

NETWORKS AND LEARNING PROCESSES: THE ROLE OF FOREIGN AFFILIATES AS NETWORK COORDINATORS

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ABSTRACT

This paper focus on how local partners learn and develop competences within networks whose central actor is a foreign-owned firm. It combines an analysis of learning processes in networks with an assessment of the effects of key foreign investment projects. Following a case study method, two large automotive projects undertaken by Renault and by Ford and Volkswagen in Portugal were analysed, in order to understand how networks were built and how local firms were able to learn as a result of their involvement in those networks. The characteristics of the automotive industry, particularly the conjunction of “collaborative manufacturing” and continuous improvement, are especially suited for understanding how learning processes take place in networks led by foreign-owned firms. It was found that such networks provide a context where learning becomes easier and vertical cooperation is a reality. Recipient country component suppliers do learn, not just regarding transformation activities, but also about transactional activities, through the development of mutual expectations. Industry dynamic puts, however, increasing demands on local component suppliers to gain and maintain positions in the networks.

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INTRODUCTION

Learning became in the last decade a fashionable topic. There is an widespread agreement that learning is a critical instrument for firms to cope with, and to anticipate, change. Learning capabilities are envisaged as a key factor in company competitiveness, as indicated by the perspectives of “the learning firm” (Senge, 1990), “the knowledge creating company” (Nonaka and Takeuchi, 1995) or the “individualised corporation” (Ghoshal and Bartlett, 1997).

However, the literature has mainly focussed on intra-organisational learning, including the sharing of knowledge within the multinational firm (Szulanski, 1996; Bartlett and Ghoshal, 1989; Doz, Santos and Williamson, 2001; Kulkki, 1996). When an inter-organisational perspective was adopted, it was mostly concerned with dyadic relationships between two firms, particularly in *joint-ventures* (Inkpen, 1996; Tiemessen *et alii*, 1997). Learning processes in the context of inter-firm networks has been a neglected issue in most international business literature, with a few exceptions, namely Kogut (2000), Lam (1997) and the authors associated with the industrial networks approach (Araújo, 1996; Axelsson and Easton, 1992; Haakansson and Johanson, 1993; Blankenburg-Holm and Johanson, 1997).

The present paper is aimed at providing an additional contribution towards the understanding of learning processes in a network context. It will focus on how local partners learn and develop competences within networks whose central actor is a foreign-owned firm. This means that our endeavour has two main facets: one regarding learning in networks; another, on the effects of key foreign investment projects which gave rise to the formation of networks. We have chosen two large automotive projects in Portugal, which are landmarks in the development of the industry in Portugal: the setting up of the Renault complex, in the early eighties; and the investment by Ford and Volkswagen to create the Auto-Europa joint-venture, in the early nineties. The characteristics of the automotive industry, particularly the conjunction of “collaborative manufacturing” (Kogut, 2000) and continuous

improvement, make it particularly interesting for the study of learning within networks.

The theoretical framework for the research combines the concept of “flagship firm”, introduced by Rugman and D’Cruz (1996 and 2000) with the perspective of business networks suggested by Haakansson (1987). The first highlights the central position held by the automakers. The second enables to grasp the dynamics of the relationships involving different actors, resources, and activities. While taking the network as the frame for analysis, this paper is mostly concerned with component suppliers learning processes.

The text is developed along six sections, excluding this introductory note. First, a brief perspective of the main trends in the automotive industry will be provided. Then, follows an historical retrospective of that industry in Portugal, underlying the key features of the projects behind our focal networks – Renault and Auto-Europa. A conceptual framework, incorporating the contributions indicated above, is presented in the third section. The fourth deals with the method adopted in empirical research, and particularly how the case studies were developed. The presentation and comparison of the two cases studies are undertaken in the next section. The main thrust is to understand the key features of component suppliers involvement as well as the characteristics and the scope of the learning processes. The paper concludes with a broader assessment of the relationships between foreign investment, inter-firm networks and learning in the automotive industry.

THE AUTOMOTIVE INDUSTRY: MAIN FEATURES

To understand how networks can foster intra- and inter-firm learning in the automotive sector there is a need to provide a broad characterisation of the industry. Four main features deserve a reference: complexity, with changing patterns of relationships among the main players; globalisation of activities; market concentration; and strategic alliances. Let us briefly describe them.

Complexity and Changing Relationship Patterns

The complexity of the automotive system stems from the existence of multiple players linked by different flows of tangible and intangible nature as well as from the very dynamics of linkages. Traditionally, three main groups of players, linked through

hierarchical relationships and located in distinct layers or tiers, were identified (Chanaron, 1998; Dyer, Cho e Chu, 1997; Stephan and Pfaffman, 1998; and Clark and Veloso, 2000). The leading place was occupied by automotive manufacturers, responsible for designing the vehicle, for assembling mechanical parts (namely engine and gear-boxes), for manufacturing the body (pressing, welding and painting), for final assembling, and for marketing (including the image/logo, and the provision of credit, and post-sales service). Then, came the first-tier component suppliers responsible for manufacturing sensitive parts of the vehicle under contracts entered into with the automotive manufacturers. Lower down supply chain was a large number of second, third and fourth-tier suppliers, often specialised in a single technological area or in a manufacturing process (stamping, plastic injection, metal protection, for instance).

With the development of lean production systems, automotive manufacturers externalised component sourcing, relying on external suppliers to an increasing extent. Consequently, supply chain management became a very sensitive topic for automotive manufacturers (Dyer, 1996; Dyer and Chu, 2000; Boyer *et alii*, 1998; Womack, Jones and Roos, 1990). During the second half of the 1990s, the clear-cut pattern of tier, hierarchical organisation became more blurred, and inter-firm linkages gained more complexity, due to the confluence of three inter-related trends. The first is the decline in the number of first –tiers, direct suppliers, together with the downgrading of weaker firms. Second, a widening of the scope and complexity of the products delivered by direct suppliers: there are no longer single parts, but rather modules and/or systems (Stephan and Pfaffman, 1998; Veloso *et alii*, 2000). The third trend is the expansion of Worldwide supply chains, with suppliers, especially “systems manufacturers” and “systems integrators” (Pilorusso, 1997; Veloso *et alii*, 2000)¹, following automotive manufacturers in their international expansion, particularly towards the new platforms set up in the main emerging markets. These trends lead to an increasing complexity of the automotive industry system.

¹ These authors provide a classification of suppliers by ascending order of their responsibilities and relevance in the supply chain: component manufacturers, process specialists (metal stampers, die casters, injection moulders); sub-assembly manufacturers, that correspond to process specialists with additional capabilities (machining or assembling, for instance); systems manufacturers, responsible for the design, development and manufacturing of complex systems; and systems integrators, responsible for the integration of “components subassemblies and systems into modules that are shipped or placed directly by the supplier in the automakers’ assembly plants” (Veloso *et alii*, 2000:43)

Simultaneously, they place increasing demands on suppliers: these should have capabilities to organise supply chains themselves as well as to cooperate with the automotive manufacturers in the development of new, more complex modules and/or systems, even suggesting new solutions, while having an international reach. This raises significant challenges for suppliers based on less advanced countries, whose relationships with automakers were originally based, at least in part, on local value added content clauses. To put it another way, the traditional role of the automotive sector as an “industrialising industry” may be in jeopardy.

Concentration

The automotive industry exhibits a strong market concentration. According to Vickery (1997), the 20 biggest automakers were responsible, in 1996, for more than 90% of the World output, while the four biggest accounted for a share above 40%. Since then, concentration ratios increased again, namely as a consequence of the alliances between Daimler and Chrysler, Renault and Nissan, and GM and Fiat as well as the acquisitions of Volvo and Saab by Ford and GM, respectively. The four biggest automakers concentrate now more than one half of the World industry output.

While some observers argue that automotive manufacturers have, in recent years, lost power against direct suppliers (Veloso *et alii*, 2000), we concur with Chanaron (1998) in considering that automakers are still in the driving seat – they control the structure and development of the automotive industry. It is undeniable, however, that concentration was a pervasive phenomenon that has also effected component manufacturers (Clark and Veloso, 2000; Veloso *et alii*, 2000): in 1997, the four biggest component manufacturers (Delphi, Viston, Robert Bosch, and Denso) accounted for 29% of the sales of the 50 biggest (Stephan and Pfaffman, 1998).

Globalisation

Although automotive manufacturers’ strategies may differ², globalisation is a major shaper of competitive strategies in the industry. The biggest manufacturers have Worldwide strategies, while there is an increasing integration of Triadic markets (Ruigrok, Van Tulder and Baven, 1991). The need to make creative syntheses between global and local forces remains, however. The development of the platform

² See the taxonomy suggested by Freyssenet *et alii*, 1998.

approach may be envisaged as a device to match scale and scope economies with the maintaining of local flavours, since markets still have different demands and grant higher value to different features. The international expansion or replication of supply chains, namely in emerging markets, is another expression of the local/global match. These moves to some extent add a new perspective to the strategy taxonomy suggested by Ruigrok, Van Tulder and Baven (1991): “glocalisation” – that is international intra-firm division of work – and “globalisation”, characterised by the division of work among geographically concentrated groups of firms. The new perspective might be called global localisation, characterised by the international replication of different locations of variations of a value chain made of global players.

Strategic Alliances

The main automotive manufacturers are adapting to the lean production “commandments” by externalising their former component divisions: the two key examples were provided by the spun-off of Delphi and Visteon by GM and Ford, respectively³. Simultaneously, there has been a surge in strategic alliance formation. Such alliances have involved three main fields of competences: *technology* through the development of new, common technical solutions or the sharing of specific technologies; *production*, encompassing co-production agreements and common use of manufacturing platforms, to benefit from economies of scale; and *marketing*, through reciprocal marketing agreements, to counter situations of excessive market segmentation.

In some instances, alliances were pursued still further, involving equity swaps and links as well as the creation of joint-ventures. A number of these happened during the 1990s; examples include the Ford-Volkswagen joint-ventures Auto-Latina and Auto-Europa (which was discontinued a couple of years ago), and Nedcar, launched by Volvo and Mitsubishi in cooperation with the Dutch public authorities. More recently, large acquisitions (such as the purchase of Volvo and Saab by Ford and GM, respectively) and transcontinental tie-ups (Daimler-Chrysler, Renault-Nissan, and GM-Fiat) took place. The strategic goals behind these moves are concerned with size and the creation of synergies to enable the leveraging of the capabilities needed to compete globally.

³ However, there are indications that Japanese auto-makers, such as Toyota, may be moving towards more hierarchised structures (Ahmadjian and Lincoln, 2001)

FOREIGN INVESTMENT IN THE PORTUGUESE AUTOMOTIVE INDUSTRY: AN HISTORICAL RETROSPECT

The history of the automotive industry in Portugal during the last half century has been shaped by the interaction between two main players: the State, defining (or intending to define) industrial policies specifically addressed to the sector; and international investors, led by the main automotive manufacturers. In the background, but somewhat defining the boundaries for players' behaviours, economic integration processes, from the creation of EFTA to the launching of the Economic and Monetary Union.

The 1960s were dominated by the so-called “assembling law”. This defined the conditions for the imports of automotive vehicles, and was aimed at both curtailing imports and stimulating the development of domestic component manufacturing firms (Guerra, 1990). The underlying logic was to substitute imports by local production. The passing of the law generated an immediate reaction by automakers: the launching of assembling plants, in the context of direct foreign investment operations or licensing agreements, with the objective of protecting or even increasing market shares. *Ex-post* evaluation of this policy was clearly negative (Schmidt and Almeida, 1987; Féria, 1999). The multiplication of small assembling units, addressed to a protected market, did not enable the emergence of a true component manufacturing industry. The negative effect of market size was compounded by the commercial, instead of manufacturing, origin of the Portuguese companies involved in the process.

From 1976 onwards, a policy reorientation, stemming from both a recognition of the meagre results achieved so far and the commitments stemming from the 1972 agreement with the then European Economic Community, started to take shape. It led to the definition of a new framework law for the automotive sector (Decree-Law 352/79), setting up a mechanism of compensating exports: imports could only be increased to the extent they were offset by exports of manufactured products. Some automakers, of which GM is probably the best example, responded the new policy by investing in component manufacturing. The main result of the policy is, however, the launching of the so-called Renault project.

Renault was attracted by the exceptional conditions offered by Portugal, not only in terms of direct investment incentives but especially because of the privileged access to the Portuguese market. The project enabled the creation of a relatively

coherent automotive manufacturing system, involving a casting unit (Funfrap), an engine and gear-boxes producing plant, and an assembling unit with a capacity of 80000 vehicles per year. The size of the project, the local purchasing policy associated with local value added commitments and the support provided to several Portuguese component manufacturers transformed the Renault project in a landmark for the modernisation of the Portuguese automotive industry. Several authors criticise the Renault project on three grounds: excessive incentives (Santos, 1996); insufficient level of national value added (Schimdt and Almeida 1987); and project design mistakes, particularly the low investment in dedicated assets (Féria, 1999). However, even these critics concede that the Renault project was a very important step in enabling the creation of a modern industry of component manufacturing in the country (Schimdt and Almeida, 1987). It may even be argued that Renault provided the ground for the Auto-Europa⁴ project to emerge.

With Portugal's accession to the EEC in 1986, the privileged conditions granted to Renault were not sustainable for a long time. This fact, together with the opening of Central and East European markets (Renault undertook significant investments in Slovenia) and the attraction of the Auto-Europa project, led to a fading-out process by Renault. Today, the Renault system no longer exists: the assembling unit was closed; the engine and gear-boxes plant was granted juridical autonomy, to pursue its own independent way; and the metal casting unit is now part of Teksid, a new firm resulting from the merger of Renault and Fiat assets in the metal casting field.

If the investment by Renault was only possible in a context of domestic market protection, the Auto-Europa project was, on the contrary, a consequence of a regional integration process, following Portugal's EEC accession. Auto-Europa, originally a *joint-venture* between Ford and Volkswagen, was the major foreign investment ever undertaken in Portugal. Launched in 1991, it involved the setting up of a vehicle manufacturing plant with a capacity of 180 thousand vehicles per year, the output being addressed to foreign markets. As a greenfield investment, Auto-Europa espoused some of the most recent developments in the automotive industry, on what concerns the manufacturing process and supply-chain management (just-in-time, close cooperation with suppliers, some of which located at Auto-Europa premises),

⁴ See the description of the Auto-Europa project bellow.

organisation (continuous improvement – *Kaizen*), human resource management (task rotation, team-working, performance stimuli) and environmental protection.

Auto-Europa was envisaged as a key instrument for the development of a “true automotive cluster” in Portugal, to quote Mr. Mira Amaral, who was then the Minister of Industry (Amaral, 1999). Auto-Europa was expected to play a pivotal role on two grounds. First, the dynamisation of the supply chain, namely through the attraction of new foreign investments, including joint-ventures with Portuguese firms, and the upgrading of local suppliers, capable to respond the challenges raised by Auto-Europa (orders size, quality, reliability, logistics, just-in-time delivery, product engineering...). Second, “putting Portugal on the map” of major location alternatives for setting up new automotive manufacturing plants.

This brief retrospect of the history of the automotive industry in Portugal shows how cumulative processes and change interact, leading to a permanent reconfiguration of industry patterns. To some extent there was a process of punctuated change, where the main foreign investment projects (Renault and Auto-Europa) play a key role. However, these are not stand-alone projects. They gave rise to the formation of supply networks as well as to learning processes inside those networks. Network management and inter- and intra-firm learning become key instruments for integrating cumulativeness and change. Although the automakers are in the driving seat and act as “flagship firms” (Rugman and D’Cruz, 1996 and 2000), a lot of learning takes place within the network and is internalised by component suppliers. Consequently, instead of focussing on auto-makers, our target will be the study of component firms’ behaviour. More specifically, there is a need to understand how do these firms behave and learn in the context of supply networks which are, to a large extent, managed and shaped by the “flagship” – the final customer.

CONCEPTUAL FRAMEWORK

Having in mind the reasoning developed above it is possible to develop a framework to study how inter-firm learning processes take place in the context of the automotive industry. This general framework will be then applied to the specific networks stemming from the establishment of Renault and Auto-Europa in Portugal.

The automotive industry may be envisaged as a “value system” in the sense suggested by Porter (1985). The espousing of the lean production concept led to new

forms of coordinating the supply chain (Freyssenet *et alii*, 1998; Sako and Warburton, 2000; Womack, Jones and Roos, 1990). Such a “value system” corresponds to a network, where firms are linked by resource and information flows and develop mutual expectations which may strengthen the trust required for the network to operate efficiently (Ebers, 1997). Therefore, an appropriate way to study the organisational and learning dynamics in the automotive industry, particularly from component suppliers’ perspective, is to develop a framework combining two different approaches – inter-organisational or business networks, and the “flagship firm” framework suggested by Rugman and D’Cruz (1996 and 2000).

Business networks are defined as sets of a two or more inter-linked business relationships, where each exchange relationship takes place between firms, envisaged as collective actors (Andersson, Haakansson and Johanson, 1994). Haakansson (1987) proposed a framework where the network includes three main elements – actors, resources, and activities. Actors control resources and have a certain level of knowledge about the resources they control. Through exchange relationships, actors exchange resources. Activities, which may be of transformation or transactional, process the resources or exchange resources through the use of other resources. Networks present multiple features, and may be conceptualised following different perspectives: as relationships, as structures (where stability and change co-exist), as positions or as processes. Relationship dynamics within networks may play an important role as stimulators of learning processes (Haakansson, Havila and Pedersen, 1999; Araújo, 1996). In fact, within a network there are common but also conflicting interests, and “actors use their knowledge of the network as well as their relationships with other actors in order to increase their control” (Haakansson and Johanson, 1992: 30).

Though some suppliers have recently improved their positions within existing networks (Veloso *et alii*, 2000), automotive industry networks remain, as pointed out above, organised by reference to a central player which has a pivotal role – the automotive manufacturer. It provides coherence to a specific networks, although some actors may belong to different networks. The idea of centrality, where an actor develops, around itself, an “industrial model” (Jürgens, 1998)⁵ is particularly relevant

⁵ This author refers specifically to the “model” of Volkswagen. With regard to other auto-makers, see Freyssenet *et alii* (1998).

for us, since our purpose is to analyse two specific networks led by Renault and Auto-Europa.

This leads directly to the “flagship firm” framework (Rugman and D’Cruz, 1996 and 2000). The flagship firm is the hub that defines the structure and provides the cohesive force that keeps the network together. To quote Rugman and D’Cruz (1996: 670), it “provides strategic leadership and direction for a vertically integrated chain of businesses that operate as a coordinated system or network, frequently in competition with similar networks that address the same end markets”. According to the authors, that “chain of business” involves five types of actors: the “flagship firm” itself (including different units located in several countries), the main suppliers, the main customers, the competitors and the support infra-structure.

Certainly not by chance, the first example of application of the “flagship firm” indicated by Rugman and D’Cruz (1996) is an auto-maker – Chrysler. In fact, this firm, as Belzowski (1998) pointed out, was able to “reinvent” itself through the development and deepening of the relationships with their suppliers. On the other hand, the network concept was used by Kogut (2000) in his challenging analysis of the Toyota production system. He has shown that the network may be envisaged as a structure that enables the combination of supplier variety with the central position of the automotive manufacturer.

Focussing on two players only – the auto-maker and the component suppliers –, the network may be presented as indicated in the Figure 1. It provides the structure of the focal network (Auto-maker A), and places this in a context where the existence of other auto-makers is acknowledged. Three other features of the Figure deserve a reference: several suppliers are linked to more than one auto-maker (and, for a single auto-maker, they may supply more than one platform); suppliers’ hierarchisation is somewhat blurred, since a same firm may act as direct supplier for some components and as an indirect one for others; and some suppliers, positioned at higher levels in the network, combine the contributions from different suppliers, playing a role of “systems integrators”.

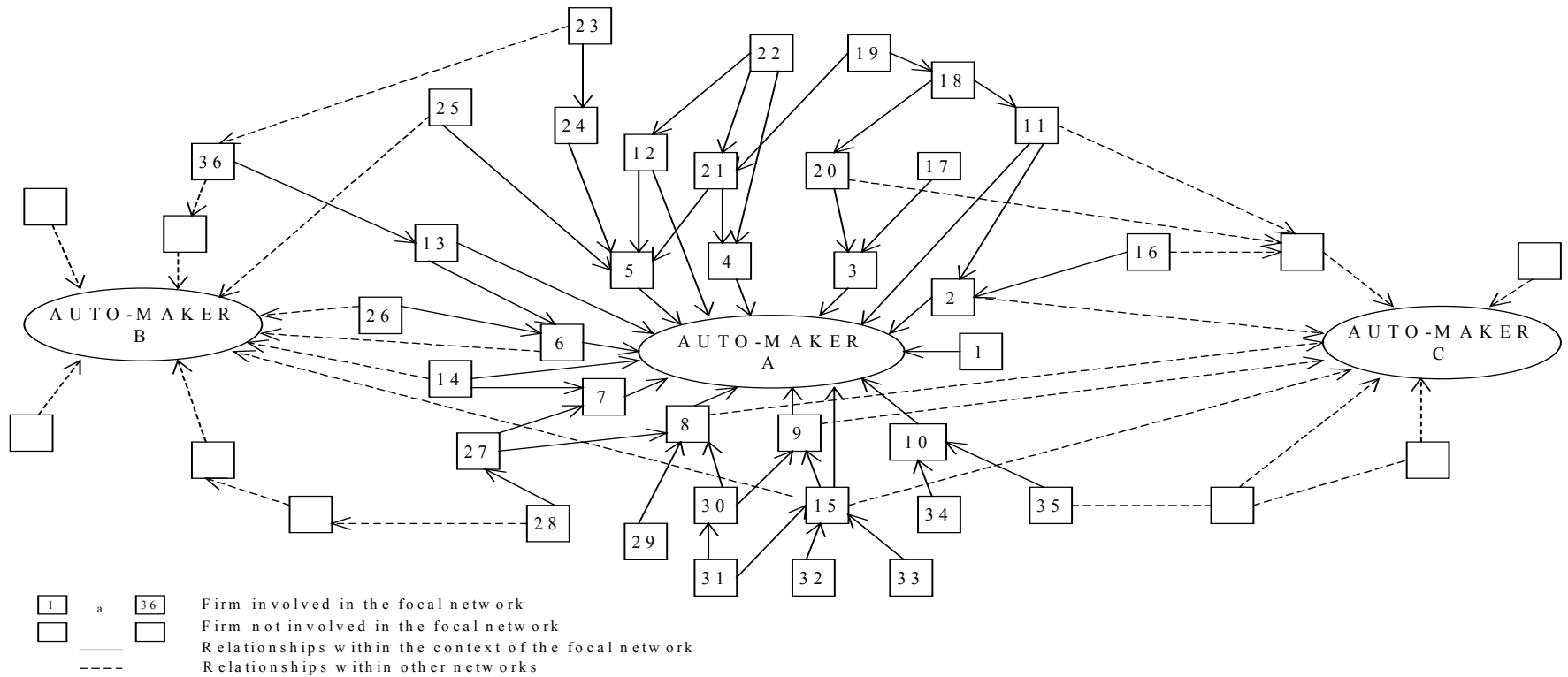


Figure 1 – Automotive Supply Network

METHOD

Since the purpose was to understand learning processes taking place in Renault and Auto-Europa networks, it was thought that the case study method was the most appropriate. According to Yin (1994) case studies should be undertaken in situations when the researcher is interested in studying how processes unfold. Case studies focus “on the understanding of the dynamics present within single settings” (Eisenhardt, 1989: 534). Renault and Auto-Europa networks may be envisaged as “single settings”, although involving multiple players.

Empirical research was developed in four main stages: (1) working out of the structure of supply networks; (2) selection of suppliers to be studied in each network; (3) undertaking of case studies; and (4) comparative inter-case analysis.

The first stage consisted in applying the framework presented above to depict Renault and Auto-Europa networks, as shown on Annexes I and II. In this phase interviews were held with sector experts, three of which had played a relevant role in the attraction and setting-up of Auto-Europa in Portugal. The purpose of these interviews was to better understand the organisation of the automotive industry and the challenges faced by component suppliers, as well as to validate our draft if the graphic representations of the networks and to introduce the research team to relevant companies.

The second stage started from the structure of the networks. Since it was not feasible to interview all the suppliers, a selection was needed. This was based on two main criteria. First, to include three different groups of suppliers: members of the Renault network, members of the Auto-Europa network, and members of both. This group was very important for our purposes, since it was expected to provide information on inter-network learning. Second, covering the four main product groups identified: metalomechanics, plastics, electronics, and seats. Eighteen firms were selected, besides the two “flagship firms”, but only twelve agreed to participate.

Each case study involved interviews with the “flagship firm” and the suppliers. Those interviews were open, although based on some common guidelines, and were undertaken in the second half of 2000. Our counterparts were envisaged more as informants than as respondents (Yin, 1994). Whenever possible, multiple informants were used to collect a richer set of contributions, as well as to triangulate information. For both Renault and Auto-Europa several interviews were held, including a very long one (5 hours in two rounds) with the former Chairman of the Board of Renault

Portugal. Four main topics were considered: decision autonomy and supply chain management processes by the Portuguese subsidiary of the “flagship firm”; initial support provided for the accreditation of Portuguese suppliers; relationships between the Portuguese plant (or plants) and the multinational group; and development of the relationships, particularly learning relationships, with the suppliers located in Portugal. Interviews with suppliers followed a set of guidelines structured along seven axes, going from management systems and strategic orientations to competence basis and assessment of the value of linkages and learning processes in the context of networks. Interviews lasted from 1.5 to 3 hours, with an average of 2.5 hours.

A comparative analysis of the patterns, relationship structures and learning outcomes in the Renault and Auto-Europa networks was undertaken. Although direct comparisons should be made with care, due to the different time frames and environmental conditions in two cases, inter-case contrasts enabled a better understanding of the dynamics underlying the formation and development of automotive supply networks.

INVOLVEMENT OF COMPONENT SUPPLIERS IN THE NETWORKS

Analysis of inter-firm relationships within the networks, from the perspective of component suppliers, may be undertaken according to four dimensions: up-stream, concerning the linkages with customers, and namely with the automakers; down-stream, that is, the relationship with other suppliers, further down in the chain; other relational spaces, namely horizontal relationships with other players, including the so-called “suppliers clubs”; and replication of the network in other environments, when a significant number of suppliers follow the automaker in international moves. In the present paper, focus is put on the first dimension: up-stream relationships.

Each network will be studied separately, starting with the oldest – Renault. A closing point will summarise the main findings stemming from the two cases.

The Renault Network

Six of the component suppliers studied have been involved, with different time lengths and positions, in the Renault network. Since for two of them the Renault experience was relatively marginal, attention will be addressed on the other four firms. Two of them, both foreign-owned, were created in conjunction with the Renault

project. For the others, involvement in the Renault network was the key determinant of their specialisation in automotive components.

One of the firms has a very interesting history of belonging to the network. It was set up in the context of the project, and had an equity participation by RNUR⁶. Its main mandate was to supply casted metal products (engine blocks, engine wheels, differential boxes, piston rods, and escape collectors) to the Renault plant of mechanical components. It is not surprising therefore RNUR to have played a key role in the process of creating a technological and manufacturing base. The launching of this casting plant followed RNUR routines of inter-unit information transmission and knowledge sharing to enable a smooth start-up. RNUR's contribution mainly consisted in nominating staff for the key posts, professional training (most engineers stayed in other RNUR plants) and providing technological information. Inter-personal relationships played a very relevant role in the foundry's learning process and know-how acquisition. Today, the firm is part of an independent multinational group, that combines the former foundry activities of both RNUE and Fiat. In spite of keeping linkages with RNUR (which still accounts for one third of turnover), the Portuguese firm had to forge its own way with the end of the Renault project.

The two Portuguese owned-firms⁷ were, since the inception of the project, involved in the Renault network and still are, more than 20 years later, suppliers of RNUR. They recognise that the Renault project enabled them to upgrade their capabilities as well as to make a stronger commitment to the automotive components industry. As the Chairman of one of them, focussed on the casting business, acknowledge, "the advantage of the [Renault] project was to support the domestic industry", being a "dynamisation and modernisation factor" (Macedo, 1995). The other company, working in the plastic injection field, is an interesting case of capability upgrading, especially in design, and is now an international partner of RNUR. The belonging to the Renault network has enabled the generation of a closer relationship and the forging of trust, leveraging the links from Renault in Portugal to the RNUR group. This accounts for around one third of turnover. The Portuguese firm has now an engineering unit close to the RNUR Technological Centre in France to

⁶ The acronym RNUR (Régie Nationale des Usines Renault) is used to indicate the Renault group, and particularly the headquarters.

⁷ One of them has been meanwhile acquired by a Dutch group.

streamline and dynamise the relationships in the development of new components and has followed Renault in some international moves, namely to Slovenia and Brazil⁸.

One of the key objectives of the Renault project was to support the creation of an automotive components industry in Portugal. Local value added commitments led Renault to stimulate the upgrading of some Portuguese suppliers, as well as to attract their traditional suppliers to Portugal. According to the former Chairman of Renault Portugal, support was provided to those companies which had the minimum capabilities to become Renault suppliers, and which showed to believe in the project; this “*means investing and bearing the inherent risks*”. One of the firms surveyed considered that Renault played a very positive role:

“[Renault] provided us with support and training and had the patience for us to upgrade and develop. There was no need for support in process technology. But they helped us in many ways: involvement in training; visits to Renault plants to better understand their operations; visits to other Renault suppliers; investment advice; and quality training. They supported us in learning and enhancing our credibility”.

These words confirm our desk research indicating a concern by Renault in developing local suppliers, particularly in the initial phase. Renault support seems to have mostly consisted in the provision of technical assistance and training, to upgrade suppliers technological capabilities and performance. The auto-maker has shown forbearance with regard to suppliers, in the first phases, both in terms of prices and quality. Timetables for gradual improvement of prices and quality were defined on a case by case basis – the “patience” mentioned in the quotation above. However, this behaviour needs to be contextualised. In fact, Renault benefited from a privileged access to the Portuguese market; the downside was the achievement of local value added objectives. So, Renault was interested in supporting local suppliers. Furthermore, in the early 1980s the Portuguese market was protected and global or regional sourcing policies by auto-makers were still to be developed. The combined effect of Portugal’s EEC accession and the development of new, centralised sourcing policies (Martinez & Jarillo, 1988) led to a significant change in Renault’s behaviour from 1987 onwards. Gradually Renault’s interest in Portugal declined and, by 1995, it

⁸ Recent news indicate that this firm is about to set up a plastics plant in Rumania through a joint-venture with a French automotive components group, traditional supplier of Renault.

informed the Portuguese government about its decision to close the assembling plant of Setubal and to annul the investment contract entered into in the early 1980s.

In spite of the problems raised by Renault's decision, a long-term perspective of the Renault experience shows that it enabled the modernisation and development of a few Portuguese component suppliers, some of which were able to establish relationships with the RNUR network. In its initial phases, Renault stimulated learning processes by Portuguese potential suppliers and granted credibility to component manufacturers which enabled them to enter other networks. It may be argued that without the Renault project Portugal would not have the domestic manufacturing basis which was instrumental in attracting the Auto-Europa project.

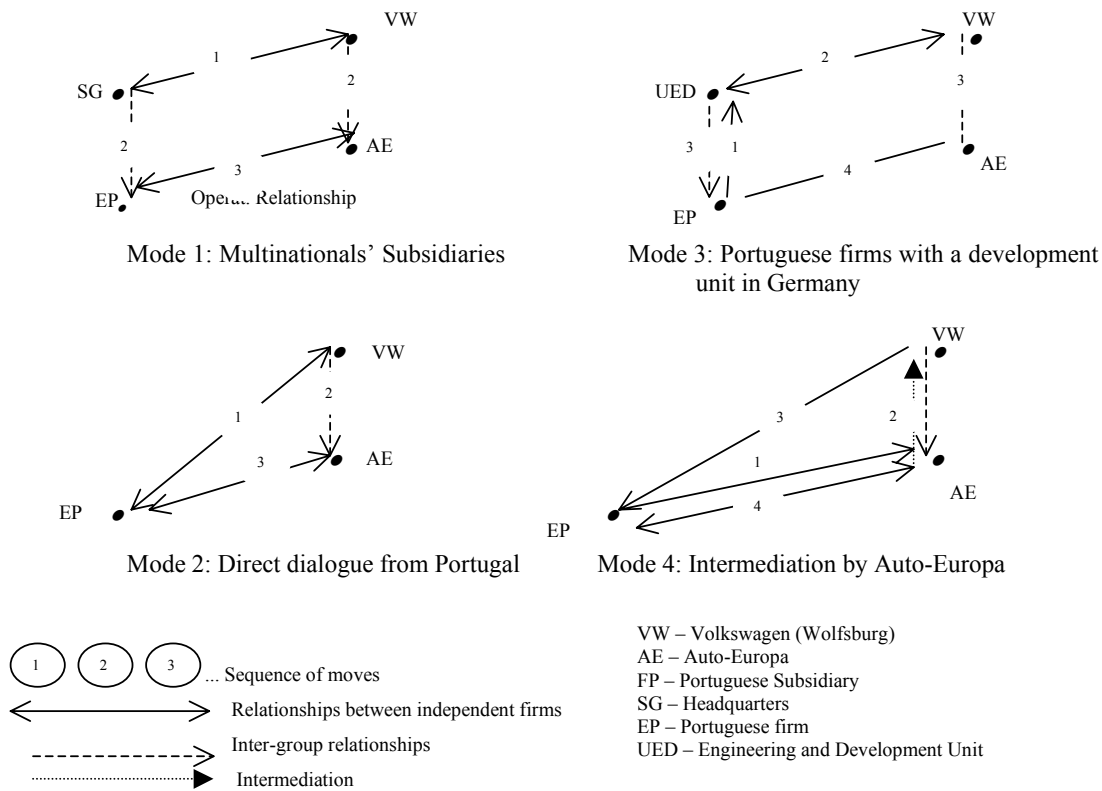
The Auto-Europa Network

The opinions of component suppliers about the impact of the Auto-Europa project on company development and technological, commercial and organisational learning are mixed. Some firms, namely the metal casters, regret engines not being manufactured in Portugal, thereby hindering the opportunities for enhancing and expanding supply relationships. Other firms, however, argue that the main advantages from the Auto-Europa experience are associated to scale of operations and to the extension of linkages with the involved auto-makers⁹ at a wider, European level. Sometimes learning was not achieved through the relationship with the auto-makers themselves, but rather with first tier suppliers. For instance, a Portuguese manufacturer of components for seats mentioned the strengthening of the relationship with Bertrand Faure as a consequence of belonging to the Auto-Europa network: *“we already had relationships with them and, since there was an intention to develop [local] suppliers due to national value added obligations, [our company] emerged as a potential supplier”*.

However, the level of autonomy enjoyed by Auto-Europa is limited – and this is perceived as an hindrance by some suppliers. Many decisions are taken by the headquarters, and not by the Auto-Europa plant. For instance, the granting of the “engineering source approval” is decided by the “corporate sourcing”, and the negotiations regarding most technical aspects of supply agreements are held with

⁹ It should be reminded that Auto-Europa was originally set up as a joint-venture between Ford and Volkswagen.

Wolfsburg, not with Palmela¹⁰. In this process, Portuguese affiliates of multinational groups – particularly those which already had a track record of close relationships with Volkswagen – enjoy a clear advantage. In this case, as indicated in Figure 2 (Mode 1), there is not a dyadic relationship, but rather a quadrialogue. The leading actors are the headquarters (or regional divisions, namely in the case of US multinationals), while Portuguese subsidiaries play a secondary role, due to their weaknesses in the commercial and technological fields. It may be even argued that the relationships between the Portuguese subsidiaries are mostly limited to operational issues (manufacturing and logistics), thereby curtailing the scope of possible learning processes stemming from the interaction.



Source: Empirical research

Figure 2 – Actors and Relationships Modes in Auto-Europa network

¹⁰ Wolfsburg and Palmela are the locations of Volkswagen headquarters and Auto-Europa plant, respectively.

Portuguese component manufacturers with more ambitions need to set up a direct dialogue with Volkswagen in Wolfsburg. In the absence of such dialogue, and having in mind Auto-Europa's limited influence in sourcing decisions and in product development, those manufacturers face a high risk of downgrading in the supply network. Two possibilities may be considered. The first is to conduct the relationship from Portugal (Mode 2), but this appears to be a transitional stage, since proximity is need for inter-action especially in the product development process. This leads to the second option: the setting up of a product engineering and development unit close to Volkswagen headquarters able to establish direct relationships "in German language" with Volkswagen's product development center (Mode 3). An illustration of this mode is provided by a plastic components firms recognised by our Auto-Europa interlocutors as a success case. "*We learned the way how Volkswagen works*", they told us, and betted on two areas: strengthening the engineering and development division (now staffed with around 40 people) to be able to design "*new things*" for the car; and setting up an office, with engineering capabilities, in Germany, to relate directly with Volkswagen counterparts. The efforts undertaken were highly regarded by Volkswagen, and may be understood as dedicated investments in the relationship. They enabled to generate a feeling of closeness: "*sometimes is not so much development [capabilities], but rather being close; there is someone with whom they [the auto-makers engineers] may talk in German language*".

Having said this, it should also be acknowledged that Auto-Europa may play a facilitating role in mediating the relationships between Portuguese suppliers and the central sourcing department as well as in confirming the technological and manufacturing capabilities of those suppliers, as indicated in Mode 4. Our interlocutors at Auto-Europa mentioned that this was done with a view to stimulate well performing Portuguese suppliers. The main instrument used in this endeavour is the so-called "*concept of relevant part*" to indicate a specific part considered by the Auto-Europa plant as very important for streamlining the assembling procedure and for enhancing plant performance. Another relevant initiative of Auto-Europa was the "tearing down" of the vehicle manufactured in Portugal, decomposing it in all its components, in order to elicit proposals from suppliers for reducing components costs and/or for suggesting better solutions in terms of value for money. It seems, however, that the main benefits of this exercise were appropriated by Auto-Europa itself – in terms of significant cost reductions –, and not so much by the component suppliers; in

fact, none of the Portuguese-owned suppliers interviewed mentioned *motu proprio* the “tearing down” initiative.

Auto Europa’s autonomy is limited and, as Veloso *et alii* (2000) pointed out, at headquarters level there seems to be a distrust regarding product engineering and development capabilities of Portuguese firms in general. Talks with Auto-Europa executives and industry experts enabled the identification of three conditions relevant for component suppliers to enhance their positions in the context of the Auto-Europa network. First, “they need to be there”, that is, to have an office at Wolfsburg to establish a close relationship with Volkswagen’s engineering department. The second is the development of linkages with those engineering consultancy companies, such as EDAG, which provide engineering services to Volkswagen. Finally, the setting up of strategic alliances, namely with companies high ranked by Volkswagen, provides additional visibility and credibility.

In their fields of competence, however, Auto-Europa has provided an important support to local suppliers, and the relationships between these and Auto-Europa seem to be characterised by a cooperative spirit (Vale, 1999). Such support had two main dimensions: one, of general nature, associated with the immersion in a lean production context; another, more specific, regarding the establishment of a continuous dialogue with suppliers, including technological or logistic help in problem solving. Especially in critical instances, Auto-Europa may allocate engineers to stay at suppliers’ premises to work together in the solution of specific problems; suppliers’ engineers may also be detached at Auto-Europa to fully understand Auto-Europa’s requirements to be incorporated in product improvement. Although the information systems of Auto-Europa and their main suppliers are connected and computer communication is easy, it seems that personal inter-action and joint inspection of plant site conditions and product requirements are the main instruments for developing joint solutions and for inter-firm learning.

As indicated above, there is a cooperative spirit within the network, and particularly in the relationships between Auto-Europa and their suppliers. “Auto-Europa wants to introduce voice mechanisms – in contrast to the exit option – to solve the problems that may emerge in the supply chain” (Vale, 1999: 407). Although, contrary to Renault, Auto-Europa does not appear to have a genuine concern with the development of local suppliers, there is no doubt that mutually profitable vehicles for dialogue and supplier support were set up, particularly personnel exchange (mostly

with larger suppliers), diffusion of information, and technical assistance. Auto-Europa was, in fact, able to create a new working environment, encouraging the endogeneisation by suppliers of the lean production philosophy. Such an endogeneisation enabled some suppliers to use the experience gained to enter other networks. This was to some extent facilitated by the very fact that Auto-Europa was born as a joint-venture; two of the firms surveyed were able to keep the relationship with Ford after its divestment from Auto-Europa. Looking at supplier behaviour from the Auto-Europa perspective, the assessment is generally positive. It appears, however, that Portuguese component suppliers did not fully profit from the opportunities for learning. Our analysis suggests that this may be due to the convergence of three factors: the frequent absence of a strategic intent of learning and improving position in the network; insufficient resources, namely technological and financial; and low propensity to cooperate, in order to overcome resource constraints and to explore joint learning possibilities.

To sum up, the Auto-Europa experience shows that networks spread over national frontiers and that automakers' plants may not enjoy the autonomy needed to behave as hubs for supply networks. To understand how learning takes place the analysis of the relationships held with headquarters is also needed. Auto-Europa is *prima facie* a plant. It is concentrated on operational activities – manufacturing and logistics. Therefore, it may be labeled a “specialized manufacturer” and not so much a “product specialist” (Simões, 1992). The scope for learning is thereby curtailed. This does not mean, however, that learning – particularly at the operational level – does not take place. On the basis of collected evidence, one should recognize that Auto-Europa has an important role in consolidating and encouraging the development of component supplier firms in Portugal.

Synthesis: Comparing Renault and Auto-Europa networks

A comparative analysis of the two networks reported above enables the identification of differences and similarities. In our opinion, the main differences between the two cases stem from time and context. The Renault project took shape roughly one decade before the Auto-Europa one, at a time when the Portuguese market was insulated (and deliberately insulated for the project to be feasible) and when the concepts of lean production and centralized sourcing had not still been espoused by European auto-makers. Consequently, for the better and the worse, the

Renault network had stronger local roots and concerns, and Renault Portugal enjoyed more autonomy than Auto-Europa does. Renault was chiefly a domestic market network, while Auto-Europa has a more open and international nature. The first was the last chance to start a local automotive industrial complex before EC accession negotiations, while the latter is itself a consequence of European integration.

These differences do not conceal the underlying similarities, however. Although the existence of several hierarchical levels is more evident in Auto-Europa, both cases gave rise to networks led by a hub subsidiary – and, in real terms, by a decision centre located abroad. In both cases, an attempt was made to involve Portuguese firms in the supply chain, together with the attraction of foreign investments. Most of these were of the implementer type (Bartlett and Ghoshal, 1989), focused on operations, while product and process development, marketing and sometimes sourcing activities were very limited. Of course, there were some exceptions to this general pattern, and a few subsidiaries were able to gradually upgrade their value added activities in Portugal. But the overall pattern reduced the opportunities for learning and for leveraging domestic firms capabilities.

In spite of this, Renault and Auto-Europa experiences were instrumental in enabling the involvement of Portuguese component suppliers in networks where they understood the underlying principles of automotive supply chains and were able to upgrade competences and develop relationships that were latter replicated in different contexts. In other words, the inter-actions held within the networks enabled Portuguese firms to access additional resources (technological know-how, market relationships, logistic tools) as well as to internalize the rules behind automotive supply chain operations. The process is not completed: Portuguese firms still are typically “second tiers” (Féria, 1997), and have limited resources and capabilities. But, at the end of the day, it seems that Renault and Auto-Europa were, their shortcomings notwithstanding, relevant factors for most Portuguese component manufacturers to enter automotive networks¹¹ and to learn about the technological and organisational requirements of the industry.

¹¹ It should be acknowledged, however, that Renault and Auto-Europa were not the only experiences in this regard. There were others, namely the process of upgrading and development of domestic suppliers by General Motors, Ford and Mitsubishi.

FOREIGN INVESTMENTS, NETWORKS AND LEARNING: INTERPRETING THE EXPERIENCES

When Portuguese component supplier firms were asked to synthesise the key features of their learning processes in the context of supply networks, the response often focussed on aspects such as “*understanding the industry*” or “*understanding the market*”. This may seem, at first sight, very limited. However, in our opinion, this is a critical element. In fact, to operate and succeed in the automotive industry, hierarchically organised but pervaded by a continuous improvement dynamics, there is a strong need to internalise the tacit “rules of the game” – the philosophy and the standards, implicit and not written, of operation and behaviour. So, learning in this industry is not restricted to transformation activities (Haakansson, 1987), of processing inputs and achieving the required quality of outputs. Learning is not just technologically oriented. A very important area of learning deals with transactional activities, to follow Haakansson (1987) typology. There is a need to understand the logic of transactional activities to the extent that the balanced working of the network – expressed in the interactions between firms at different levels or tiers, but also increasingly at the same level (supplying systems or modules) – is critical for the lean production. Transactional activities generate new resources, while contributing to strengthen trust and creating relational grounds (Simões, 1999; Nonaka and Konno, 1998), where knowledge sharing may take place. Consequently, learning involves simultaneously explicit elements (well defined, formalised procedures concerning quality or manufacturing processes) and tacit features, namely on what concerns rules of behaviour within the network and expectations on others’ behaviours.

This reasoning leads to suggest that the success of newcomers to the network very much depends on their capabilities to understand the implicit structure behind the inter-action of the five dimensions of network operations mentioned by Ebers (1997). These include the following: resource flows, information flows, allocation of property rights on the resources, coordination mechanisms and mutual expectations. In automotive supply networks all these five dimensions interact. Some of these are relatively obvious, as is the case of resource and information flows, which are widespread features of the interactions in any network. The allocation of property rights on resources is not straight-forward since automakers (and even systems integrators) often compel component suppliers to undertake dedicated investments (in moulds, tools and machinery, for instance) whose recovery very much depends on

factors controlled by the automaker. This is still the main orchestrator of the network, and holds the central position. But the coordination works downstream, with every manufacturer reflecting on its suppliers its customer requirements, while being responsible for granting the latter a product meeting the quality and the delivery conditions agreed. The continuous improvement philosophy is also pushed downwards, each company defining specific demands regarding improvements and price cutting on its suppliers.

Our research confirms the critical importance of mutual expectations. The expression, used by one of our interviewees, “*we learned the way how Volkswagen operates*” translates a process of gradual deepening of knowledge about partner’s expectations. Such a learning process is key for the weaker partner, which experiences a feeling of dependency towards the other. Sometimes, those suppliers bet on anticipating customers’ needs, making credible commitments. Positive surprises are envisaged as an instrument for the weaker partner to strengthen the relationship and improve its position in the network. The promotional literature of one of the firms surveyed explicitly pointed out the purpose of “*creating an environment favourable to the motivation for exceeding our customers’ expectations*”. In the same vein, another firm set up an engineering office in Germany, close to Volkswagen headquarters, “*without having business enough to justify*” this investment decision. The purpose was to stimulate a relationship that might be further consolidated through operational performance.

But even for the more powerful partner, including the “flagship firm”, the management of expectations, often based on an analysis of past performance, is important. The shadow of the past is projected towards the future (Parkhe, 1993), and may give rise to small adjustments by the powerful partner, translated into technical assistance to solve specific problems, personnel exchange, availability to discuss solutions for unforeseen difficulties or even the opening of new opportunities. The idea of “forbearance”, introduced by Buckley and Casson (1988), seems to apply here. There is a risk reduction logic: if the supplier met the expectations so far (which means that both partners have “*made money together*”), there are no reason to change. In contrast, if suppliers “*systematically raise problems*” they will sooner or later, be discarded, as Auto-Europa has done in the recent facelift of the models. Forbearance may be envisaged as a result of the convergence of expectations, and simultaneously as an input for further convergence. A good track record of performance is the best

catalyser for furthering cooperation. The development of mutual expectations may lead to a co-evolution of actors' competences and to a deepening of the dyadic relationship¹².

The network perspective followed in the automotive industry suggests, however, that it is not strategically sound to reason neither in a pure dyadic logic nor in a conflictual perspective of competitive forces *à la* Porter (1980). The "rules of the game" are clear, although not unchangeable. Although there are centralisation, hierarchisation and power imbalances, cooperation prevails over conflict. Cooperation, responsabilisation, commitment and learning are stimulated. As Kogut (2000) suggested, contract assembling and sub-systems manufacturing changed the nature of the industry relationships between automakers and suppliers in favour of "collaborative manufacturing". The purpose of the component suppliers surveyed is to play the cooperation game by improving operational and design performance, enhancing internal competencies and better understanding customers' "mental frameworks". Although conflict may be latent, one is far away from Porter's perspective, and even Hamel's (1991) competitive collaboration does not translate the industry reality.

Internal competences are necessary for enhancing positioning. Learning processes help a lot. But learning may be improved by the capability to mobilise and orchestrate resources from different actors. Our research confirms the findings by Haakansson, Havila and Pedersen (1999) that learning possibilities are increased when an actor is linked to a larger number of other actors. The new sourcing trends, privileging the supply of systems and modules, demand still an upper level cooperation. This requires further cooperation to achieve larger responsibilities for a wider market. Consequently, suppliers should not look at dyadic relationships with "flagship firms" or systems integrators only; they need to explore the opportunities for horizontal cooperation.

Operational learning is strongly stimulated by the logic continuous improvement that pervades the industry. Change capabilities, knowledge accumulation and performance enhancing are badly required: those which are not able to improve, to reduce costs and to increase value are bound to lose positions in the network, and to be downgraded. It is interesting to note that the new industry trends enable to avoid an

¹² It should be acknowledged however that there is a risk of lock-in, that is much higher for the supplier than for the auto-maker, which has a wider set of relationships. More on this below.

excessive concentration on exploiting, that is, an efficiency improvement in a pre-defined framework (March, 1991), expressed in price reduction objectives or incremental introduction of new features. There is also room for exploring, namely on what concerns suppliers' scope of activities. As the marketing manager of a firm told us, "*the time when [the customer] said you have a part here to reproduce is over*". To improve a supplier's position static production efficiency is no longer enough: engineering competence, especially in new product development and design, is needed. This point has two main implications for learning. It demands a new vision of what a component supplier organisation is. It is no longer just a manufacturer: product design and development capabilities are needed. Second, absorptive capacity becomes a key feature insofar it shapes company's ability to identify, access and internalise new knowledge. Sometimes this may be achieved by connecting two different networks.

This research has shown that automotive networks may foster the upgrading and business development by recipient country component suppliers. The network provides a context where learning becomes easier and vertical cooperation is a reality. Learning is not restricted to transformation activities. Much learning occurs in transactional activities and leads to the development of increasing mutual expectations. The dynamics of the industry puts, however, increasing demands for component suppliers to gain and maintain position in the networks. Both Renault and Auto-Europa enabled the development of Portuguese component suppliers. But these still have a long process of competitive sustainability ahead. The way is not easy: probably only the fittest, the more capable, the more outward looking or the happiest will succeed.

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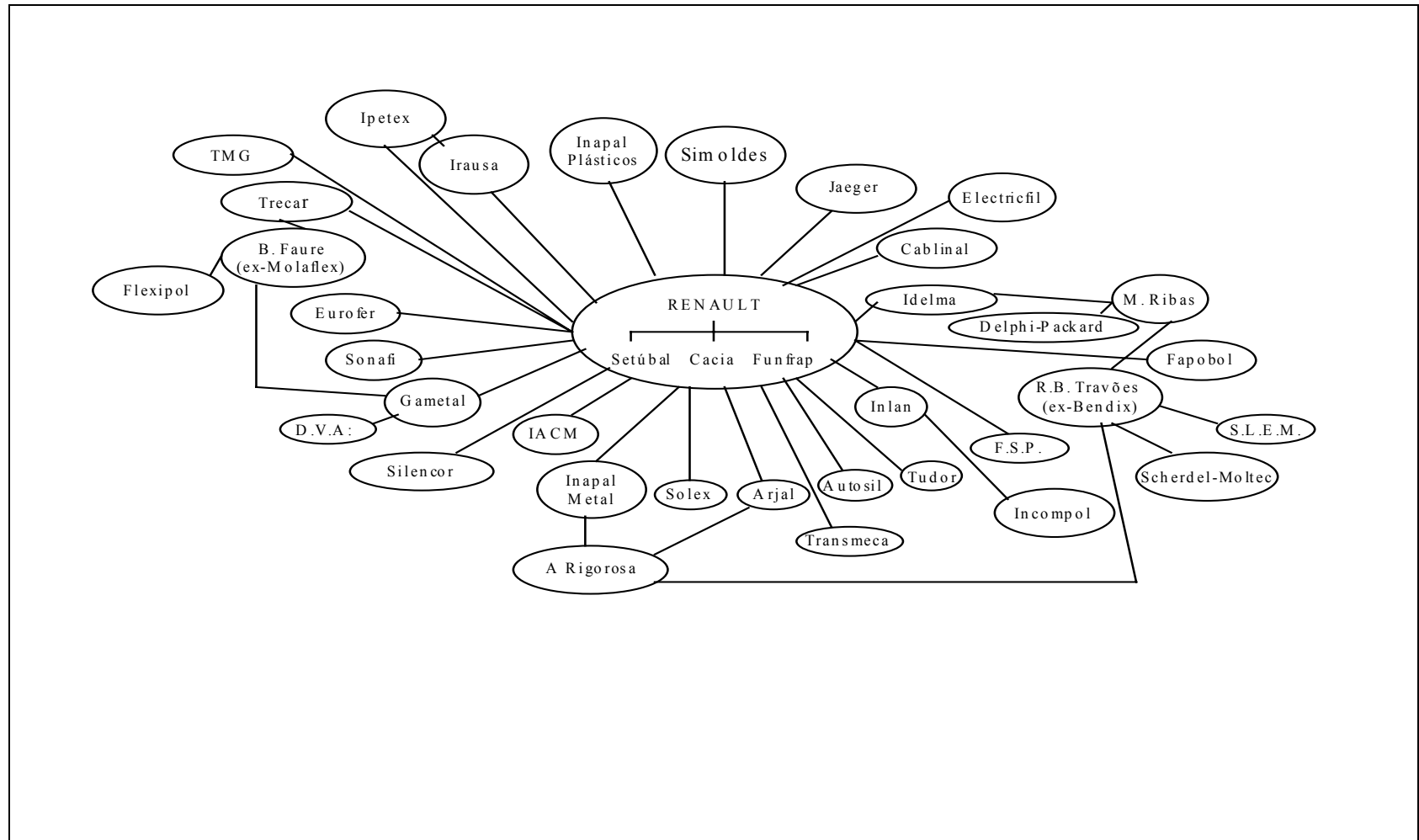
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ANNEX I

RENAULT NETWORK



ANNEX II AUTO-EUROPA NETWORK

