand, it is the supplier's actual manufacturing costs that are decisive. For this reason, an effective exchange of information between the business partners is crucial to the success of the partnership model. This applies both to the supplier's cost calculations and to the volume of vehicles the producer actually plans to produce. Both parties strive for the goal of zero-fault quality by rigorous forward planning and process regulation. In this way, the relations between producer and supplier acquire a very high degree of transparency. In the partnership model, the producer relies on a small core of regular suppliers. The producer holds only minimal stocks. The delivery system is managed on a *just-in-time* basis. Either the supplier's deliveries are fully synchronised with the assembly process, or the components have to be delivered (or collected by the producer) within a very tight time frame.

For Western car manufacturers, this process of change from the traditional to the partnership model was and still is combined with the opening-up of new markets. The preferred regions are Eastern Europe, Southeast Asia and Latin America. Since the lifting of the Iron Curtain and the transformation of the former socialist command economies into liberal market economies, Eastern Europe in particular seems not only to offer an enormous new market but also to be a profitable location for investment in new production plants. The restructuring of production and organisation, on the one hand, and the globalisation of the automotive industry, on the other, are two of the strategies the car producers have adopted as they attempt to maintain their international competitiveness. Both of these developments reached fruition in the 1990s at virtually the same time. In a way, they are mutually dependent[2], and this of course considerably increases the complexity of the structural change in production and supply relations, for producers and suppliers alike.

The new production strategies adopted by the Western car manufacturers led, and continue to lead, to a paradoxical combination of circumstances. On the one hand, the reduction in the level of vertical integration among the car manufacturers and the introduction of *just-in-time* logistical systems means that the organisation of production flows is increasingly shifted into the market sphere. As a result, the value-added chain in the automotive industry has become both more efficient and more flexible, but at the same time more fragile (cf. Lehndorff 1997: 65 ff.). On the other hand, the smooth functioning of the supply system, which has become crucial to the continuity of the production process because of the very low stocks held by the manufacturers, and the maintenance of "zero-fault quality" among the components delivered, which is an essential prerequisite for the new delivery systems, demand a high degree of stability in inter-firm relations. Disagreements, misunderstandings and irritation must be avoided as far as possible. In order to manage this paradoxical situation, the automotive production system has made use of "human beings as buffers" (Lehndorff 1997), often to an unreasonable degree, which has led to new imponderables and instabilities and must therefore, and for long-term economic considerations also, be regarded as unsatisfactory.

Another option was found in the inter-firm arrangements on the implementation of supply and quality assurance procedures. In the past, manufacturers and suppliers entered into contracts on the price, volumes and quality of the products and services to be purchased; now they also have to agree on regulatory mechanisms and/or precise procedural arrangements governing inter-firm processes. The new delivery and quality assurance systems, such as QS 9000 or VDA 6.1, are just such mechanisms. They enable customers as well as suppliers to create the required mixture of discipline and flexibility and reduce the need for expensive monitoring procedures and sanctions on the part of the buyers.

[2] Cf. Pries (1999), who characterises the evolution of the three German automotive groups in the 1990s as a "dual strategy of restructuring and globalisation" and for this reason speaks of an "accelerating spiral of restructuring and globalisation".

1.2 "Optimising the production and supply relations between component suppliers and producer : the joint project and its objectives

It is not our intention here to investigate in any greater detail the changes in market and production strategies that are generally regarded as having triggered the development of a new inter-firm division of labour between producer and component supplier within the automotive productive system. What interest us, rather, are the contradictory processes at work in the gradual emergence of new forms of communication and co-operation that are indispensable if the interaction between customers and suppliers in the production and delivery process is to be better synchronised. The joint project "Optimising the production and supply relations between component suppliers and producer"[3] gave us an opportunity to investigate the processes over a period of three years. The project was designed as a consulting as well as a research project.

As a consulting project, it pursued two objectives: Firstly, its intention was to make a contribution to development of inter-firm organisation. The aim was to bring together, on neutral territory and around the same table, representatives of the local bodywork and assembly plant operated by an American automobile company and representatives of a small number of very different component suppliers[4] from North Rhine-Westphalia. The idea was to create an opportunity for the various parties to step aside from the hurly-burly of everyday business in order to engage in an exchange of thoughts, opinions and experiences relating to the complications that were then bedevilling this very specific set of assembler-supplier relations. In methodological terms, the project design was an open one[5], in the sense that the difficulties in the relationships on both sides were not defined in advance in the form of a list of tasks that had to be completed within a certain period of time. At the beginning of the project, the partners had agreed only that the problem areas to be focused on would be logistics and quality management. Put very simply, the objective was to develop and test forms of communication and co-operation adapted to the requirements of the changed production and supply relations in the automotive industry.

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[3] The project ran for a period of three years, from mid-1996 to mid-1999, and was funded within the framework of the EU's ADAPT programme. It was part of the European project group CORE (**C**orporation **o**f **R**egions in **E**urope) which, in addition to the Institut Arbeit und Technik, also involved the following institutions: Instituto Aragonés de Fomento, Saragossa, Spain; Bedfordshire County Council, Bedford/UK; Cranfield University, Cranfield/UK; North Tyneside Council/Tyneside Training and Enterprise Council, Newcastle/UK; RKW-Landesgruppe Hessen, Eschborn. The members of the IAT project team were the authors of the present study, together with Dr Steffen Lehndorff and Wolfgang Stolte. We thank both of them for their constructive criticisms of the structure and content of this project study.

[4] Throughout this study, we will refer to and describe our project partners anonymously. Thus we refer to the "local bodywork and assembly plant" or "the car factory" and to "supplier Z1", "supplier Z2" etc.

[5] The "open" design of the project meant that the primary aim was to initiate, support and shape social processes taking place between project participants. The project was based accordingly on the rolling planning principle, with each new stage being planned on a step-by-step basis depending on current need and the willingness of the participants.

Secondly, the project pursued industrial policy objectives. As the reality of life in the workplace shows, the interaction between customer and suppliers in the inter-firm production and supply process does not generally move in synchrony of its own accord. In our view, the main reasons for this are, on the one hand, the asymmetrical power relationships between producer and suppliers and, on the other, the chronic time pressures on day-to-day operations and personnel shortages at the functional manager level. This is why projects organised and moderated by neutral third parties are required in order to develop inter-firm organisational structures.

As a team engaged in a joint project funded out of the public purse, we took the view that it was not our task, as external moderators, to promote inter-firm co-operation as such. Rather, we considered it our task to create the conditions in the workshops whereby all participants would have a realistic opportunity adequately to articulate their interests, to have their own insights respected and to make their problems a matter for all those involved. This is how we felt we could contribute to the success of an undertaking that was designed as a "learning project" with a powerful partner. This was also, in our view, the decisive industrial policy justification for using public money to fund a project in the automotive sector on the development of inter-firm organisational structures.

From the industrial policy perspective, the need to develop inter-firm organisational structures in the automotive industry arose out of the concern of policy-makers at *Land* and regional level to maintain the quantitative and qualitative employment potential represented by each car factory with its network of component suppliers by providing the support services considered necessary to manage the new demands. In the present case this meant: a local bodywork and assembly plant in North Rhine-Westphalia with more than 14.000 jobs and around 100 component suppliers. Despite all the trends towards globalisation and internationalisation in the industry and the global sourcing strategies adopted by the car producers, the suppliers still have their headquarters or production plants in North Rhine-Westphalia. Some of them are well-known companies, steeped in tradition, that have at their fingertips a vast accumulation of specialist know-how in product development and process organisation and have developed astonishing abilities to adapt to the new demands made by their customers and their globalisation strategies.

Both producers and suppliers are equally affected by the consequences of the "third transformation" in the automotive industry. However, since producer-supplier relations based on partnership require new thinking, different routines and new forms of behaviour on both sides, the component suppliers have to be regarded as the actual targets of industrial policy initiatives. Above all, they need outside support in order to meet the challenges of the new forms of inter-firm communication and co-operation. Since their position as suppliers means that they are structurally subordinate to their powerful producer customers, the essential aim here is, through industrial policy projects, to create special conditions in order to neutralise these power structures as far as possible within the project context, thereby opening up learning opportunities for both sides, suppliers and producers alike.

However, it was not the sole purpose of the project to shape and influence the behaviour of the participants. As researchers at the *Institut Arbeit und Technik* (IAT), we were also pursuing our own interests. Firstly, we wanted to identify the possible stumbling blocks that lay on

the road leading from the traditional to the partnership model in the automotive industry and to ascertain the extent to which, given the current power structures within industry, they could be recognised and avoided. Secondly, we wanted to ascertain what functions external moderators have to fulfil in such a joint project and to put them into practice.

The empirical basis for this report is a total of some 30 interviews, many of them lasting several hours, which we conducted in the initial phase of the project as part of our analysis of the "weak spots" in the various plants. Our interviewees were representatives of company management and the functional managers in the areas of quality management and logistics. In the final phase of the project, we carried out detailed interviews with the same people, again for periods of several hours in many cases, in which they were invited to assess the progression and effectiveness of the project. The interviews are supplemented by our own observations and experiences gathered in the course of 22 workshops held between 1997 and mid-1999.

Our most important observation is that both the producer and the component suppliers involved have embarked on the task of putting in place new forms of communication and co-operation based on partnership that reflect the radically changed demands to which the automotive industry is now subject. However, the potential of these new forms can be tested and developed only gradually, since day-to-day business is still conducted on the basis of co-ordination and management instruments and of modes of behaviour that have their roots in the traditional power relationships within the automotive industry, that is in the absolute dominance of the customer. What is more, the development and testing of forms of communication and corporation based on partnership, which is the goal of the joint project, is mediated through centralised decision-making structures and the strategies adopted within the automobile group, some of which are mutually contradictory.

Looking back, the "learning project" we embarked on with a powerful partner was a risky undertaking. It is in the nature of things that a powerful organisation has no need to take account of the interests and points of view of other, weaker actors, let alone get involved in a joint learning project. It is evident, therefore, that our idea of using the joint project as a platform for testing new, partnership-based forms of inter-firm communication and co-operation required a good deal of goodwill and understanding on the part of the car producer.

1.3 The structure of the study

Before we look in greater detail at the role and structure of the automobile group, we will in section 2 first introduce the partners in the joint project and try to sketch in the range of motives for their involvement in the project.

Section 3 is given over to the complex world of the automobile group and the period of turbulence it has gone through in recent years, the effects of which made themselves felt even within the immediate sphere of our project. The effects of that turbulence provide some interesting clues as to the contradictory and conflictive relationship between group headquarters and the various production sites, which also influences the relationships with the component suppliers.

In section 4, we attempt to give an insight into the dynamic and scope of the joint project. This insight is mediated through two of the instruments developed in the course of the project: Firstly, the sequence of workshops or "workshop meetings", which were the most important form of action developed in the course of the project, illustrate the room for manoeuvre and potential effectiveness of such a co-operative association. Secondly, the failure of the inter-firm incident analysis, in particular, points to some of the current limitations of approaches based on partnership.

Section 5 is given over to the reactions of the project participants, which are based on a survey of their experiences with the work of the joint project and its outcomes. This evaluation of the project reveals two things. Firstly, the need for communication and co-operation between the assembly plant and its component suppliers is currently very high at all levels and is not adequately met by current practices. Secondly, it has to be noted that this need meets with very little response from the decision-making bodies of the car manufacturing company.

By way of conclusion, section 6 examines the scope that exists within state industrial policy for promoting forms of communication and co-operation based on partnership in the production and supply relations in the regional automotive industry.

2 A "learning project" with a powerful partner

2.1 The partners in the project

The central and dominant actor in the joint project was our partner on the producer’s side, namely the local body work and assembly plant in North Rhine-Westphalia, which employs more than 14.000 people. Daily production capacity at the plant is currently around 1.200 vehicle units. The assembly plant receives components from around 400 suppliers. From the point of view of industrial policy in North Rhine-Westphalia, it is interesting that around 100 of these automotive component suppliers have their company headquarters or their production plants in the *Land*. The spectrum of suppliers ranges from a large international group which, as a system supplier, built its own factory near the assembly plant at the end of the 1980s in order to be able to deliver seats to the manufacturer's final assembly line on a fully synchronised basis, to a screw and bolt manufacturer in the region of Sauerland that produces a differentiated range of nuts and bolts for the car assembler. From a regional perspective, therefore, the assembly plant and its component suppliers in North Rhine-Westphalia represent considerable potential in terms of industrial and employment policy.

The idea that we should seek to enlist this assembly plant for our project was based on pragmatic considerations. By virtue of the close physical proximity between the *Institut Arbeit und Technik* and the car plant, there have for several years been good working relations between the two which have been sustained by personal contacts and the organisation of joint activities. To that extent, we already had access to the plant, and our proposal met with a favourable, if cautious, response from the plant management.

In terms of their size and corporate structures, as well as their sources of supply and markets, the six automotive component suppliers involved represented a broad spectrum of the industry. They included traditional, medium-sized family companies with production plants in Germany and abroad, as well as subsidiaries of large foreign companies or groups. They also included parts, components and systems suppliers.

In terms of our project, supplier Z1 represented the archetypal system supplier. It operates as a supplier of seat systems to the assembly plant. The local factory is part of an American conglomerate that is steeped in tradition. It was built in 1989 at a distance of only 8 km from the assembly plant.[6] It employs around 230 people and produces 1.200 seat assemblies and door linings daily. Supplier Z1 is connected to the car factory's main computer via a permanent link for the transmission of firm orders and other logistical information. Z1 is also linked by computer to its own suppliers. The time from receipt of the firm order to installation of the seats on the car factory's assembly line is just 3 hours. Deliveries take place in accordance with the *just-in-sequence* system (jis). In the first few years after the plant was commissioned, supplier Z1 worked solely for the car factory; in recent years, however, this exclusive status has changed. Since October 1995, Z1 also supplies seat systems on a *just-in-sequence* basis to an assembly plant operated by another car producer in North Rhine-Westphalia. Supplier Z1 also provide services for another of the car factory's systems suppliers, which produces airbags and door linings. Z1 has a contract with this supplier for a small engineering job and also organises the commissioning of the door linings and the compilation of the delivery sequences. From the point of view of the second supplier, Z1 operates as an intermediate store in close proximity to the customer and therefore as a buffer in the *just-in-sequence* delivery system.

Supplier Z2 was originally part of a famous North Rhine-Westphalian company.[7] The company name was, at the same time, the brand name for the specific material from which its most important products were made. This automotive component supplier was, and still is, regarded as a specialist in the use of renewable raw materials for car interiors. The company's particular strengths are said to be the environmental soundness, low weight, stability and robustness of its products. The company has developed a whole range of natural fibre materials with specific properties that meet a wide range of very different demands. Supplier Z2, in whose production plant around 700 workers are employed, operates as a component supplier to the assembly plant. Because of its high level of technological expertise in the use of renewable raw materials, supplier Z2 is seeking to enter into a development partnership with its

[6] One point of interest for the history of the globalisation of the automotive component supply industry is that, in the same year, this American conglomerate acquired a 49% stake in a German manufacturer of seat mountings and inside linings for the automotive industry. In 1992, this component supplier finally became a wholly-owned subsidiary of the conglomerate. For the new parent company, this meant two things. Firstly, it gained access to the German automotive component supply market. Secondly, it created the technical conditions for the emergence of complete seat producers.

[7] The history of this company illustrates the amazing speed at which the automotive component supply industry is currently being concentrated and globalised in the wake of the 1992/93 crisis in the automotive industry and the globalisation of the automobile producers. In 1994, the company was bought out by another North Rhine-Westphalian automotive component supplier. This company, in its turn, was taken over by an American family business that mainly produces door systems and dashboards as well as head (inside roof) linings and floor consoles for car producers. In April 1998, finally, this supplier was bought up by the large American conglomerate that also owns our project partner Z1.

customer and to acquire the status of a system supplier in the area of car interiors. It already has this status in respect of other car producers. However, it was unable to achieve this objective for the new production series planned for the assembly plant. Supplier Z2's plant has been supplying the car factory for many years.

Supplier Z3 is a long-established family concern that has its headquarters in the Münster area. Since 1866, ownership of the company has been passed on in direct line within the family. The form of the company has been changed in various ways since the mid-1990s in order to create the flexibility required by the expansion of its business and its increasing foreign commitments. The group currently employs around 2.700 people in more than 16 plants at 14 locations in Europe. As far as the automotive industry is concerned, supplier Z3 mainly produces insulating and lining components such as boot (trunk) carpeting, rear window (parcel) shelves, roof linings, backrest linings, floor carpets etc.[8] Supplier Z3 and the German subsidiary of the car producer have been dealing with each other for many years, since the immediate post-war period. Currently, however, these dealings are of secondary importance for both parties. Thus Z3, working in accordance with the new MAIS system[9], supplies the assembly plant with only a small number of ancillary parts. And since the assembly plant accounts for only 10 percent of Z3's turnover, it is hardly a priority customer for the supplier. In terms of our project, supplier Z3 represented the archetype of the automotive component supplier which, by virtue of its technological know-how and the complexity of the parts it supplies, is able to function as a component or system supplier and as a development partner[10] for car producers.

Supplier Z4 is also a North Rhine-Westphalian company, steeped in tradition, with its headquarters in the Sauerland. It employs around 1.700 workers at seven sites in Europe. Since 1998, Z4 has been 70 per cent owned by an American company that is one of the leading

[8] Supplier Z3's specific product know-how is based on its reliability and precision in the production of various textile materials made from a combination of synthetic and natural fibres that meet prescribed criteria such as mass uniformity, dimensional stability, colour fidelity, fastness to light, emission safety etc. This know-how is the result of more than 100 years' experience, first with carriage upholstery and later with the interior appointments of cars and the manufacture of textile floor coverings.

[9] The MAIS (= **M**aterial **I**nformation **S**ystem) logistical system, a set of specifications to which four of the six component suppliers involved in the project now operate, is based on the following main principles. Each order is for a precise number of parts, with each batch being as small as possible. The parts have to be packed in standard containers that act as a sort of mobile store until the components reach the point of assembly in the car factory. The parts are picked up, transported and delivered by haulage companies contracted to the car producer, which is a change from past practice. The supplier has to make the quantity of parts ordered available for collection within a very tight time frame (usually twice a day), and also has to provide very precise documentation. For the assembler, the advantage of this delivery system lies in the enormous reduction in the volume of parts held in store. Of course the system is much more liable to disruption, and both the assembler and suppliers have to be very disciplined in planning and complying with the system specifications. The main advantage for the suppliers is that firm orders for a guaranteed volume of components are placed approximately one month in advance, which means they are able to plan ahead with greater certainty than before. Two of the six suppliers are not integrated into the MAIS system: Z1 delivers parts on a just-in-time/just-in-sequence basis to the assembly line and Z2 dispatches a whole day's output of its large components every day by rail.

[10] Along with thirty-seven other suppliers, Z3 was involved as a resident engineer, and therefore as a development partner, in the process of designing a new model for a Southern German car manufacturer. The company is acting as a so-called design supplier for this model.

manufacturers of window and door systems and seat components for the automotive industry in the USA. The acquisition of a majority stakeholding in supplier Z4 not only allowed the American company considerably to extend its own product range but also gave it access to the European car market. The remaining 30% of the company's shares belong to another large German automotive component supplier. As a traditional metalworking company, supplier Z4 originally produced mainly doors and bodywork parts for the automotive industry. At the beginning of the 1970s, the company began to produce plastic parts and has now made its mark as a processor of semi-finished glass modules. It is much in demand as a specialist manufacturer of complex decorative bodywork parts made of metal and plastic. It sees itself as a "development supplier to the international automotive industry". Its customers include virtually all the well-known car producers in the world. It has been doing business with the owner of "our" car factory since the 1920s. Even today, both the car producer and the assembly plant it operates are important customers for supplier Z4. The main product Z4 makes for the assembly plant is the scuttle, a body shell panel directly below the front windscreen that often incorporates the air inlet slots for interior vents. It is a critical part located at the intersection of contrarotating tolerance fields. Z4 operates as a component supplier for the assembly plant but aspires to be a development partner with the car producer, an ambition it has not yet been able to realise. Z4 supplies the assembly plant on the basis of the MAIS system.

Supplier Z5 is a typical family metalworking business in the region of Sauerland that was founded at the beginning of the last century. Right from the outset, it was involved in producing sheet metal for the automobile industry. In the "López era" of producer-supplier relations[11], supplier Z5 went through a period of crisis as sales fell and jobs were cut. With the change in management, the company has genuinely managed to turn itself around in recent years. A process of internal reorganisation was initiated. A programme of new investment was drawn up and a new plant was built on the original site, in which modern transfer presses and metal-forming machines were installed, all of which meet the demands of today's logistical systems. In terms of its orders from the automotive industry, supplier Z5 "*has been through a period of rapid expansion*"[12], which has also led to the creation of new jobs. Today, supplier Z5 employs almost 600 workers and, in addition to its headquarters in the Sauerland, has production sites and joint ventures in Poland, Portugal, Spain and in the USA. The core competences of supplier Z5 are in sheet- metal forming and the processing of sheet-metal parts to make welded subassemblies. Pressed, punched and drawn components are produced for the automotive and electrical industries. The car manufacturer that operates the assembly plant is one of supplier Z5's main customers. Z5 supplies the assembly plant with large volumes of some 35-40 different parts on the basis of the MAIS system. On several occasions, Z5 has been nominated *"supplier of the year"* by the car producer. As far as the joint project is concerned, Z5 is the archetypal parts supplier. It can be seen as a winner in the process of structural change that has taken place in the automotive industry. Clearly, Z5 has adopted a proactive and constructive approach to the car producer's attempts to reduce the level of vertical integration, turning the process to its own advantage and developing new technological competences. It has taken greater responsibility for products and has seen its own sales rise considerably. Z5 aspires to the status of component supplier to the car manufacturer.

[11] Cf. page 22 ff. below.

[12] Quotations from the expert interviews are reproduced anonymously and italiscised.

Since the mid-1990s, supplier Z6 has been part of a group of medium-sized, family-owned firms in the metal industry in North Rhine-Westphalia, which has its roots in the early days of industrialisation. The group employs around 2.200 workers and has production plants in Ireland, Portugal, Mexico, Brazil and Poland. In addition, it is involved in joint ventures in Spain, the USA and Canada. The automotive component supply business accounts for approximately 50% of its turnover. It produces a similar range of products, using much the same metal-forming technology, as Z5. The two Z6 plants involved in the joint project together employ about 500 workers. The assembly plant is one of Z6's main customers, and the parts it produces are delivered in accordance with the MAIS system. On its own admission, Z6 has had to struggle with quality problems in recent years. From the perspective of the joint project, Z6, like supplier Z5, is the archetypal parts supplier. Unlike Z5, however, Z6 has not been able to come to terms so rapidly with the process of structural change in the automotive industry. The reasons for this are to be found not least in the group's sometimes turbulent history, with its changes of ownership, stagnating investment, the transfer of functions to other sites and job losses. The benefits of the restructuring that has taken place are now beginning to make themselves felt. When the project came to an end, however, it was not yet clear where Z6 would eventually position itself in the reshaped automotive productive system.

The assembly plant and the six suppliers involved in the project can be seen as a microcosm of an industry that is constantly changing and under great strain. This applies both to the process of increasing international integration and concentration in the automobile industry, in which changes of ownership now seem to be the order of the day, and to the suppliers' constant jockeying for position relative to the producer in the automotive productive system. It is the status of development partner that has the greatest strategic significance. The standard categorisation of component manufacturers as system, component or parts suppliers seems to be of secondary importance in assessing their competitiveness, as is shown by the economic success of the parts supplier Z5, for example. And even the small sample of firms involved in the joint project showed that dynamic component suppliers function as parts and component suppliers or as component and system suppliers to their various car producing customers.

2.2 The firms' motives for involvement in the project

The fundamental objective of our project, namely to tackle problems in the collaboration between producer and suppliers on the operational level, that is problems encountered in the day-to-day running of their businesses, was of interest to managers in the assembly plant in the sense that they were keen to ensure as trouble-free a launch as possible for the new model that was due to enter series production in the course of our project. This is why representatives of plant management expressed an interest from the outset in making quality assurance and logistics the main focus of the project. In addition to these pragmatic concerns, however, the hope was expressed that the project would also provide answers to the question of how customer and suppliers should deal with each other. As far as their own company was concerned, it was suggested, self-critically, that the real problem lay in deciding how to "*stop playing the all-powerful customer in our dealings with suppliers*".

Managers in the assembly plant were interested in setting up a suppliers' group that would include both "*good*" and "*problematic*" suppliers. Management also regarded differences in

size and company form among its suppliers as an important issue. It was clear that the car producer as customer often knows very little about its suppliers' internal structures and procedures, which may well give rise to "*problems with information flows*". As a result, management was interested in "*the ways in which different corporate structures might affect co-operation and communication*". Plant management showed little interest in suppliers of standardised, mass-produced parts: "*DIN suppliers are readily interchangeable and therefore uninteresting*".

On their own admission, those managers who, as representatives of the assembly plant and heads of function in the quality assurance and logistics departments, had helped to set up the project and had kept a watchful eye on its progress, were given responsibility for it by their superiors. They accepted the task allocated to them in the knowledge, tinged with resignation, that this additional responsibility would be theirs "*for the duration*", since senior management was much too overburdened. The assembly plant representatives expressed the hope that the project would offer a forum "*in which we will be able to get across our requirements more clearly*".

For their part, the suppliers got involved in the project because the assembly plant was involved. At the same time, they decided to take part because the project had obviously *not* been initiated and funded by the car producer. This apparent paradox reflects a dual motivation. On the one hand, the project was seen as a good opportunity to cultivate and improve relations with the customer. There was also the subliminal suggestion that it would be better not to disdain an initiative in which a car-producing customer was also involved. This can be the only plausible reason why managers representing the various component suppliers agreed, at the very first meeting and without further ado, to participate in the project. On the other hand, the suppliers wanted to use the project in order to open up new and different channels of communication with representatives of the car producer so that they could discuss and possibly solve problems that tended to be off-limits in the course of everyday business. In the expert interviews, a number of problems and causes of friction were identified as bedevilling relations with the assembly plant on the strategic level. The difficulties identified can be summarised briefly as follows: no involvement in the early stages of product development; no formal, long-term contractual relationship; a shifting of responsibility and costs onto the system supplier without giving the company any real power to choose its own sub-suppliers and without any attempt being made to modify patterns of behaviour based on exploitation of the producer's superior power; unfairness and bluffing in business discussions; price squeezing. For these reasons, it was not least of the suppliers' hopes that the IAT project team would be able to bring influential members of the producer's management team to the table.

If this strategic combination of defence and attack was the main motivation for the suppliers' involvement in the project, there was also a hope that it would provide a means of exchanging experiences and information with other suppliers. The suppliers' need for guidance and encouragement can be summarised in the following two questions: What position are other suppliers in? What are the others doing differently - and what can we learn from them?

3 The car producer - a subsidiary caught between organisational dependency and technological leadership

The general trends in the evolution of the automotive industry in the West, outlined in the introduction, find their own particular expression in each car manufacturing company. Specific corporate structures and traditions, influenced by each company's particular positioning in the market, the historical evolution of its supply relations and the (national) system of industrial relations within which it operates, all play an important role in this respect. For "our" assembly plant which, as a local, non-American bodywork and assembly plant, is located on the lowest rung of the hierarchy in the group's power structure, this means being part of a system in which the local interests, customers and traditions of individual production plants are not the only factors at work. Superimposed over these local considerations is the shift from the "traditional" to the "partnership" model, with its partially contradictory American and Western Europe notions on how to organise a flexible system of mass production that does equal justice to the new demands for innovation and quality, flexibility and efficiency, international expansion and the fostering of local production sites.

3.1 The assembly plant's position within the American automobile group

The German subsidiary plays an ambivalent role in the parent group's power structures. In the current organisational chart, it is located on the fourth level of the group's Automotive Operations, as part of the Europe zone, which in turn is part of the Europe/Asia region.[13] The local assembly plant, our partner in the project, is located at the fifth and lowest level of the group hierarchy.

However, this formal definition of its location within the parent group's organisational structure does not adequately reflect the actual position of the German subsidiary, nor that of the assembly plant it operates. The German subsidiary is the leading company in the parent group's European operation. It operates three production plants in Western Germany and employees some 44.500 workers (status as at end of 1997). There is also a fourth plant in Eastern Germany that employs around 1900 people and is affiliated to the German subsidiary through a profit and loss transfer agreement. Since 1995, the Eastern German plant has been regarded as "without doubt the most productive car factory in Europe" (AP, February 1997: 26) or "as the absolute number one in Europe" (FAZ, 7/2/1996), whose production and work organisation system is regarded as the very model of the modern car factory.

A comparison of the numbers employed in the Western European plants operated by the group underscores the dominant position of the German subsidiary within Europe. The numbers employed range from 9.800 in Great Britain to 1.100 in Portugal. In between these two extremes are the plants in Spain (9.000 employees), Belgium (7.700 employees) and Austria (2.800 employees) (status as at 31/12/1996).

[13] The three other regions are North America, Latin America/Africa and the Middle East.

The current position of the assembly plant within the German subsidiary is determined by its status as home plant for a new car that has been on the market since March 1998. Both the product and the function are full of implications.

As is reflected in headlines such as: "A new beginning" (AutoBild, 20/2/1998), "Breaking new ground" (AutoZeitung, 25/2/1998), "Reaching for the stars" (Frankfurter Rundschau, 28/2/1998) or "The stars are sparkling brighter than ever" (Frankfurter Allgemeine Zeitung, 24/2/1998) that appeared in the daily and specialist press, the new car had, and still continues to have, many high expectations associated with it. It was supposed to repeat or even improve upon the success of its predecessor, which with sales of 3.8 million units had been the most successful model the German subsidiary had ever produced, and thereby further reduce the lead enjoyed by the rival model produced by a German car maker.

Thus the economic stakes were already very high. However, the political significance of the new model within the group was even greater. The German subsidiary saw in it a means of advancing into the "premier division" of the car market and of winning back consumer confidence in the brand. The test reports that appeared in the press before or at the time of its launch in the first quarter of 1998 confirm the high quality standards of the new vehicle.[14] The postponement of the new model's launch from the autumn of 1997 to March 1998 was fully consistent with this quality strategy. The company commented loftily at the time that quality was more important than time and that it was better to be lagging behind the competition's schedule than its quality standards (AutomobilProduktion, December 1997: 42).

The new car's entry into series production led to far-reaching changes in the assembly plant. The two-line system introduced a completely new production method. The production line was slowed down to half of its original speed. This made it possible to produce the new car and a mini-van version of it simultaneously. Furthermore, reorganisation (pre-assembly of 48 major modules) and automation (expansion of the robot lines from 250 to around 1000) led to a 20% reduction in the length of the manufacturing process relative to the previous model.[15] Additional changes introduced as part of the new production system included the further development of group work, a new logistical system and the introduction of a new quality system. The new car really did mark almost a new beginning for the car plant, a fact reflected in the statement that, when the new model went into mass production, "the walls were the only part of the original plant left standing" (works manager in an AP interview, October 1997: 100).

While the new model can certainly be described as the German subsidiary's current prestige product, the car has a further particular significance for the assembly plant, since it has been nominated by company headquarters as the *home plant* for the new model. Together with the

[14] Cf. AutomobilProduktion reports of December 1997 and February 1998; AutoBild of 20/2/1998; Frankfurter Allgemeine Zeitung of 24/2/1998; Die Welt of 28/2/1998; Frankfurter Rundschau of 28/2/1998; Süddeutsche Zeitung of 28/2/1998; auto motor sport of 25/2/1998; automobil of March 1998; AutomobilProduktion special edition of June 1998.

[15] For further details on the restructuring measures cf. AutomobilProduktion of October 1997: 98.

project director (management and responsibility for the development of new models), the product development team and the business processing function (control, coordination and chairing of the project team), all of which are head office positions, the *home plant* is one of the four pillars of the group's production system.[16] A *home plant* is responsible for a particular model in the sense of being a centre of excellence. Thus "our" car factory sets the quality standards for the three other assemblers involved in the production of the new car. It is the centre for the production of this model in Europe and bears the main responsibility for the preparatory work prior to series production and for the production process proper.[17]

The extra new competences the plant acquired as a result of its designation as a *home plant* were not clearly defined from the start. They emerged only gradually from August 1997 onwards, when pre-series production started, and led eventually to a revaluation of the status of this regional production plant within the group. This was confirmed to us in expert interviews with representatives of the assembly plant. This shift, initially only a gradual one, in the relationship between head office and the local bodywork and assembly plant was also attributed to the policy adopted by the German subsidiary's new chairman. It was suggested, "*that the Americans have now begun to understand that not everything can be decided centrally, that is a long way from the actual problems.*" It was noted in evidence of the growing importance of the assembly plant that, since the new model had gone into series production, high-ranking representatives of the sourcing department were constantly "*hanging around the place*", and that the weekly car-line meetings for all the assembly plants involved in the production of the new model were now taking place at the *home plant*.

In terms of the topic that concerns us here, namely the current change in producer-supplier relations, it is interesting to note that the launch of the new model was accompanied by a good deal of talk about new technical quality developments, a new factory and a new production process, but that little was said about changes in producer-supplier relations. Thus the works manager, in an AP interview, stressed that intensive benchmarking with rival factories had taken place before the plant was rebuilt and reorganised, with Japanese transplants in particular being the object of much critical scrutiny (AutomobilProduktion interview, October 1997: 100). The question of which production line speed produced the highest quality was identified here as "the key issue". In other words, in preparing for the production of the new model, the main focus of attention was on the internal reorganisation of the production process and on the technical systems to be installed in the plant. The question of the future organisation of relations with suppliers was obviously of secondary importance. The reporting on the development of the new model reveals a similar emphasis. There is no particular mention of development partnerships as a reflection of changes in producer-supplier relations and as a crucial precondition for optimising costs and improving quality. Rather, it was stressed that racing drivers had, for the first time, been involved in the development of the new model: "The tests on the racing track provided so many important pointers for the car's development that (…) in future racing drivers will be brought on board at an earlier stage" (AutomobilProduktion, December 1997: 46).

[16] This system was first adopted for a new model's entry into series production in 1994 (AutomobilProduktion of February 1997: 26).

[17] Cf. AutomobilProduktion of June 1998: 24.

3.2 Upheavals in the automobile group in the second half of the 1990s

Over the course of our project, various events taking place within the automobile group caused a stir in the business and daily press. The new model, which began to roll off the production line at the beginning of 1998, inspired both positive and negative headlines. The positive headlines have already been mentioned. The new car attracted negative headlines during its development phase, well before it went into series production. In protest against the refusal of the group's headquarters in the USA to equip the new model with a fully galvanised body, the head of development, who had only been in post since 1995, resigned from his job with the German subsidiary in mid-1997 (AutomobilProduktion, December 1997: 42).

A recurrent theme in 1997 and 1998 was "the feud" (Frankfurter Allgemeine Zeitung, 21/1/1998) between the German subsidiary and the American parent company, the chief protagonists in which were the then head of the group's worldwide automobile business outside the USA and the then chairman of the German subsidiary. It would be simplistic to see this power struggle simply as an expression of personal rivalries and antipathy between two powerful men. Rather, it reflected deep-seated differences of opinion as to the future strategy the group should adopt in reaction to the changed market economy in the automobile sector. The daily press peddled the line that the group representative was fighting to raise profitability considerably, and wanted above all to cut costs, while the chairman of the German subsidiary, also an American incidentally[18], was said to be championing Germany as a location for business enterprises.

The history of the "feud" can be summarised as follows. The two adversaries A and B, operating at a level somewhat below the highest rung of the company hierarchy, embodied two contradictory market strategies. A was responsible for the entire automobile business outside the USA, that is he was both the senior manager and coordinator of the European plants and the person in charge of the group's globalisation strategy. He was placing his faith above all in achieving expansion by building new factories in Eastern Europe, Latin America and Asia, to the detriment of existing plants in Western Europe, even if it meant disregarding the accumulated know-how available in those plants (cf. Der Spiegel, 5/1998: 2 ff.).

Despite the German subsidiary's lowly position in the group's organisational chart, its importance within the structure of the group as a whole has constantly increased in the wake of the group's expansion across the globe. The reason for this is that the group's cars aimed at the North American consumer market were unsuitable for markets outside North America. The German subsidiary took over the lead role in technical development and in the opening-up of car markets outside the USA. In reporting the removal of B as chairman of the German subsidiary, the German business paper "Handelsblatt" diagnosed "a distinct uneasiness in the group's (American) headquarters at the growing importance and alleged power of the subsidiary (…) within the group structure.… (The German subsidiary's) models are more suited to

[18] The upheavals outlined here graphically illustrate the questionability of interpreting the struggle primarily as an expression of "national" specificities. In this case, the "German" strategy was being championed by an American, while the "American" strategy had a fervent advocate in the technical director of the German subsidiary, a German who had been with the company for many years.

the global market, and it has become the group's leading brand in its foreign markets" (Handelsblatt, 22-23/5/1998).

The German subsidiary's growing importance within the group is also reflected in the opening of an "International Technical Development Centre" employing over 8.000 workers at its German headquarters, which was given sole responsibility for the development of engines and gearboxes for the whole group. "A leading role … in a new global organisation" was predicted for the new centre (Frankfurter Allgemeine Zeitung, 19/10/1997). Thus it is only logical that the head of sourcing for the Europe zone should be based at the German subsidiary's headquarters, close to the production plant and to the International Technical Development Centre.

However, the chairman of the German subsidiary embodied not only the enhanced - and still growing - importance of his company within the group, but also a different commercial policy. If it was said of A (or "the American", as he was known) that he wanted "to keep their German plants … on a tight rein" or to lower quality standards, an attitude also reflected in the group's American products with their enormous quality problems[19], B had a reputation "as an energetic champion of the record of German engineers in the motor industry" (Handelsblatt, 8/1/1998).

"The feud" between the German subsidiary and the American parent company led to personnel changes at management level within both the group and the German subsidiary. As head of the group's international operations, A was ordered back to the USA and deprived of his power shortly afterwards. As the former chairman of the German subsidiary, B was transferred in the summer of 1998 to Russia, where he assumed different responsibilities. After a brief interregnum during which the former president of the group's Mexican subsidiary headed the company, the head of the group's Swedish operation was appointed as the new chairman of the German subsidiary. It remains to be seen whether these changes in senior management will be enough to reduce future tensions between the German subsidiary and its American parent. While the new chairman has been quoted in the press as being keen to strengthen the German plant, doubts have also been expressed about his ability to stand up against the new head of the group's operations in Europe. This latter has been described as "more authoritarian then his predecessors". He "is said, like his predecessors, to be concerned almost exclusively with cutting costs, to the point where the product itself is almost forgotten" (Handelsblatt, 18-19/5/1999).

As our outline of the upheavals that shook the automobile group in the second half of the 1990s was intended to show, the distribution of power between the group's American headquarters and its production sites or, more accurately, between group headquarters and the German subsidiary, can in no way be regarded as set in stone. In our view, what has really

[19] This opinion is widely expressed in the German press. The magazine "Der Spiegel" put it this way when the new model was introduced: "The rapid decline in quality was the result of the company policy that is now known by (…) insiders as the 'American disease'. The parent company (…), the world's largest car producer, which has complete control of its German subsidiary, is going all out for a radical reduction in costs at the expense of quality" (Der Spiegel 9/1998: 174).

lain behind the upheavals that have shaken the group in recent years is a constant shifting of the balance of power between the various constituent parts. The scales sometimes tip more in the direction of group headquarters and sometimes more in that of the German subsidiary or of the various production sites. At times, those for whom the dual challenge of globalisation and the implementation of a flexible mass production system is best met by adopting a strategy of worldwide expansion and rigorous cost reduction, to the detriment of quality and the cultivation of existing resources and competences, will be in the ascendancy; at others, the position of strength will be held by those who are more concerned with quality and the fostering of individual sites and their know-how. We will turn to these considerations again in our conclusions on industrial policy.

3.3 Producer-supplier relations within the group straitjacket

The group's relations with its European suppliers were under particularly severe strain at the beginning of the 1990s. The acronym PICOS[20] and the name López stand for a policy of cost reduction and rationalisation of the value-added process in its entirety which, on the suppliers' side, has gone down in history as the "iron hand" policy (Lamming 1994: 282). Lopez set in train a pattern of development in the Western European and the German automobile industry that led to the creation of what Lamming (1994) calls the "tension model". He describes the situation prevailing in the component supply industry at the time in the following terms: "The parts producers found themselves in such a desperate position at that time that they were unable to exercise good business sense when it came to hanging on to customers. Competition in the component supply industry was sliding into chaos" (Lamming 1994: 209). He describes the situation with producers and suppliers as one of "desperation". All decisions and activities were subordinated to the objective of "cost reduction".

In view of the balance of power between the group, the largest car producer in the world, and its suppliers, what this meant in practice was that the producer shifted even more of its own risks on to its suppliers. The "López effect" has become a saying because, when the car producer hit upon the idea of directly increasing its suppliers' productivity, it was for the first time in its history violating their autonomy. In so far as one can speak of "trust" at all with reference to the "traditional model", then this resource was badly affected by the aggressive moves made by the producer.

Today, producer-supplier relations within the group are shaped by the structures and decisions of a worldwide purchasing system. According to an organisational chart dated December 1997 (in: AutomobilProduktion, February 1998: 37), four sourcing directors are each responsible for one of the North American, European, Latin American and Asia-Pacific regions. They operate under the overall management of a group sourcing director, who is responsible for the group's purchasing of materials and equipment throughout the world. National

[20] PICOS = Purchased Input Concept Optimisation with Suppliers. The originator of this programme is said to be José Ignacio López de Arriortúa, who was firstly head of sourcing at GM Europe and then production chief at VW. Lamming (1994: 356, note 1) rightly points to the meaning of PICOS in Spanish: not only 'summit' or 'peak', that is a symbol for top-class performance, but also 'pick-axe'. Thus it is only in conjunction with the Spanish origin of Señor López that PICOS acquires its true meaning.

sourcing directors and nine (supra-regional) divisional directors report in turn to the four regional purchasing directors. The divisional directors are assisted by so-called creativity teams, which are responsible for the sourcing, anyway in the world, of a system or module within their division.

Since our project was located at the operational level, where producer-supplier relations in the day-to-day production and delivery process are shaped, it was faced with a dual relational structure. The basic determining factors were the principles and practices of the development and sourcing departments. Both departments are located at the German subsidiary's headquarters, development in the head office of the German subsidiary itself and sourcing in the group's European office. This primary, power-ridden relational structure was overlaid by a more pragmatic one within the assembly plant itself, which had to deal on a daily basis with the component suppliers that had been selected for a particular model by a sourcing department operating on a global basis. In one of the expert interviews we conducted, the conflictive nature of this dual relational structure was expressed in such a way as to identify the sourcing department as the locus of considerable problems: "*That's where they keep the fierce dogs that are let loose when they have problems with the suppliers*."

The Vice President Europe Supply is responsible, together with six national sourcing directors (and the nine divisional directors), for the Europe zone. Together, they constitute the European Sourcing Committee, which meets weekly to decide which suppliers are the "best worldwide" and therefore obtain the contract. In an interview, the Vice President Europe Supply gave notice not only of a further reduction in the number of direct suppliers and an increase in the purchase of modules and systems, but also a further consolidation of "world sourcing", with the aim of concluding contracts which suppliers at the "world price" (AutomolbilProduktion, February 1998: 32). Thus the globalisation of car production is bringing with it the globalisation of material and equipment sourcing.

It is entirely consistent with strategy of worldwide, cost-conscious sourcing that the group should not have a supplier development programme based on partnership (in the sense that we understand the term). The main message that suppliers hear from group headquarters is that further cost reductions and increasing efficiency are what is required of them. The strategy adopted by the senior purchasing director is described as follows in an AutomobilProduktion article: the objective is "… world sourcing from suppliers that have a fault rate of only 25 ppm[21] … (he) is keeping up the pressure in order to choke off the source of faults. If a supplier cannot notify the company within 90 days that deficiencies have been eliminated, they are deleted from the file" (AutomobilProduktion, October 1997: 42).

[21] The unit of measurement "ppm" stands for the ratio "parts per million" and in quality management denotes the share of faulty parts produced or delivered. The ppm rate, averaged out over a month or a six-month period, is used by car producers as a basic criterion for evaluating the performance of individual suppliers and is one of the decisive factors in the awarding of contracts.

4 Scope for action and the project's limitations

The structural change in production and supply relations in the automobile industry has placed considerable demands on the ability of all those involved to learn and adapt. Once a producer has taken the strategic decision to opt for a particular supplier, every effort has to be made to build up a partnership with that supplier. Of course, the shift away from the traditional "adversarial, conflictive relations, based largely on tactical considerations" (Wolters 1996: 235) towards modes of behaviour based on partnership has not been completed. In many cases, there is a contradiction between the need to optimise actual supply relations on the ground and the sourcing strategy of automobile groups operating on a global basis. In the case of a producer whose thinking is ultimately determined by the traditions of the American automotive industry, the prevailing attitude still seems to be that suppliers simply have to adapt to their customers' requirements. To date, only a very limited number of strategically very important suppliers have been given any real scope for mutual adjustment, and even them only in a few, highly selective areas. The question of how far down the road towards partnership it is really possible to go has not yet been resolved.

Representatives of the *home plant* stressed that the firms involved in the project were, from their point of view, *"particularly good suppliers"*. They repeatedly made an issue of this fact, since it seemed to them to be much more important for their day-to-day operations to influence their "problem suppliers". Nevertheless, these misgivings about scrutinising and fostering "perfectly normal relations" were somewhat contradicted over the course of the project, as it became clear how complicated even these "unproblematic" producer-supplier relations could actually be.

4.1 Weak point analysis: an instrument for producing credibility and openness

The primary requirement for learning based on partnership is that all those involved should be confident of being treated as equals as they get to grips with the problems they face.[22] Several of the suppliers we contacted in our search for project participants expressed reservations about this. It emerged that it was precisely "problem suppliers" that were reluctant to get involved in such a learning process with the producer. This whole set of problems came out particularly clearly in the case of a component supplier that was experiencing certain difficulties with quality management but that we did not contact until after the project had started. On the one hand, the company did not want to reject out of hand an initiative in which the car producer, the customer, was involved. On the other hand, our suggestion that communication and co-operation problems should be dealt with as part of the project was perceived as a particularly subtle method of "being taken to the cleaners". If we disregard the first, and for them momentous step taken by the six component suppliers, namely their initial decision to take

[22] An empirical study conducted by the Hochschule für Unternehmensführung (School of Management) in Vallendar (Weber/Wertz) identifies seven factors that are vital for good producer-supplier relations in the German motor industry, among which "the building of trust" is regarded as the sine qua non (cf. Frankfurter Allgemeine Zeitung, 25/5/1999).

part in the project, then their faith in its viability was strengthened above all by the weak point analysis carried out right at the outset. Extensive interviews conducted on the premises of all project participants (a total of more than 30 interviews) revealed a number of trouble spots in production and supply relations. As far as quality assurance was concerned, there was a considerable need for clarification of the introduction and workings of the new quality management system (QS 9000), which from the suppliers' point of view had been "imposed" upon them. Particular attention was drawn to the complications of supplying preliminary samples in the run-up to a new model's entry into series production, the processing of claims in respect of rejected parts and the lack of transparency in the criteria for appraising suppliers. Logistics managers were also concerned to discuss the new *lean material management systems*, and in particular the question of fluctuations in orders from the producer. Complaints were also made about problems with badly designed packaging and the inadequate supply of transport containers.

Some of these important problem areas, together with a number of additional individual topics, were what might be called "hot potatoes". All parties are indeed aware of them, but they are seldom tackled or dealt with openly in the course of "normal relations", because any attempt to do so might well stir up the latent conflicts of interest between a "powerful" producer and its "small" suppliers. All the project participants were agreed that the weak point analysis shed some light on these areas of difficulty, which strengthened the project team's role as a mediator between different interests. This in turn gave a real boost to the participants' motivation, since they were now prepared to believe that "exciting" issues could be raised, clarified and perhaps even resolved in the course of the project.

Consequently, a whole series of workshops (a total of 22 events in just two years), devoted to in-depth investigations of the problem areas identified, were organised for the quality management and logistics functions. Taken as a whole, these workshops made an important contribution to the elimination of information deficits, the clarification of controversial issues and sometimes also to the resolution of practical problems between component suppliers and the assembly plant. In the next section we will describe in greater detail the possible effects this form of action may have. Our examples will be drawn from several workshops on a range of different issues in the broad areas of quality management and logistics.

4.2 The potential of workshops as a means of optimising communication and co-operation

The productive potential of the cooperative association lay above all in its contribution to the intensification and improvement of communication and co-operation between function heads in the supply firms and their counterparts in the assembly plant. In view of the fact that two new cars went into series production in the assembly plant in the course of the project, the importance of this can hardly be underestimated. Although there was a tendency in the early stages of the collaborative venture to "pillory" the other side when problems emerged, such behaviour became less and less evident as the project evolved. Rather than seeking always to lay the blame for their problems on the other side, all those involved began increasingly to discuss with each other not only the constraints and difficulties they had to deal with but also the room for manoeuvre they enjoyed in their respective spheres of activity and areas of re-

sponsibility. The representatives of the component suppliers were very appreciative of the increasing openness displayed during these workshops by their customer's representatives.

In-depth discussion of the actual quality management measures required in preparation for the imminent entry of a new model into series production allowed those involved to go beyond their blinkered individual perspectives to reveal the complex links and interactions between producer and suppliers. After the change of model was more less completed, the participants in the project reflected on the "highs and lows" of the whole operation from the point of view of their respective companies as well as from a joint perspective. The almost inevitable disruptions that occur when a new model is going into series production, as well as the achievements and successes of the individual suppliers and of their collaboration with managers at the assembly plant, were the object of a detailed appraisal by workshop participants. The mutual dependency between producer and suppliers, and the consequent need for optimisation and learning processes based on partnership, was evident to all. This particular workshop, the main purpose of which was to survey the difficulties that had just been overcome, was assessed by all participants as an extremely interesting and productive event, the like of which their hectic daily schedules normally made impossible. In the space of just a few hours, an atmosphere of mutual attentiveness developed that was to have a lasting positive effect on subsequent project activities.

The workshops had a similar constructive effect on the logistics managers. Unlike their colleagues in quality management, who preferred to meet on neutral territory at the IAT, they preferred to exchange experiences on site, in order to discuss common problems at the assembly plant or on one of the suppliers' premises. At each meeting, the host organisation outlined its current projects and there was a joint discussion of the relevant production processes, for example, or of the logistical procedures involved. These discussions gave rise to a number of bilateral initiatives and contacts. Overall, the participants regarded this direct insight into the structures and procedures of each of their partners in the project as conclusive evidence of mutual trust. After one of the suppliers had set the ball rolling at the beginning of the project, the others could hardly refuse to follow suit.

The basis for communication and co-operation that was created as a result could be exploited subsequently for various joint actions. Particular mention should be made in this connection of the negotiations with the company which, under contract to the car producer, supplies and services the standardised containers used to transport components. For some time there had been a number of problems with the cleaning, supply and charging of the containers. Through a process of mediation, and with the assistance of logistics managers at the assembly plant, the supply firms involved in the project were able to agree mutually acceptable solutions with senior representatives of the container company.

In the course of the logistics workshops, the representatives of the producer provided details of the planned medium-term planned volumes for each of the models about to go into production. The suppliers regarded this as extraordinary. It enabled them to make earlier and more satisfactory arrangements, particularly as regards material sourcing, than they had been able to in the past. However, "unofficial" target figures of this kind are always liable to change, particularly as a result of changed market assessments, and so this openness had to be quali-

fied by an agreement within the logistics group, to the effect that: "*Ultimately nobody can rely on the figures quoted here*!".

Another example of the work done by the logistics specialists is their joint attempt, in two workshops, to get to grips with the new *lean materials management systems* developed by the car producer. The successive stages of the planned procedure for the new models about to go into production (from scheduling, through materials ordering and the handling of incoming goods, right up to the assembly of the components supplied) were examined in detail from the point of view of their advantages and disadvantages for the suppliers. This provided valuable feedback for the representatives of the car producer about trouble spots and the potential for optimisation. For their part, the suppliers' logistics managers were given a far-reaching insight into the changes taking place in the assembly plant, which enabled them to adjust at an early stage to the demands of the new logistical management system.

The fruits of the attempts by functional managers on both the producer's and suppliers' sides to get to grips with the QS 9000 quality management system, which took place in numerous workshops held over virtually the entire course of the project, can be summarised in very similar terms. The atmosphere of trust created by the joint project afforded the producer's representatives an insight into both the difficulties and the impressive efforts made and successes achieved by the suppliers in their attempts to implement QS 9000, an opportunity usually denied to them in the course of their hectic daily round. As they stressed, this allowed them to assess more realistically the possibilities, the limitations and the tried and tested starting points for the implementation of the new quality management system. The suppliers' functional managers were given an opportunity - in their eyes hardly to be overestimated - to reflect critically with their customers' representatives on the areas of uncertainty and complications that kept cropping up again and again as they struggled to introduce QS 9000 into their own companies, and thereby to arrive at more appropriate solutions. It was the producer's representatives from both the assembly plant and company headquarters who were particularly instrumental in driving forward the process of building trust among the project participants. It was they who acknowledged that QS 9000 was primarily a set of regulations drawn up to serve the interests of the producers. They also conceded that mistakes had been made in its implementation. On the producer's side, it was admitted, *"we've not done all our homework yet"*; the main priority here would be to drive forward the process of "harmonising" the requirements of the various production sites with the suppliers. Such self-critical openness was appreciated by the managers from the component supply firms as a particularly valuable basis for the joint development of real-world solutions: *"We've not been able to talk about such things at all in this way in recent years!"*.

This outline of some of the activities undertaken in the course of our workshop series highlights the most important opportunities for effective action offered by that instrument that were exploited in the course of the project. In the next section, we will explore in greater detail the stress field delineated by the triangular relationship between the component suppliers, the car producer's regional production plant and the producer's American headquarters. In so doing, we will refer to an attempt by the producer to standardise the forms of communication and co-operation with its suppliers that we were able to observe in an excerpt provided by way of example. It became clear how easily its tentative depictions of participatory approaches can relapse into *dirigiste* routine, thereby helping to reproduce obsolete forms of communication involving little if anything in the way of partnership.

4.3 On the ambivalence of a *dirigiste* implementation strategy: the case of the quality manual and the need for co-operation based on partnership

For all suppliers to the three American car producers, QS 9000 constitutes a binding regulatory framework for quality management. It lays down in a general form the standards to be complied with in the development, production and supply process in order to ensure consistently high product quality. QS 9000 defines very rigorously what has to be done. However, more detailed procedures in respect of contacts, channels of communication, processes, forms etc. are the subject of more detailed explanations or instructions drawn up by individual manufacturers or even production plants. While the project was going on, the producer's efforts to develop and introduce throughout the group a suitable quality manual[23] came to fruition. As with the commitment to QS 9000 itself, the impetus for the Q-Manual came from the American parent company. Overall responsibility for testing the concept of a quality manual "in the field" fell to the group's European "model plant", namely the assembly plant in Eastern Germany. In the next phase of its development, it was to be introduced into "our" assembly plant, the *home plant* of the new model about to go into series production, where it was to be used to govern all dealings with suppliers.

In the course of a series of four workshops on issues in quality management, spread out over almost a whole year, we obtained an insight into what is required of such a Q-Manual, as well as into the difficulties of implementing it against the background of the current state of production and supply relations. The workshops provided a particularly clear demonstration of the dynamic of co-operation that could be achieved through the joint activities organised within the framework of the project.

4.3.1 Developing a new idea: partnership or instruction from the centre?

The car producer's central sourcing department, the functional area responsible for supplier development, invited selected suppliers to various two-day events at which a revised draft of the Q-Manual was presented and discussed. With the assistance of our partners at the assembly plant, the six suppliers involved in the project were able to take part in one of these training sessions. The relevant managers at the supply firms were eager to take advantage of this opportunity to gather information on the latest developments in their client's organisation, particularly since it had been announced in advance that the car producer's representatives were interested in an exchange of experiences with and criticisms of the current draft. However, in the course of the training session, the representatives of group headquarters and of the plant that was piloting the manual made it clear that the mere fact of participation in the session made the provisions of the manual binding, much to the irritation of our project partners. The representatives of the six supply firms gained the impression that the participatory nature of the event had been merely an illusion. Although the manual's approach to the management of actual day-to-day procedures had been welcomed in principle, the mood of the meeting changed abruptly. A number of those present protested, with justification: "*The manual is not*

[23] Hereinafter referred to as the Q-Manual.

the basis for a contract!" or: "*As a supplier operating on a global basis, I refer if necessary to the international standards laid down in QS 9000!*". Subsequent discussion of individual points in the manual was unilluminating and, at times, very tense. The suppliers' representatives were obviously no longer interested in discussing the constructive ideas laid out in the draft and insisted instead on focusing all their comments on the problems they perceived in implementing the specifications laid down in the manual. In their view, the demands made in the manual meant only additional expenditure and effort compared with the tried and tested procedures already in place at the assembly plant. The representatives of the central quality management function tried to calm the mood of the meeting by stressing the provisional nature of the current draft of the handbook and reiterating their interest in productive criticism. However, they failed to overcome our project participants' scepticism about the producer's initiative. The authoritarian tone of what was supposed to be a training session devoted to communication and co-operation based on partnership was all too familiar to them from their past experiences.

At the time of this meeting, the quality managers at the local bodywork and assembly plant could be said to have adopted a "wait-and-see" policy towards the introduction of the Q-Manual. They seemed to be uncertain as to which of the approaches in the draft manual might actually help to optimise practice and procedure. This is a different attitude from that adopted by the initiators of the training sessions, who clearly assumed that their specifications required only slight modifications. Moreover, it had become clear during the meeting that the budget set aside for such training measures was on the low side. It was unlikely, therefore, that they had any real interest in having their draft challenged, since their overriding concern was to see it implemented efficiently. The representatives of the assembly plant, on the other hand, were keen to assess the actual opportunities and risks it might present. The framework created by the project was used as an almost ideal forum in which to examine the suppliers' point of view in greater depth. To this end, it was suggested that a further workshop should be organised within the framework of the project itself in order to give further consideration to the training arrangements and to exchange initial practical experiences with the Q-manual. The workshop was held three months later. The representative of the pilot plant with overall responsibility for the training programme also attended.

Here, in the familiar surroundings of the co-operative association, the quality control managers on the suppliers' side once again articulated very clearly their indignation at their customer's authoritarian behaviour. Citing concrete examples from the day-to-day functioning of the production and supply process, they explained their misgivings about the abrupt introduction of the Q-Manual. Of course they also explained that some of the procedures in the manual would be advantageous. Indeed, they had already put some of them into practice in their own companies. However, they also made it clear that some of the specifications contained in the manual simply could not be reconciled with their own quality management systems. In particular, other car producers demanded different standards, and they could not introduce special procedures for each customer. Quite apart from the expenditure the new specifications would require, various of the procedures irritated their own workers, thereby leading to reduced process safety. That could not be in the producer's interests.

On this occasion, the representative of the pilot plant involved in the introduction process adopted a very conciliatory and understanding approach. He again stressed that there had been misunderstandings at the training session, since there was absolutely no intention "*to push*

through (the Q-Manual) by decree"; rather, its introduction continued to be "*conceived of as a two-way process*".[24] Furthermore, the manual was to be regarded "*as a guideline for the majority of cases, not as a law for all eventualitie*s". It was more important, he said, to reach a mutually acceptable approximation than to insist on absolute conformity with formal standards. Thus the main objective had to be "*to keep the processes as simple as possible*", not to amass "*unnecessary paper communications*" and "*to avoid waste*". Moreover, other representatives of the producer had admitted to errors in the introduction of QS 9000 and expressed great interest in hearing about the suppliers' attempts to optimise implementation of the manual with a view to improving compatibility with the quality management systems in their own plants.

This debate on how best to optimise communications and co-operation between the producer and suppliers in matters of quality management, organised and moderated within the project framework, ended on a conciliatory note. At the training session, organised by the car producer, the general feeling had been that the existing problems were going to escalate; this time, however, under different conditions, those present engaged in a businesslike discussion of the pros and cons of the solutions currently being proposed. Some of the suppliers' representatives also took the opportunity to make new contacts, for example with the plant piloting the Q- Manual, which subsequently - as we heard - made day-to-day business easier. The contradictions between these two events reflect those in the day-to-day communication and interaction between unequal "partners". At the same time, however, there were glimpses of how such events might be further developed to productive ends. On the producer's side, the possible benefit to be derived from such moderated workshops held on neutral territory lies in the opportunity they provide for establishing genuinely participative contacts with their partners in the production and delivery process with a view to unlocking otherwise unexploited potential. And provided they do not gain the impression that they are being "taken to the cleaners", it is very much in the suppliers' interest to establish a reliable framework for the regulation and optimisation of production and supply relations. Two further events gave us an opportunity to observe the learning process on the suppliers' side at closer quarters. In the wake of their joint experiences with the Q- Manual, some of the suppliers' quality managers began to consider a strategic initiative. In their view, they simply had to abandon the one-way flow of information and take advantage of the opportunities offered by the co-operative association in order to put proposals to the crucial functional areas and decision-making bodies in the car company that took full account of the circumstances prevailing in many of the supply firms. In the next section, we will show the extent to which it was possible to develop this strategic initiative under the existing conditions.

[24] From the conversations on the fringes of the workshop, it became clear that the previous version of the American parent group's Q-manual had gone very much further in its specifications (to include, among other things, cost adjustment through quality management) and had been much more prescriptive. In transferring it to the circumstances in which the German subsidiary operates and to the communication and co-operation between producers and suppliers in Europe, several items were dropped and others were watered down.

4.3.2 A strategic initiative on the part of the suppliers?

As far as quality management is concerned, the actual requirements of individual production plants and the procedures put in place to regulate producer-supplier relations still vary considerably. It is very much in the interests of both producers and component suppliers to go byond the established frameworks (in particular QS 9000 and VDA 6.1) in order to develop a more robust arrangement, such as that represented by the Q-Manual. From the suppliers' point of view, however, there is little to be gained by applying this form of standardisation solely to the production plants operated by a single producer. Ultimately, it must cover all their customers, since only in this way would a supplier working for several car producers be in a position to develop a consistent quality management system firmly embedded in the supply firm's own internal processes. Readily understandable and unambiguous procedures could then be put in place for all workers, thereby improving product quality and reducing costs.

Soon after the second workshop on the Q-Manual attended by representatives of the car producer, the suppliers themselves organised a meeting attended only by their own representatives. This event was given over to discussion of an "in-house" quality management system that would meet the requirements of a number of different customers. The representatives of our partners in the project were, firstly, unanimous in acknowledging the advantages of the general regulatory framework that had been in place for about a year: "*I don't know of any QS 9000 requirement that isn't sensible and that our own company wouldn't encourage*!" Their own colleagues in production and elsewhere were increasingly seeing themselves as providers of services to their customers. They had now learned, they said, that the requirements of the regulatory framework could be met only by putting in place, and rigorously observing, a coherent QM system. In practice, however, the car producer was constantly requiring its suppliers to improvise, since there were frequently contradictions between the instructions issued by head office and those issued by the various production plants, as well as between those issued by the regional sites themselves: "*QS 9000 isn't second nature to them there yet!*" Moreover, this particular customer insisted on having a lot of formal documentation and communication. True, the producer was now seeking to standardise supply practices, and the Q-Manual did indeed contain some very helpful ideas. However, some of the manual's specifications could be incorporated into the suppliers' internal QM systems only at an unacceptably high cost, and in some cases not at all: "*We can't concentrate on just one producer!*".

In view of this situation, those who attended the suppliers' meeting finally expressed the opinion that they were not really able adequately to communicate to the producer their experiences with the introduction of QS 9000 or their own ideas for optimising the process: "*As quality control managers, we are often regarded, in any discussions on sourcing, as bit-part players without an overview of the whole process*." Most of the communication and co-operation that went on was channelled down "*one-way streets*". On the other hand, it was in the interests of both sides that managers in the assembly plant should understand the difficulties experienced by the suppliers in meeting their demands. They were agreed that it must be in the producer's interest to discuss and jointly agree issues of future strategy. It was unanimously decided actively to develop the co-operative association as an important source of experience and ideas and to offer it as a resource to the important decision-making bodies of the group's German subsidiary.

This positive mood among the suppliers was taken up and actively supported by the project team. It was decided to use the next supplier workshop, planned to take place shortly afterwards, to discuss and plan the initiative in greater detail. Even during the preparations for this meeting, however, it became clear that the impetus for a strategic offensive by the quality control managers in the co-operative association had had to be sacrificed to the prevailing production and supply relations. The quality control managers were now no longer so certain that such an initiative might actually find ready acceptance. At the actual workshop, even those who had most eagerly championed the idea now expressed reservations about offering their own services as a source of feedback and ideas on issues around the optimisation of quality management. Moreover, the more operatively minded supplier representatives were nervous about the imponderable cost of such a high-level activity. In the end, therefore, it was decided to concentrate on the second important topic on the agenda for the workshop, namely the development of the suppliers' own subcontractors in accordance with the requirements of QS 9000. How far this impetus for a bottom-up approach to the relevant functions and decision-making bodies in the car manufacturing group might have actually been taken could not be put to the test. It had turned out to be a flash in the pan because past experience had placed limitations on it from the outset.

If the dynamic of interaction between these four meetings on current problems in quality management is considered in context, then the tensions in current production and supply relations are clearly revealed. On the one hand, there is clearly a need for communication and co-operation if those relations are to be optimised. On the other hand, however, the established organisational structures on the producer's side, as well as the existing power relationships, are an obstacle to exploitation of the potential for learning processes based on partnership that such communication and co-operation would provide. Even those representatives of the producer otherwise well disposed towards partnership and co-operation were very quick to resort to unilateral, authoritarian measures in both the introduction of new procedures and the day-to-day running of the supply process. It has to be noted, however, that the suppliers' representatives recognise the opportunities the project offers for proposing alternative forms of behaviour and that they were initially keen to take advantage of them. Ultimately, however, they shrank back from putting their ideas into practice. In doing so, they were contributing to the reproduction of traditional relations and to modes of behaviour holding out little prospect of genuine partnership in producer-supplier relations. The extent to which both sides[25] are still largely imprisoned in the traditional structures and routines can also be seen from the failure of another initially very promising initiative set up within the framework of the project. The opportunities for optimisation and learning based on partnership offered by inter-firm "incident analysis" (cf. Wehner/Endres 1996; Endres 1996 : 13 ff.), a procedure tried and tested elsewhere, turned out to be unrealisable within the framework of the project because of the nature of current producer-supplier relations.

[25] However, in view of the power relations between unequal partners, it should be added that it is really up to the car manufacturer to make a convincing effort to tackle the problem.

4.4 Inter-firm incident analysis: the acid test for learning processes based on partnership

The basic idea of inter-firm incident analysis is that otherwise annoying complications in the production and delivery process should be apprehended as valuable opportunities for optimising that process. The starting assumption is that the causes of most malfunctions lie not so much in the mistakes made by an individual actor but rather in a lack of information or coordination within the whole complicated nexus of producer-supplier relations. Cases that attract attention because they seem to occur systematically can be used as learning opportunities for those involved on both the suppliers' and producer's side. One precondition for such learning, of course, is the involvement of an outside body with the specialist skills needed carefully to reconstruct each individual participant's perspective on the problem and on the actions taken. This creates an opportunity to transcend the convenient but false interpretations and apportioning of blame that frequently take place in the course of day-to-day operations in order to clarify the underlying causes of malfunctions. Facts are then regularly brought to light that had either been passed over by all concerned or that nobody had dared to mention. If such a process is to be successful, the external body must be granted neutral status vis-à-vis individual interests. With the IAT as a public body, on the one hand, and the project team made up of social scientists, on the other, both conditions were met by the project.

In individual conversations, virtually all the participants welcomed incident analysis as an important opportunity for identifying and tackling the causes of problems that had their roots in the shortcomings of the various forms of inter-firm communication and co-operation and were usually difficult to apprehend in the normal course of day-to-day operations. Moreover, over a period of several months, they brought to the attention of the project team several malfunctions that had a direct bearing on the attempts to optimise the supply process. One of the supply firms involved in the project also made itself available as a locus of inquiry into current malfunctions. However, all this failed to provide a sustainable basis for the joint implementation of incident analysis with a view to process optimisation, as the disillusioned project team had to concede. After six months of constant campaigning, the contradiction between the project participants' need for clarification of problematic shortcomings in inter-firm coordination, on the one hand, and their high-minded reluctance to get involved in the practical implementation of incident analysis, on the other, was clearly revealed.

The causes of this syndrome point to fundamental difficulties that will have to be overcome if the long road to co-production based on partnership in the automotive industry is to be embarked on with any confidence. Two different sets of problems can be identified here. Firstly, bottlenecks caused by the sharp reductions in manning levels resulting from previous waves of rationalisation, combined with the troubleshooting routine, act as an obstacle to more thorough, and therefore more costly analysis of malfunctions. Secondly, and most importantly, those concerned do not yet have sufficient trust in each other to put into practice a procedure based on the principles of partnership.

4.4.1 The contradiction between day-to-day operations and systematic error analysis

Incident analysis is not an instrument for the direct and rapid elimination of all disruptions in the supply process. Rather, it is a method for identifying and remedying more deep-seated problems that occur systematically and are caused by inadequately coordinated communication and co-operation processes. In particular, it is also a procedure by means of which, with the assistance of external moderation, partnership-based approaches to problem identification and elimination can be tested and practised. Incident analysis requires a greater expenditure of time and effort than is required to remedy an acute crisis, since it requires a concentrated effort on the part of all those involved and affected to get to grips with the causes of the problem and any possible solutions. This cannot be done in the course of day-to-day operations. For this reason, it can really be sensibly applied only to complications in the supply process identified as systematic, for example those that occur repeatedly. It was precisely at this point that many of our project participants began to have doubts. Because of the "slimming down" of corporate structures over the past few years, they said, they no longer had the personnel required to put into practice what was otherwise an interesting procedure. There was simply too little time during the working day to investigate the causes of malfunctions; the overriding priority was to solve acute crises immediately. Moreover, it was beyond the scope of the project to intervene in day-to-day troubleshooting by offering short-term assistance. The project team was not a "rapid intervention squad" set up to compensate for manpower shortages. At the same time, however, individual project participants constantly complained about recurrent complications caused by problems of coordination between suppliers and producer that simply could not be remedied. Although they were constantly grappling with the problems, they were simply unable to free themselves from the pressures of their daily operations in order to find lasting solutions. These experiences are not the least of the reasons why, in our view, learning processes based on partnership are difficult to implement in the automotive industry because there is neither the personnel nor the time to devote to optimisation of producer-supplier relations. Nevertheless, our partners' reluctance to get involved in inter-firm incident analysis would not be understandable if the reasons for it were seen to lie only in the time and effort required. Only when the interests and fears of a very diverse set of actors is considered against the complex background of the production and supply process does the picture become complete.

4.4.2 Political imponderables as the stumbling blocks on the road to enlightenment

The whole notion of incident analysis was regarded by our project participants as altogether too controversial, particularly in "political" terms. Various factors were mentioned in this respect. Firstly, there was a fear on the suppliers' side that responsibility for disruptions could be pinned on them and, moreover, that the causes would be revealed to the producer. Even though those directly involved in the project were prepared to accept this possibility, it proved a very difficult case to argue with other important functional managers in their own companies. The sales departments were concerned about their chances in negotiations on the supply of components for the new model, while the production departments feared that the buck would once again stop with them. Leaving to one side for the moment the specific role of the component suppliers, who permanently perceive themselves as being the weaker partner in their dealings with the producer, such internal political problems also affect the assembly plant. On this side of the production and supply relation, an important additional factor comes

into play of course. It is in no way sufficient to convince the decision-making functions at the regional assembly plant of the positive effects of incident analysis. The suppliers' representatives, in particular, were sceptical about the chances of a successful implementation of incident analysis largely because of the difficulty of predicting the reactions of important decision-making bodies at the producers' American headquarters. Experience suggested that the sourcing department, in particular, which was deeply imbued with the traditions of the American automobile industry, would not be very interested in new forms of communication and co-operation based on partnership. Furthermore, the seeds for many subsequent quality management and logistical problems were sown much further upstream, in the central product development function. There was very little chance of the suppliers exerting any real influence there, although contacts had been established with certain individuals. The suppliers could not afford to jeopardise these important connections by putting into practice a procedure for discovering the causes of problems that had not been fully agreed and coordinated.

Our account, which is based on some of the salient events of the joint project, is intended to outline both the scope for action and the limitations of the project. It has to be concluded, by way of summary, that the trust between suppliers and customer, which is crucial to the success of any learning processes based on partnership, is not very robust. This applies particularly to those problem areas that extend beyond the immediate relations between the producer's regional assembly plant and its suppliers. The various functions and decision-making bodies at company headquarters have to take account of the "big picture" if they are to act globally, and this frequently conflicts with actual requirements on the ground. It was clear throughout the entire course of the project that the discrepancies between company headquarters and the local plant in their dealings with the suppliers were recognised at management level in the car factory. In one expert interview, it was suggested that everything was possible at the local level and that attempts had to be made, "*to keep relations and problems on the micro level for as long as possible. There is a good deal of scope for action at this level. At the macro level, on the other hand, little can be achieved.*"

However, it became clear that a considerable number of unresolved issues could still be tackled and cleared up within, as it were, the regional confines of producer-supplier relations. Right from the outset, however, the course of this collaboration with the local production plant of a major car producer and six component suppliers was determined by the time constraints under which all involved laboured. The fact that, despite these unfavourable conditions, they collaborated continuously on the project for more than two years – with a few absences and cancellations from time to time – is proof of the considerable need that exists for improvement in communications and cooperation between the producer and its suppliers.

5 The project and its resonances among the participants

About six months before the end of the project, the team conducted in-depth interviews with representatives of all the organisations involved (a total of 25 interviews) in order to evaluate and critically assess the work that had been done over the course of the project. Regardless of the fact that the interviews revealed several shortcomings, virtually all the interviewees expressed a wish to pursue this opportunity to exchange experiences and solve problems that was as unusual for them as it was valuable in helping them manage their day-to-day opera-

tions. In order to be able better to categorise the participants' views on the project's strengths and weaknesses, the general need for new forms of communication and co-operation in the optimisation of production and supply relations has to be more clearly differentiated. Once again, the evaluation interviews brought home to us just how much the entire venture had been shaped by three different requirements, by which, therefore, its results have to be measured. Depending on the individual companies, as well as on the differing motivations and intentions of individual participants on the logistics or quality management side, the following needs could be identified:

- increased co-operation in resolving acute operational crises,
- improved communications in order to clarify and provide guidance on new requirements, and
- improved communications and co-operation in order to optimise management systems.

5.1 The need for co-operation in resolving acute operational crises

The overriding priority here is to rectify, with as little damage as possible, the disruptions to the production and supply process that are still unavoidable in the changed routine of daily operations. These are acute problems that can be eliminated quickly only by joint action taken by the production plant in question and the individual supplier. With short-term solutions of this kind, priority is given to guaranteeing continuity in the supply and production process. Cost usually plays a subordinate role here.

On the producer's side, it is mainly the production plant being supplied that is affected, while the company's central functions are normally not involved. The producer's functional managers are, of course, more likely to focus on so-called problem suppliers, a category to which none of our project participants belonged. Conversely, however, these suppliers were keen to co-operate more closely with the producer in order to deal with complications that occur repeatedly. As far as this operational dimension was concerned, therefore, the main concerns of the two sides involved in the project tended to diverge somewhat.

Managers in charge of interface departments at the assembly plant have been unsettled by the radical changes to the entire supply system, and are also personally overburdended. At the beginning of the project, there were frequent reminders of their defensive attitudes: "*We prefer to have just one visit a year from the supplier*!". Nevertheless, as the project progressed, more intensive contacts developed between the individuals involved, which eventually gave the suppliers "*improved access to certain departments in the assembly plant*". Taken overall, however, the project produced "*too little in the way of usable results*" in this area, and failed to meet initial expectations of what the opportunities for cooperation might deliver.

5.2 The need for improved communications in order to clarify and provide guidance on new requirements

The main issue here is the need for information at as early a stage as possible of any changes the producer may intend to make to the production and supply process. Managers at the component suppliers want "*to have their fingers on the customer's pulse in order to be able to react more quickly and to do our job better*". This is a reference to changes, such as the introduction of the Q-Manual already discussed above, that are being envisaged in the medium-term, and have perhaps not even been decided on. However, if the suppliers are to adjust to them adequately, measures have to be taken and new activities prepared for. The advantage of the early provision of information lies not least in the fact that it leaves space for the development of cost-effective solutions.

One of the difficulties thrown up by this need for improved communications in respect of new requirements arises out of its pronounced one-sidedness: initially it was only the suppliers that benefited directly from the information on far-reaching developments provided by the car producer's representatives. The advantage accruing to the producer was much less direct, and lay principally in the fact that the suppliers were more readily able to understand changes. In contrast to their suppliers' position (in respect of the introduction of QS 9000, for example), the producer's representatives did not express any particular need to improve the information flows.

All project participants were of the view that the strength of the project lay above all in its success in satisfying the considerable demand for communication on current or imminent changes. The work done in this area largely exhausted the assembly plant's capacities for providing information. On the other hand, central functions relevant to the main concerns of the project could be persuaded to participate only occasionally: "*We could have done with ten meetings with Mr X, not just one!*". In particular, the sourcing function, of crucial importance to producer-supply relations based on partnership, could not be persuaded to participate at all: "*They like to keep their plans to themselves*".

5.2.1 The need for communication and co-operation in order to optimise management systems

The main issue here is the need, in the wake of the structural change taking place in producer-supplier relations, to exchange experiences, difficult or otherwise, with the new management systems. While the need for co-operation on operational matters is aimed at finding and implementing short-term solutions, what is required here are proposals that can be sustained over the long term and cost-effective procedures. The discussion and optimisation of the Q-Manual on a basis of partnership, for example, would belong in this category.

On the producer's side, it is mainly the experts in central functions who would have to get involved in a joint programme of this nature. They will have a greater interest than operational managers at the local assembly plant in developing a group of "good" suppliers. Only

such suppliers are in a position to provide them with cogent information on the weak points of their new supply systems and to work with them to optimise those systems. With regard to the current inadequacies in coordination, it seems reasonable to suppose that competent suppliers are best able to act as sensitive "seismographs" and effective advisers to their customers.

While the functional managers at the most advanced suppliers were pushing particularly hard for more intensive exchanges of experiences with a view to optimising system processes, their efforts found little resonance among the producer's central decision-making bodies. As a result, the project's potential in this area could scarcely be realised. Several of the people we interviewed at the suppliers involved in the project expressed dissatisfaction with this lack of interest on the producer's side and the missed opportunity to implement a learning process based on a strategic-conceptual approach.

5.2.2 On the problematics of a continuing cooperative and learning association

As the project was coming to an end, virtually all those involved spoke in their reviews of a considerable need to initiate, test and practise new forms of communication and cooperation between the "partners" in the value-added chain. On the suppliers' side, there was great interest in a continuous exchange of experience with their customer, as well as with each other, within the now tried and tested framework. Representatives of the local assembly plant took the view that the project was an ideal forum for discussing and managing some of the new requirements they would have to be dealing with. At one of the last scheduled meetings, a discussion developed on the possibilities for continuing the cooperative association once the project had come to an end. The IAT project team also declared its interest in continuing the venture, although the initiative would have to come from the other project participants, who would also have to supply the material resources required. A clear statement of intent from the producer's higher-level decision-making bodies would have signalled a breakthrough in the practical implementation of the need for improved communication and co-operation. However, approaches to senior management at the assembly plant and at group headquarters were rebuffed. In the light of this negative response, the suppliers' representatives stressed that the continuation of the cooperative association, which they regarded as desirable, was dependent on the agreement and co-operation of their customer. When it became clear that senior management was not going to co-operate, some of the project participants on both the suppliers' and producer's side expressed a desire to maintain the contacts that had developed out of the project on an informal basis. Furthermore, the representatives of three of the supply firms declared their interest in trying to organise exchanges of experience with their partners in the project (two to three times a year).

In sum, it is clear that, despite the obvious need and despite their constructive experiences with the process of external moderation in the development of inter-firm organisational structures, the participants in the project were not prepared to devote sufficient capacities and resources to the optimisation of producer-supplier relations on a basis of partnership. This applies in particular to the producer's important decision-making bodies. However, in view of the considerable problems that still persist, it may be that this attitude will change and that agreement will be reached on the testing of new forms of communication and co-operation.

If a clear commitment along these lines were to be forthcoming, then it would make sense for the development and consolidation of forums for partnership-based learning to be supported by state industrial policy with a view to strengthening regional producer-supplier relations. In the light of the unequal power relations in the automotive industry, it is particularly important to create a neutral platform for constructive discussions between producers and suppliers.

6 Industrial policy conclusions

6.1 Project results

The need to develop and test new forms of communication and cooperation is great, particularly from the suppliers' point of view. Even in the case of a manufacturer with "problem-free" suppliers, the everyday management of the production and supply process throws up enough problems to make it necessary for both sides to engage in joint consideration of the complications, to exchange information on their various approaches to problems and prospects for action and to analyse systematically the more deep-seated causes of disruptions.

As a result of constructive collaboration between the functional managers at the car plant, the suppliers and the IAT project team, it was possible over the course of the project to assess the scope that exists at local level for developing producer-supplier relations based on partnership. On this basis, the first steps were taken towards developing new forms of inter-firm communication and co-operation, with a view to improving the management of day-to-day operations. In the course of the project, it emerged that management in the assembly plant had become acutely aware of the discrepancies between their way of dealing with the suppliers and the practices prevailing at group headquarters. This is an opportune moment to remind ourselves of the assessment that everything is possible at the local level and that efforts should be made, *"to keep relations and problems on the micro level for as long as possible. There is a good deal of scope for action at this level. At the macro level, on the other hand, little can be achieved."*

The main strength of the project must be seen to lie in its success in satisfying the considerable need for communication concerning current or imminent changes in the customer's practices. In our actual case, this consisted of the early provision of information by the producer to the suppliers on the new quality management procedures being planned and on the planned production figures for the new model about to go into a series production. The suppliers were given important information and insights that allowed them to adapt to the new requirements at an early stage. This forward planning also brought with it an opportunity to look back on the past. By identifying and discussing problems that had occurred when previous models had gone into series production, some lessons could be learnt from these past difficulties. In this way, the producer received valuable feedback about trouble spots and the potential for optimisation. As was confirmed to us in individual interviews with representatives of the supply firms, this was perceived as a unique success for the project: "*We've never had such good volume projections when a new model's gone into series production as this time*." This was a

good result achieved with minimal effort: one well-prepared, half-day workshop, moderated by the IAT project team, was all it took.[26]

Another instrument used for the mutual exchange of information in the course of the project was the so-called workshop meeting, which was new to most of the participants. In accordance with the motto "firms learn from each other", the logistics managers opened up the doors of their own companies in order to provide insights into the structure and routines of their daily operations. Once again, this event provided considerable information and learning opportunities with relatively little effort. Another effect, which emerged from the expert interviews as well, was that these events also enhanced the image and prestige of the "hosts" within their own companies: "*We're not used to letting people into our own businesses, and to do so is quite a step for us. It is also valuable on a personal level, and good for one's position within the company*".

These positive experiences have strengthened us in the view that, within the conflict between organisational dependency and technological leadership that characterises the position of the local assembly plant and of the German subsidiary within the American automobile group, there lies considerable dynamic potential that to some extent determines the freedom of local management to act and shape events.

Over the course of the project, we were able to observe that our notion of a constant shifting in the balance of power between the various levels of the group and of constant competition between contradictory strategies was indeed very close to reality. The fact that the assembly plant had been given home plant status noticeably altered its peripheral position within the group as a whole, thereby opening up considerable scope for taking direct action to influence the process of optimising producer-supplier relations. This additional room for manoeuvre could become the most important factor in the interplay between competing strategies and interests, provided managers in the assembly plant were to take advantage of it.

The main constraint on the project's effectiveness lay in the structural contradiction between the strategies and interests of group headquarters and those of the local assembly plant. We did not in fact succeed in breaking through the barrier between the local plant and the group's central decision-making levels. By their very nature, projects like ours, functioning on the operational level and seeking to influence the relations between the local assembly plant and its suppliers, repeatedly come up against the limits of inter-firm organisational structures. Problems between the car plant and its suppliers that occur in the daily supply and production process are all too often the consequence of decisions that have been taken elsewhere, namely at central group level, and over which local managers or those responsible for day-to-day operations have little if any influence. In the triangular relationship between group headquarters, the local assembly plant and its suppliers, the primary and strategic decision-making compe-

[26] Since there is a limit to everything, it must in all fairness be pointed out again that it was our good fortune that two new models were being prepared for series production in the course of the project, and that the assembly plant had been granted home plant status by group headquarters. As a result, functional managers at the assembly plant had considerable personal interest in optimising the whole process through the mutual exchange of information at an early stage.

tences in both development and sourcing are located at group level. One of the things that emerged clearly and repeatedly in the course of the project was that the global sourcing strategy, which consists of seeking out those suppliers anywhere in the world best able, over relatively short periods, to provide the required components at low cost, conflicts with the need to develop and nurture long-term producer-supplier relations based on partnership. One of the things that emerged clearly and repeatedly in the course of the project was that the global sourcing strategy, which consists of seeking out those suppliers anywhere in the world best able, over relatively short periods, to provide the required components at low cost, conflicts with the need to develop and nurture long-term producer-supplier relations based on partnership. The fact that functional managers in the car plant are constantly having to deal with problem suppliers is the consequence of decisions taken at central level. For their part, the representatives of central group functions accept only very limited responsibility for the consequences of their decisions that impact on day-to-day operations at local level. This is the only possible explanation for the persistent lack of interest shown by managers at central level in the view, expressed by suppliers and functional managers in the assembly plant, that it was both necessary and interesting to continue the activities initiated during the project. The opportunity the project offered to put in place a learning process based on a strategic-conceptual approach remained unexploited.

Nor were the suppliers' expectations of the opportunities the project might provide for co-operation with the producer on the operational level fully satisfied either. The functional managers at the local bodywork and assembly plant are, as their title rightly suggests, responsible for the smooth *functioning* of the daily production and supply process. We identified trouble-shooting as the dominant strategy for ensuring such functioning. It is entirely consistent with the logic of this kind of problem-solving strategy that the attention of functional managers in the assembly plant should be concentrated on so-called problem suppliers. Bringing these suppliers into line would make their daily tasks very much easier. However, since this is not a means of identifying and eliminating the causes of inter-firm malfunctions, such disruptions occur over and over again, and every time they have to be dealt with again from scratch.

In addition to these structural limitations, however, the specific composition of our project brought something else to light, namely that "good" suppliers have also expressed the need for a joint investigation of the more deep-seated causes of complications that occur repeatedly. We have frequently suggested that the suppliers are the best management consultants for their producer customers - provided of course that the relations between suppliers and producers are sufficiently robust and based on trust. The reasons why this resource has been barely recognised and exploited lie not least in the chronic time constraints and personnel shortages under which functional managers are forced to operate.

Thus even at the operational level, the overriding concerns of producers and suppliers tend to diverge. To that extent, the structural contradiction in strategic orientation between group headquarters and the local assembly plant is overlaid at the operative level by a further contradiction between the drastic reduction in staffing levels in recent years, on both the producer's and suppliers' side, and the current need for time and effort to be devoted to developing and maintaining new forms of inter-firm communication and co-operation. Are we dealing here with a vicious circle?

6.2 Industrial policy conclusions

6.2.1 External moderation and its functions in the development of inter-firm organisational structures

There was no formal cooperation agreement between the firms taking part in the project, and the contractual relations were non-binding and on-going[27]. Despite this, the project continued to run for the whole of its allotted span, and indeed after the first year began to develop a certain self-perpetuating dynamic of its own (cf. Schmidt-Dilcher 1999). From the project team's point of view, this justified our methodological decision to design the whole venture, with all its initiatives and activities, as an iterative process. However, this meant that we had to deliver a very demanding and complex service, requiring considerable patience and equanimity.

Within the microcosm of the project, the IAT project team were engaged in a wide range of tasks contributing to the development of inter-firm organisational structures, assuming in the process a variety of different functions. The team had to create opportunities that could be used to establish the basis for the development of mutual trust between the various participants. In the initial phase of the project, the instrument of incident analysis was deployed to this end. By this means, a number of trouble spots in the production and supply relations between the assembly plant and the six component suppliers could be identified. As an external body, the project team had an important role to play in articulating the whole process and picking out the central themes. Team members not only summarised these trouble spots but also sought to ensure that those taking part in the ensuing discussion dealt with each other as openly and honestly as possible. The so-called workshop meetings attended by logistics managers proved to be another instrument for creating an atmosphere of mutual trust. It is clear from their own statements that those involved came to regard these direct and reciprocal insights into the structures and procedures of their partners in the co-operative association as firm evidence of the mutual trust that had developed between them. In initiating this programme of company visits, the project team was making effective use of its instigating function.

The project team's fundamental and on-going task was to create an appropriate framework for identifying, tackling and possibly resolving the trouble spots in the production and supply relations. The instrument most usually used for this purpose was the half-day workshop held on neutral territory at the IAT. At these events, the IAT project team had to assume a whole set of functions simultaneously. Firstly, in preparing for the workshops, it had to fulfil a basic coordinating function by persuading all the participants to gather together in one place and at an appointed time. In the light of the chronic time constraints and permanent disruptions to daily routines in the automotive industry, this was mentally taxing and required a high frustration threshold. At the same time as performing this coordinating function, the IAT project team also had to fulfil an organisational function in preparing for the workshops; this involved

[27] In other words, cooperation was based on the minutes and/or documentation of the workshops attended by functional managers and management representatives, which were regarded as joint agreements on future actions.

drawing up the programme for each one, agreeing it with the participants and preparing the content and organisational details. During the workshops themselves, the team moderated the discussions between the participants and, in its capacity as an external, neutral body, tried to mediate between the various points of view and positions. In performing their moderation function, team members took account of the double meaning of the Latin word "moderatio". They both "*directed*" and "*restrained*" the discussions - the reader is reminded, by way of example, of the workshop held on the neutral territory of the IAT and within the familiar framework of the co-operative association at which the "training" on the Q-Manual was subjected to retrospective evaluation. The project team also fulfilled an important chronicling function in the evolution of the project as an iterative process by documenting the results of the workshops after the event and circulating them to all participants.

With the prestige of an external, independent moderator and the reputation of a research institute, the IAT project team succeeded in inviting senior decision-makers within the automobile group and a company providing logistical services to take part in the project - an achievement that was duly recognised by the other participants: "*the project got the right people sitting round the table - although there weren't enough of them*." In this respect, the IAT team was fulfilling its instigating function.

Finally, mention should be made of another function that was at least offered to the project participants, namely the coaching function. If systematic use had been made of incident analysis in the course of the project, it would have been possible to test and perfect a partnership-based approach to problem identification and elimination.

6.2.2 Regional industrial policy recommendations

The project confirmed us in the view that, even when a producer is dealing with "good" suppliers, a whole host of complications can arise in the production and supply process. This does not of course mean that activities such as those we undertook in the course of the project can eliminate the ultimate structural causes of these complications, namely the contradiction between sourcing decisions taken centrally on a global basis and the need to develop producer-supply relations based on partnership that have to be nurtured over the long term.

What it does mean, however, is that a clear and realistic perception of the structural constraints under which regional industrial policy has to operate is not synonymous with a lack of power to do anything at all. This is underlined by the result of our stocktaking exercise, which revealed a considerable need for external moderation. In the power-ridden producer-supplier relations that exist in the automotive industry, neutral platforms have to be created for a fixed period in order to create the conditions under which opportunities for reciprocal learning can be discovered and exploited through new forms of communication. To that extent, the programmes for the promotion of inter-firm cooperation in the automotive industry set up by the governments of the *Länder* are both appropriate and necessary.

However, promoting the development of inter-firm organisational structures with public funds is a tricky task for industrial policy. Projects in which the process itself, that is the events that

take place in the course of the project, is made an explicit object of the joint learning programme, have to be designed as "open" processes. As a result, such projects are just as likely to fail as to succeed. And even if they succeed, the results are intangible and difficult to apprehend. In the case of our project, it was clear from the start that it would not produce anything to which the participants could refer in order to prove to themselves and others that it had all been worthwhile. There was nothing of which they could say: "That's what we achieved! Just take a look at that! See for yourselves!". Projects aimed at the development of inter-firm organisational structures do not achieve a payoff in the short-term, but at best in the medium or long term.

This must automatically increase the difficulty of legitimating such industrial policy initiatives. Those involved in projects repeatedly have to defend the purpose and necessity of what they are doing to their colleagues. The same applies to politicians vis-à-vis the general public. This is of course easier if one can point to newly created institutions, with their premises, people and jobs, or to products such as jointly developed training materials or quality manuals. This is not intended in any way to belittle the results of exercises in the development of inter-firm cooperation, but merely to point out the difficulty of legitimating the public promotion of process innovation, both for those taking part and for policy-makers.

For reasons of competition and regulatory policy, the promotion of small and medium-sized enterprises is an article of faith in regional industrial policy. We recommend that this article of faith be abandoned in promoting the development of inter-firm organisational structures in the automotive industry. In order to be able to provide effective and lasting support to small and medium-sized automotive component suppliers caught up in the reorganisation of producer-supplier relations and the process of repositioning themselves within the production and value-added chain, it is necessary to obtain the cooperation of both a local production plant and of system and component suppliers. We would make the following observations.

Firstly, because of the strategy of industry-wide rationalisation currently gripping the automotive industry, the automotive component supply industry is a very heterogeneous sector, in which firms of very different sizes and organisational and ownership structures collaborate. If this structure is also reflected in the composition of joint projects, then it is reality that is being mirrored.

Secondly, the development of inter-firm organisational structures is a task for producers and suppliers alike. Even if, for reasons of regulatory policy, the component suppliers have to be the primary targets of industrial policy projects, the specific learning opportunities offered by co-operative projects cannot be fully realised unless producers, with their own specific interests, perspectives and attitudes, are also involved. We consider it an urgent priority at the moment to utilise these learning opportunities at the operational level, even if the structural contradictions between the scope for action and shaping events in the operational sphere at local level and decisions taken centrally at group level make themselves felt in the process.

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Handelsblatt (Hb)
Der Spiegel
Süddeutsche Zeitung (SZ)
Die Welt

Appendix

1. Some data on the joint project on "Optimising the production and supply relations between component suppliers and assembler"
2. Meetings of the CORE management and coordination group
3. Workshops with the project participants
4. Conferences
5. Expert interviews
6. Publications

Some data on the joint project on "Optimising the production and supply relations between component suppliers and assembler"

The project on “Optimising the production and supply relations between component suppliers and assemblers” was part of the European project group CORE (**C**ooperation **o**f **R**egions in **E**urope) (a European training and innovation programme for the promotion of regional competitiveness and employment in the automotive supply industry), which was funded by the European Union as part of its ADAPT programme.

Project term: 1996-1999

European partners:

- Instituto Aragonés de Fomento, Zaragoza/Spain
- Bedfordshire County Council, Bedford/UK
- Cranfield University, Cranfield/UK
- North Tyneside Council/Tyneside and Enterprise Council, Newcastle/UK
- Centre for Urban and Regional Development Studies, University of Newcastle, Newcastle/UK
- RKW-Landesgruppe Hessen, Eschborn/Ts.
- Institut Arbeit und Technik im Wissenschaftszentrum Nordrhein-Westfalen, Gelsenkirchen

IAT project team:

- PD Dr. Heiderose Kilper (Project director)
- Dr. Steffen Lehndorff (Project director)
- Jürgen Schmidt-Dilcher (Project assistant)
- Wolfgang Stolte (Project assistant)
- Jutta Hahn (Project administration)
- Ralf Tyra (Student assistant)

Industrial partners:

A local bodywork and assembly plant and six automotive component suppliers in North Rhine-Westphalia.

Meetings of the CORE management and coordination group

13-14 May 1996	First formal meeting of CORE management and coordinating group in Zaragoza at TQM conference
15-16 July 1996	Bedfordshire TEC
28-29 November 1996	Zaragoza
17 March 1997	Eschborn/Ts.
12-13 May 1997	Newcastle/Tyneside
11-13 September 1997	Gelsenkirchen, on the occasion of the meeting "Whither JIT production?"
26-29 October 1997	Albarracin/Aragon, on the occasion of the meeting "How to develop benchmarking activities in industry?"
3-6 February 1998	Bridgeend/South Wales, on the occasion of the conference on "Manufacturing into the 21st century"
3-4 March 1998	Eschborn/Ts., on the occasion of the 2nd Convention of Automotive Component Suppliers in Hesse
8-9 June 1998	Zaragoza, Spain
28-30 October 1998	Cranfield University/Bedford, on the occasion of the final conference organised by the British participants

Workshops with the industrial partners (in chronological order)

3 June 1997	First joint workshop with representatives of senior management and functional managers of participating firms. Official inauguration of the co-operative association between car producer and regional component suppliers.
8 September 1997	QS 9000 as a new requirement in quality management (organised as part of the series of workshops on quality management)
10 September 1997	Empty containers and packaging as a and logistical problem ("Logistics" workshop at one of the participating component plants)
24 September 1997	Visualisation and internal audits in QS 9000-compliant QM systems (organised at the assembly plant as part of the series of workshops on quality management)
11-12 November 1997	The Supplier Quality Assurance Manual as a set of procedural rules for the application of QS 9000 (organised as part of the series of workshops on quality management in collaboration with the car producer)
9 December 1997	The demands on the logistical system when a new model goes into series production (“Logistics” workshop held at the assembly plant)
11 December 1997	2nd joint workshop with representatives of the senior management and the functional managers of the participating firms
4 February 1998	Model launches and the start of series production. Critical events in producer-supplier cooperation (organised as part of the series of workshops on quality management)
12 February 1998	The continued development of logistical systems in internationally active groups (“Logistics” workshop held at one of the participating component plants)
1 April 1998	Changing logistical requirements in just-in-time systems (“Logistics” workshop held at one of the participating component plants)
22 April 1998	The application of QS 9000 to daily operations (organised as part of the series of workshops on quality management)
3 June 1998	Orientation workshop on “Benchmarking for automotive component suppliers” (meeting of the participating component suppliers held in collaboration with INNOSYS GmbH, Bochum, the Institut für Arbeitswissenschaft of the University of Bochum and the University of Cranfield/UK)

26 June 1998	Supplier appraisal and supplier satisfaction - an issue in customer-supply relations (organised as part of the series of workshops on quality management)
14 July 1998	From supplier to systems supplier - changing requirements in the customer-supplier relationship (meeting of the participating component suppliers)
7 August 1998	Improving communications and cooperation between suppliers and producer in the planning and preparation process (workshop held with the producer's planning and preparation department)
10 September 1998	Current model changes, a touchstone for supplier-producer collaboration in logistics ("Logistics" workshop)
23 September 1998	Current changes in quality management systems. The revised version of QS 9000 and the opportunities for harmonisation between QS 9000 and VDA 6.1 on the basis of a new ISO arrangement (organised as part of the series of workshops on quality management)
5 November 1998	Availability and handling of hired containers ("Logistics" workshop held in collaboration with the assembly plant)
10 December 1998	The changed role of transport in the automotive production and supply chain ("Logistics" workshop)
5 February 1999	Supplier development and quality management for small sub-suppliers (meeting of participating component suppliers held at one of the supply firms)
24 February 1999	Instruments for the improvement of process quality in the run-up to new model launches (organised as part of the series of workshops on quality management)
29 April 1999	Possibilities for continuing the work of the cooperative association (meeting of the participating component suppliers)
27 May 1999	3rd. joint workshop with representatives of senior management and the functional managers of the project participants. Assessing the joint workshop.

Conferences

11 September 1997	Whither JIT production? – Discussion group
26-27 March 1998	Globalisation in the German automotive industry
28-29 January 1999	How can cooperation be established in the automotive industry? On the (small) differences between producer strategies, *Land* programmes and joint projects

Expert interviews

In the course of the project, two sets of in-depth expert interviews were conducted with our industrial partners. At the beginning of the project, more than 30 interviews were conducted and documented and in the final phase around 25 interviews took place. They were used for the purposes of project appraisal and have also been utilised in the current report.

Publications

Kilper, Heiderose, 1999: Zwischenbetriebliche Kommunikation und Kooperation in der Automobilindustrie. Probleme und Eckpunkte einer regionalen Industriepolitik. In: Kilper, Heiderose/Pries, Ludger (Hrsg.): Die Globalisierungsspirale in der deutschen Automobilindustrie, München und Mering: Hampp, S. 223-246.

Kilper, Heiderose (Hrsg.), 2000: Wie stiftet man Kooperation in der Automobilindustrie? Über die (kleinen) Unterschiede zwischen Herstellerstrategien, Landesprogrammen und Verbund-Projekten. Dokumentation der Tagung am 28./29.1. 1999 im Institut Arbeit und Technik in Gelsenkirchen. Graue Reihe des Instituts Arbeit und Technik 2000-01, Gelsenkirchen.

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Kilper, Heiderose/Schmidt-Dilcher, Jürgen, 1999: Auf dem Weg zum Ko-Produzenten. Über den Wandel der Hersteller-Zulieferer-Beziehungen in der Automobilbranche. In: Institut Arbeit und Technik (Hrsg.): Jahrbuch 1998/99, Gelsenkirchen: Institut Arbeit und Technik, S. 156-169.

Kilper, Heiderose/Schmidt-Dilcher, Jürgen, 2000: Vom Recht des Stärkeren zur Partnerschaft? Über den schwierigen Weg zu neuen Hersteller-Zulieferer-Beziehungen in der Automobilindustrie am Beispiel eines Karosserie- und Montagewerks. Graue Reihe des Instituts Arbeit und Technik 2000-02, Gelsenkirchen.

Schmidt-Dilcher, Jürgen, 1998: Kooperation stiften. Initiierung und Moderation eines Kooperationsverbundes in der regionalen Automobilindustrie. In: Pekruhl, Ulrich (Hrsg.): Unternehmensberatung. Profil und Perspektiven einer Branche. Graue Reihe des Instituts Arbeit und Technik 1998-03, Gelsenkirchen, S. 59-69.

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Stolte, Wolfgang, 2000: Das Verbund-Projekt „Optimierung der Produktions- und Lieferbeziehungen zwischen Zulieferern und Hersteller“. In: Kilper, Heiderose (Hrsg.): Wie stiftet man Kooperation in der Automobilindustrie? Über die (kleinen) Unterschiede zwischen Herstellerstrategien, Landesprogrammen und Verbund-Projekten. Dokumentation der Tagung am 28./29.1.1999 im Institut Arbeit und Technik in Gelsenkirchen. Graue Reihe des Instituts Arbeit und Technik 2000-01, Gelsenkirchen, S. 96-102.