

**HOW INTERNAL SELECTION PROCESS LEADS TO A CO-
OPERATION AGREEMENT ?
AN EVIDENCE FROM CAR INDUSTRY**

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Karine CHAKIR, Nadia JACOBY
chakir@univ-paris1.fr ; jacoby@univ-paris1.fr
MATISSE
Université de Paris I Panthéon-Sorbonne
Maison des Sciences Economiques
106-112, bd de l'Hôpital
75013 PARIS

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ABSTRACT

The purpose of this paper is to understand when internal selection process leads inexorably to co-operation.

It's a reasonable assumption to suppose that, before the test of external selection (by the environment), firms are faced to an internal selection process.

In an evolutionary perspective, the firm is seen as a set of routines. The persistent heterogeneity of organisations can be explained by variation and selection mechanisms. The internal selection process guarantees the coherence of the firm disturbed by mutation.

So, we will try to define internal selection criteria acting before the decision to co-operate. Some of routines hold germs for a new co-operation or a longer one.

The clarification of useful concepts (routines and selection) allows us to find a connection between motivations and forms of the co-operation.

As the external selection process selects firms, the internal selection one acts on routines. We disclose internal selection criteria and describe the selection process as an intermediary process between natural selection (automatic and without any deliberation) and choice.

Micro Car Company (created by Mercedes-Benz and Swatch) and the common development of a monospace (by PSA and Fiat) represent two good examples to support our topic.

The identification of internal selection criteria and the analysis of internal selection process, when an ad-hoc structure has been created (MCC) or not (Fiat-PSA), raise the question of coherence [Dosi, Teece, Winter, 1990]. The structure's capacity to find coherence is influenced by the co-operation form. It partly determines the probability of the agreement continuation.

The economists, for whom this last question is important, have focused their reflection on the R&D co-operation. Our examples highlight a disagreement on productive (MCC) or commercial (PSA-Fiat) functions.

The timelessness of the co-operation agreements is connected with the difficulty for firms to find coherence and to assimilate other actors' routines.

INTRODUCTION

Contemporary evolutionary approaches accord a particular status to the selection process. Within this theoretical framework, the firm is a set of routines evolving under the influence of change. Firms are naturally selected by their external environment according to an automatic mechanism operating without consultation or deliberation [Nelson & Winter, 1982].

Unfortunately, the internal process of routines selection has been seldom investigated. However, this mechanism vouches for the internal coherence of the firm. Indeed, when change takes place, routines are no longer necessarily consistent with each other. In such a situation, the selection process ensures that the coherence essential for a firm's survival is restored.

Thus it seems to be important to define and to identify internal selection mechanisms, in particular by clarifying key concepts like routines, skills or coherence. Our analysis will allow us to highlight situations in which internal selection mechanisms lead inexorably to co-operation.

As we shall see, co-operation can take many forms. Selection can lead to the creation of a common structure as well as to more informal co-operation that does not require any *ad hoc* structure.

By highlighting internal selection mechanisms within four manufacturing firms (Fiat, PSA, Mercedes and SMH), we will be able to show that sometimes co-operation is inexorable. The motivations for co-operation can partly explain the form the co-operation takes, i.e. with or without structure.

Finally, we are going to analyse why some co-operative ventures stop by showing that the internal selection mechanism can be biased. The sources of disagreement have to be found not only in R&D departments but also in production and/or marketing functions.

I- Clarifying the key concepts in evolutionary approaches

1) Routines and Selection*

Among basic evolutionary concepts, that of routine is a central one. In accordance with the biological analogy on which evolutionary theory rests, routines are analogous to genes. They evolve according to a double mechanism : variation (in a biological meaning), where routines mutate, and selection. The latter takes place either within the firm and concerns the routines elsewhere, or outside the firm or on the market and then selects firms.

The processes of mutation and selection are simultaneous and interactive.

a) Routines

Clarification of the concept of routine requires two levels of analysis.

At the individual level, individual routine or skill determines individual behaviours and leads to a performance. Based largely on tacit knowledge, it undergoes selection. However, skills are further broken down into sub-skills. The latter are mainly practical knowledge, qualification and know-how or ability.

At the organisational level, the organisational routine is like a skill and is broken down into sub-routines applicable to specific parts of behaviour. However, only someone possessing the same competence can break down routines as well as skills. Indeed, the importance of tacit knowledge makes the perfect understanding of routine content unattainable. Routines are specific and partially non-reproducible, because of tacit knowledge that cannot be codified and transferred.

Furthermore, not all routines are operating at the same time. Thus there are two kinds of routines : dynamic routines and static routines. The first ones respond to external signals and tend to be directed towards learning and innovation. Also called “acting routines”, they influence performance. Static routines, for their part, store knowledge and represent the ability to reproduce tasks performed in the past. They constitute the memory or repertoire of the firm and are very close to the notion of biological genes. On receipt of an external signal, static routines react, decode the signal and order the implementation of dynamic routines. The

organisational memory, composed by static routines, contains co-ordination, control and adaptation routines, allowing the efficient handling of external signals.

But the question is : how do routines endure and how do they evolve ? In fact, routines constitute a link between past actions and present situations. In a way, they guide present actions and govern future facts. The successive implementations and the process of “remember by doing” defined by Nelson & Winter [1982] keep them the same. Individuals like firms “remember by doing”. At the same time, these routines evolve under the effects of learning and are subject to the internal selection process¹.

Even if the organisational memory is made up of the set of individual memories (individual skills or routines), the influence of the organisational context matters. Indeed, the persistence of knowledge and skills of the firm is not only ensured by the existence, within the firm, of individual routines. Others more specifically organisational routines ensure some degree of coherence between these individual skills. This organisational context is composed of three elements :

- There exists “a variety of forms of external memory that complement and support individual memories” [Nelson & Winter, 1982, p.105]. In fact, these external memories are a part of the organisational memory. They correspond to “files, message boards, manuals, computer memories, magnetic tapes” [Nelson & Winter, 1982, p.105] and do not exclusively result of the individual storage of information.
- The durability of equipment, and more widely of the work environment, provides an organisation with a certain amount of memory. The storage is ensured “by the simple fact that equipment and structures are relatively durable”. Thus “one might therefore be tempted to say that an organisation “remembers” in part by keeping its equipment, structures and work environment in some degree of order and repair” [Nelson & Winter, 1982, p.105].
- There is a correlation between the knowledge stored by the various members of the organisation. “Without the crane operator’s ability to interpret the hand signal for “down a little more” and to lower the hook accordingly, the abilities to perceive the need for the signal and to generate it are meaningless” [Nelson & Winter, 1982, p.105]. The

¹ We will go over again the selection processes and more precisely the internal selection processes.

complementary of the organisation's members coming from the complementary of their skills and the habit of working together promotes internal coherence.

The organisational context, guarantor of internal coherence, then ensures the durability of the firm.

According to Dosi, Teece, Winter [1990], there are two kinds of coherence : coherence of activities and coherence of firms. Even if intuitively there is greater coherence and stability at the level of activities², we are going to focus on the coherence of the firm.

Thus, generally speaking, the coherence of the firm can be defined through common features linking its activities. More precisely, however, internal coherence is explained by the complex interaction between, on the one hand, learning, path dependence and the opportunities presented to the firm and, on the other hand, complementary assets³. So we are looking for coherence between the routines that make up the firm.

The firm is a set of organisational routines, which are made of individual skills evolving within the specific organisational context of the firm. Furthermore, these routines interact with the environment within which they evolve.

Following a Lamarckian perspective, which explains the transformation of firms in the course of their existence, the main source of change is learning ; moreover, the environment appears as an important source of change. Thus, from this perspective and in our view, there are three sources of change to which the firm is subjected.

- Individual routines or skills transfer under the influence of learning. Thus, these modifications are the first source of change in the firm.
- After that, organisational routines, also submitted to learning, change. Thus, one set of changes is superimposed over another.
- Finally, the organisational routines making up the firm constantly interact with the environment, changes in which make adaptations necessary. Market conditions, competition and / or possible shocks to macro-economic indicators are sources of change within the firm.

These changes can be characterised according to two criteria.

² Dosi, Teece, Winter give the exemple of Hertz which, since 1918, has changed five times the parent company, but kept the same activity (rent a car).

Some call into question the hypothesis according to which there is no conflict within the organisation⁴. Very often, they are linked with the disappearance of a part of organisational memory of the firm, *via* an employee departure. When an employee leaves, his knowledge and skills are missing ; but the lack rests particularly on tacit knowledge.

Others changes do not challenge the assumption. They do not affect the survival of the firm and they more often concern environmental modifications, for example, a change of supplier. These changes require the firm to adapt but do not alter its organisational structure.

Search, defined by Nelson & Winter, is the theory of the transformation of genes and of the emergence of mutations that make it possible to explain this phenomenon.

In fact, mutation implies a risk of genotype modification. To deal with that, there is within the firm a control system looking after the maintenance of routines and their coherence. This control system is not so far from the internal selection process acting on routines that make up the firm.

b) Selection

According to Nelson & Winter, selection is not a choice because it occurs without any deliberation [Nelson & Winter, 1982, p.85]. It is an automatic selection process of competent behaviours⁵. It includes the possible selection of a bad option ; then, the selection process can be biased.

In fact, there are two kinds of selection process. External, or market, selection eliminates insufficiently competitive firms. It is the result of competition. Internal selection, on the other hand, acts on routines in accordance with an internal selection environment, which reflects external competitive pressures. The selection process Nelson & Winter describe is a natural selection process acting on firms. They say nothing about the existence of an internal selection mechanism.

The internal selection has to vouch the internal coherence of the firm disturbed by the mutation process. The sources of this mechanism are learning and environmental interactions (internal and external environments). Then, routines and core competencies mutate, disturbing the internal coherence. So, the firm survival is no more guaranteed. In order to ensure the

³ Complementary assets are support activities developed by a firm and which contain its evolution path. They are in the added-value chain before the development of products.

⁴ According to Nelson & Winter, the activity of the firm « is unchanging or cyclically repetitive ». [1982, p.98]

⁵ The competent behaviour is the common point between individual and organisation.

consistence between routines and core competencies, the internal selection process will act on them. According to this process, the core competencies frontier can be modified or moved.

The selection process operating within the firm comprises two steps. The first one acts on skills, i.e. at the individual level, whereas the second one deals with organisational routines, at the firm's level. In both cases, the evolutionary schema of the automatic selection of competent behaviours is observed. The selection of individual skills is automatic, without any awareness or deliberation between individuals. For its part, the selection of routines takes place according to several criteria. It is guided by the organisation competence, which is a kind of tacit knowledge linked with individual human factors within the firm. In fact, internal selection is an intermediary process between natural selection, automatic and without any deliberation, and choice. It is not a totally natural and automatic mechanism nor is it a choice. Indeed, a non-neutral selector agent -individual or collective- within the firm guides the internal selection process. But it is not so easy to define precisely the position of this selection process between natural selection and choice. According to the influence of the selector agent, the internal selection will be more a choice or more an automatic process. Indeed, if this agent is despotic and arbitrates the selection process, it's more a choice than a natural selection. But, at the opposite, if the selector agent has, for instance, a risk aversion or if he thinks that their competencies are not sufficient to influence the selection process, that is more a natural selection than a choice.

The intensity of R&D investment, past success of search, risk incentive structure and resource allocation process within the firm, are internal selection criteria [Warglien, 1995]. However, external environment reactions, on the one hand, and internal environment pressures, on the other hand, are so many additional criteria. The first one is related to the market and to competition between rival firms. It is evidence of technological and scientific progresses and has its origin in macro-economic shocks. Symmetrically, formal or informal decision-making processes and interactions between individuals compose the internal environment. It also takes into account organisational structures, technological and marketing practices, as well as financial constraints. Finally, the degree of irreversibility of commitments, like the demand from a manager for a minimum level of profitability, also influences the selection process. The firm evolution follows specific paths, strategic paradigms that compose a part of the internal selection environment.

Skills and organisational routines evolve under the influence of learning, which gives rise to mutations. As we have already said, internal coherence between routines has to be preserved in order to guarantee the firm's survival. However, the mutation process can not guarantee that such coherence will endure. Thus it is left to the selection process to restore coherence.

After mutation, the genotype is modified. So, the control system within the firm ensures the preservation of routines and coherence. Changed routines (individual and organisational) are selected in order to vouch that the firm continues to behave in the same way. In this perspective, routines that are incoherent with each other or with the firm's general orientation (activity, product) are eliminated.

In fact, firms' behaviour is pre-programmed into their routines. Various possible options on production, marketing or management are already integrated into their routines. Good routines operating within the firm are selected by the selection process.

If the internal selection process is not biased, the firm will achieve the best performance.

However, it is our purpose to show that sometimes the selection process leads inexorably to co-operation. Indeed, depending on the selection criteria required, the better solution for the firm leads sometimes to co-operation. This co-operation may be either intra-firm or inter-firm. So, what are the forms this co-operation may take?

2*) *Theoretical approaches to co-operation*

In many cases, co-operation is not a choice, but a necessity. It is the result of the selection process. Evolutionary theory does not deal, *a priori*, with either co-ordination or co-operation, since the struggle for survival is individual. Nevertheless, we will try to identify the various approaches to co-operation in the literature.

a) The different approaches to co-operation : inter-firm co-operation

On the empirical level, the use of co-operation becomes increasingly widespread. We will discuss two main reasons.

Deregulation and privatisation have increased competition between firms that had hitherto been protected. Co-operation for them is often an efficient way to control at least a part of the competitive game. Among some important examples, we can quote one, the American airlines sector and the deregulation policy that has been in place since the end of the 1970's.

At the same time, the intensification of technical change increases doubt and leads firms towards co-operation. Then, co-operation is more a technological co-operation, where all the financial means are put together, to allow the exploration of many ways at the same time. The co-operative firms are more able to achieve their goals, in other terms to win the technological fight.

From a theoretical point of view, co-operation can be conceived of in three different ways.

- Co-operation is sometimes the mechanism through which the activity of independent agents is co-ordinated. In this case, it is a mechanism for communication, negotiation or organisation and, more generally, for interaction between the agents [Hamdouch, 1998]. In this context, the individual agents' interests can converge or become compatible. In this way, a certain "co-ordination equilibrium" is possible.
- Nevertheless, choosing co-operation is, in other cases, a refusal of competitors to confront each other. When this agreement is tacit, it is characterised by the existence of neutral behaviours, a reluctance to "attack" potential or actual rivals. On the hand, an explicit and negotiated agreement corresponds to a situation of an institutionalised non-aggression, either by the agents involved who do not want any confrontation since it may have serious negative consequences, or by the authorities. In this case, the aim is to maintain an active and healthy competitive environment and, therefore, to avoid all unfair behaviour.
- Finally, nowadays, co-operation results most of the time of a common project. Two or more agents would like to develop together a new product or process, either by using assets already available, or by creating some new ones. At the opposite of the two cases quoted before, the approach is positive. The aim is to develop something new, to improve industrial development.

Then, we can talk about "creative co-operation", defined through three specific conditions :

- ✓ At the beginning of the co-operation, the game is neither zero nor negative, but on the contrary, positive, i.e. mutually profitable for each party.
- ✓ The partners have to commit themselves irreversibly for that kind of co-operation to exist.
- ✓ Finally, even if co-operation decreases at least partially the competition, it doesn't stop it totally. Therefore, there may be a difference between the initial objectives of the co-operation and the effects it produces on the competitive game [Hamdouch, 1998].

From an evolutionary perspective, co-operation is a source of learning that enables stores of knowledge to evolve. These forms of inter-firm co-operation are analysed most of the time as forms of organisation that have three principal functions. Co-operation allows the transfer and the accumulation of frequently complex knowledge and skills. It facilitates collective learning and encourages the combining of knowledge and skills dispersed among the various agents. In this way, the motivation for co-operation is knowledge, and can be compared to a "knowledge network" [Weinstein, 1997].

b) A new form of co-operation : intra-firm co-operation

The general idea here is that it is difficult to co-ordinate dissimilar activities inside a firm, even if they are complementary. The best organisation form, in this case, seems to be co-operation. It makes it possible to avoid the use of market mechanisms and the problems of co-ordination within a centralised hierarchy. However, the complementary of the activities has to be more qualitative so that co-operation corresponds to a set of distinct skills.

In fact, co-operation seems to be a compromise between a pure market mechanism and the pure organisation. It tries to retain the advantages of each and to minimise the shortcomings as far as possible. It is based on regular exchanges of information. According to Aoki [88], a relational quasi-rent, produced by the informational efficiency of the contractual relation, is beneficial for each party involved in the co-operation. The quasi-rent, defined by Aoki, is not linked solely to the existence of inter-firm co-operation. In the case of intra-firm co-operation too, a quasirent is produced by the efficiency of the co-operative relationships established within the firm.

This quasirent, in fact, leads to the disappearance of some opportunistic behaviours, because it is the sign of a long-term commitment, the gains from which (the quasi-rent) appear only in the long term.

These gains come from a sharing of unrecoverable costs, on the one hand, and of the learning costs of both parties, on the other hand. If the co-operation permits effectively this share, its interruption prevents from taking back the irretrievable costs.

Finally, the co-operation relations (intra or inter-firms) are the reflection of an interpretation of organisation principles and market ones. The decisions taken in the frame of these agreements lead to the satisfaction of common interest, which have been commonly defined before.

According to Cohendet and Gaffard [1990], co-operations' forms depend on organisation's firms.

The A firms, controlled mostly in a hierarchical way (vertical), turn to the co-operation by creating some *ad-hoc* structures, as joint ventures. It allows the realisation of a common project.

At the contrary, the J firms, mostly controlled in a horizontal way, set up some internal co-operation. The may constitution of some new independent entities would be inside the group, the better-adapted structure.

II - How do the firms reach a co-operation agreement ?

The two examples we have chosen come from the car industry. They have a common point : they deal with a *niche*, either a recent one like the monocorps (Fiat and PSA) or a future one like the Short-City (Mercedes and Swatch).

While analysing these two agreements, we will explore how the internal selection process creates (or doesn't) a structure.

1°) *Two examples of development and production in co-operation :*

the PSA-Fiat monocorps and the MCC Smart.

The PSA-Fiat monocorps and the MCC Smart both have been made in France in stricken areas : Nord-Pas-de-Calais for the monocorps and Moselle for the Smart.

The Smart is produced by MCC (Micro Car Company) equally owned by Mercedes and SMH (Swatch). MCC is a new automotive brand. In return, the four brands (Peugeot, Citroën, Fiat and Lancia) have not created a structure.

We'll study incitements and reserves of the partners who have to put together their skills. We'll see the importance of some of criteria leading to co-operation.

a) Co-operation without a structure : Fiat and PSA agreement :

In December 1988, Fiat and PSA (Peugeot-Citroën) decide to introduce a growing market by creating a common monocorps. This segment of market has been creating by Chrysler (Voyager). In Europe, Renault then dominates this growing segment : the Espace has been launched in 1984. All the car manufacturers tend to create this type of vehicle, concerning all the family. Thanks to equipment, monospaces belong to « High » segment, for high purchasing power.

Seeing the benefits and sales made by Renault with the Espace (42% of the European market and 93% of French one, in 1990), PSA may regret not to have accepted the project of Matra in 1983. PSA was then weakened by the absorption of Chrysler Europe. So, it wasn't able (or dared ?) to create the future Espace. Volkswagen was then interested in designing a monocorps with Ford but the first monocorps built in co-operation will be those of Fiat and PSA.

These two groups are used to make together. Indeed, they collaborate with each other since 1978 for the Commercial segment. Their common structure, Sevel, produces the Fiat Ducato, J5 Peugeot and C25 Citroën in Italy since 1981. They have also developed many components, like Fire motor in 1980.

The partners want to modify the design of their common Commercial vehicles. They also contemplate the possibility of developing four monocorps on a same « platform »⁶. These cars are all built in a factory in France, owned by the two groups. The cars will be sold under four different names and brands : 806 Peugeot, Evasion Citroën, Fiat Ulysse and Lancia Zeta. So, they can not prefer creating an *ad-hoc* structure. The choice of the stricken site of Hourdain, near Valenciennes, is appreciated by Nord-Pas-de-Calais region, which gives financial helps to the partners. The help covers 30% of the total industrial investment.

The three initial principles of this co-operation are : a common conception and production, the parity (financial, productive and of decision) and a clear-cut repartition of the management of the sites. The Sevel Italian plant is managed by Fiat whereas PSA deals with the French plant. The construction of the French plant started in March 1990 and finished in May 1994. The functions of each partner are redefined and all monocorps will come out of the French plant.

Fiat always looked for faithful partners and hoped to merger with PSA. But PSA prefers limited co-operations because of the difficult absorption of Chrysler Europe and the slow establishment of synergies between Peugeot and Citroën. In fact, some important efforts were made for workers of these two brands, once competitors, become real partners. But is a

⁶ A « platform » is the base of a car : sash, front axle and back axle.

temporary co-operation always easy to organise ? To put skills together is also a problem in a flexible co-operation.

b) A co-operation in an *ad-hoc* structure : Micro Car Company.

As we noted, initially, Mercedes and Swatch equally owned MCC.

Creating a structure is well understood for a co-operation between two firms from different sectors : Swatch the watch producer and Mercedes the car manufacturer. Swatch is seen as a creative trade. The German car manufacturer has a traditional reputation. They are very different but they both look for quality. The new car producer had to have a clear identity.

The Smart was born from an interesting meeting between Nicolas's Hayek thinks about the future of the Automobile and a Helmut Werner's wish about a new product strategy for Mercedes.

In 1989, Nicolas Hayek predicts people would throw the car out of the city if it keeps polluting. According to him, carmakers have to integrate environmental preoccupations (pollution, traffic jams, and no parks enough) if they want to sell cars. So, the future car should be little, electric and cheap. He proposed to Renault, then Volkswagen, to develop a funny little city car which couldn't exceed 50 000 francs.

Helmut Werner wanted Mercedes to realise a « downsize », which consists in producing less luxurious products and more basic cars. Then, consumers could buy their second car in the range of products make by Mercedes (not in the ranges of competitors). Directors of Daimler-Benz Group have already decided to produce the « Class A », a cheaper car. But Helmut Werner persuades them to complete the new product strategy by a little city car.

The project was totally original. Nicolas Hayek proposed a new thinking of the « Urban Mobility » concept. He expected co-operations with airways and railways companies, also with car renters and car parks firms. The driver of that he initially called a « Swatchmobile » could rent a big car a month and a *cabriolet* (or a motorbike) a weekend in a year, for free. But these agreements never succeed. Mercedes works towards half price in car parks, because Smart

takes half a place. In France, an agreement has been found with Avis (a car renter) : for 3150 francs a year, drivers of a Smart can rent a Megane or an Espace (both Renault) for a month. This is a 40% reduction. Nevertheless, Smart isn't an element of a global optimisation of mobility.

Smart is an original car, by forms and colours. It belongs to the « Short-City », a Marketing segment created for it, and it's the only one. Nicolas Hayek wanted Smarts' drivers change the colour of their car, as they can change clothes or watches ! But developers left this option.

Nicolas Hayek also expected Smart to be sold in an original way. He wanted to create a new kind of car sellers. The new legislation about European car distribution allows it. Carrefour, the big French food seller, started to negotiate but, now, none supermarket sells Smart. Despite of the separation between Selling and Informative units, Smart is actually sold as any car.

Smart integrates a few innovations, as a special turbocompressor and a body, which can be recycled. The gearbox (with six levels) comes from best technologies of racing.

But the real innovation isn't in the product. It concerns a new way to produce : the *modular consortium*.

In Resende, Brazil, trucks of Volkswagen are produced by this way founded by Ignacio Lopez de Arriortua. In this factory, a few equipment producers, carefully selected, are a kind of partners. They don't produce pieces of cars, but complete functions. Actually, they each direct assemble their function on the line. So, the carmaker is no more the only assembler. In the Hambach factory, MCC adopts the *modular consortium* principles. The Cross-organisation of this factory facilitates the action of seven of the eleven « systems-partners »⁷.

In this co-operation case, skills of the staff of Mercedes are more used than the SMH one's. The watchmaker mostly acted at the beginning of the project, by define the specifications of the product. By building a factory out of Germany, by engaging French staff and by adopting

⁷ Seven systems-partners directly act on the assembly line : Magna (Canada), Eisenmann (Germany), VDO (Germany), Krupp Hoest (Germany), Bosch (Germany), Dynamit Nobel (Sweden) and Ymos (Belgium).

an original way to produce, Mercedes disturbed his skills. The MCC internal coherence has roots in the Production function, between « systems-partners » and the new car manufacturer, more than between both owners of MCC.

2°) How these two Internal selection processes act?

Among all internal selection criteria we exposed, some of them were influential in the decision of developing or not a new car. We'll show how some of internal selection criteria lead naturally to co-operation. They also influence the choice of a specific partner and the form of this alliance.

So, by a detailed presentation of these two agreements, we could specify difficulties in founding their synergies and internal coherence. Instinctively, we can think that synergies are easier to get in an *ad-hoc* structure than in an integration of a staff from a firm to the other company. In fact, in the new structure, which equally belongs to both partners (« neutral »), we can test each other.

Internal selection criteria

	PSA	FIAT	SMH (Swatch)	MERCEDES
Aim : to belong to a new market segment	Monospace, a real market ?	Monospace, only a segment ?	Short-City, a future segment	Downsize Young consumers
Is this project coherent with my image ? If not, how is my risk motivation ?	Yes (low motivation)	Yes (low motivation)	Diversification but strong motivation	Absolutely not, low motivation
Have I good skills for this project ?	Not all of them	Not all of them	None	Not all of them
Can I develop missing skills ? If yes, what kind of RD investments ? If not, are they in another company ?	Some of them Design and platform No (except Renault)	Some of them Motor, design and PF Yes, for the Motor	Impossible (Too expensive) All generalists	Yes Young Engineers Yes (Renault ?)
How can I reduce costs ?	Standards between Peugeot and Citroën	Standards between Fiat and Lancia (risk about image ?)	No solution in the firm	Weak solutions inside (with Class A ?)
Have I a factory to produce it ? If not, can I increase my productive sets ?	No Financial limits	No Financial limits	No Yes (money)	No Yes (money)
How is the competition frame ?	Only Renault, Growing Market	Renault and Chrysler, Growing Market	Unknown (new sector)	Intensive (generalists)
Which innovations stimulate me ?	None	None	Electric motors	None
What macroeconomics mutations ?	None	None	Pollution standards (future)	Car throwing out (maybe)
First results :	For economical motives, Essential co- operation	For economical motives, Essential co- operation	For skills motives, Essential co- operation	For image motives, Better co-operation (not essential)
How are my decision rules ?	Centralised	Family	Centralised	Negotiated
How is my communication structure ?	Vertical	Vertical	Transversal	Transversal
Path dependence	Commercial with Fiat	Commercial with PSA	(none in this sector)	(none in this segment)
Result of the Internal Selection Process :	Co-operation with Fiat, lower costs and risks	Co-operation with PSA, lower costs and risks	Logical Co-operation with a European generalist	Co-operation with an innovating firm (credible strategy)
Do I want to create a specific structure ?	I don't want	I want	It's indispensable	It's most preferred

a) Common monospaces between Fiat and PSA groups :

a1 - Selection criteria in developing and co-operating decisions :

Both groups wanted to propose a monospace in the European market. In this segment, competition is stronger for PSA in France than for Fiat in Italy. Since 1990 and thanks to Renault experimentation, PSA deciders are certain that monospace is a real market, whereas Fiat is not sure. For the Italian group, monospace is a part of a segment « high ».

By deciding a simultaneously developing of a Peugeot and a Citroën vehicle, PSA group expects keeping its consumers, but takes a risk : *cannibalism* between both products. Consumers of the trades Fiat and Lancia have got different sociological specifications. So, Fiat group has a weaker risk of *cannibalism*. In compensation, Lancia takes a risk of a reducing image by confusion with the Fiat trade (lower).

PSA as Fiat should have co-operated with any other European generalist carmaker. Volkswagen would be a good partner, for example. But the German group, observing the expansion of the *light trucks* segment (*pick-up*, 4X4) in the American market, prefers a world diffusion than a European one. So, he'll sell a monospace for the United-States and Europe, later. That's he made by developing Sharan (and Seat Alhambra) in co-operation with Ford (Galaxy).

PSA and Fiat both have strong personalities in their decision units. Even if family rules don't exist in the decision process of PSA group (more « monocratics » than Fiat), affective aspects influence them both. European, they have the same vertical communication structure. They already work together for developing Commercial vehicles.

So, the co-operation contains many positive aspects, even if they disagree about the form this co-operation can take. Fiat would like this new co-operation is a test for a future merger, whereas PSA prefers « punctual » agreements, even if some of them start a long time before.

a2 : During the co-operation, looking for synergies and coherence :

The global investment exceeds 10 milliards of francs, including 6,5 milliards for building the factory (and equipment). This factory, based in France (Hourdain), has been inaugurated in 1994, May 16th. Monospaces are launched just afterwards : in June for Peugeot 806, in September for Citroën Evasion and Fiat Ulysse, then in November for Lancia Zeta.

These four products are too similar. They have been principally designed by PSA. Actually, PSA provided motors and most of the ideas related to the interior. This can explain the kind of « domination » of PSA during the developing stage.

This co-operation increases scale and range economies opportunities. These savings are more surely reached than within each group. Creating a specific platform is seen as an essential condition to avoid confusion between luxurious monospaces and Commercial vehicles. So, there is a low standards transfer from a product generation to another one, but there are very strong economies by the standardisation within the same product generation.

The aim of standardisation is not only the reduction of costs. By decorticating working processes and skills, standards offer a common language between partners, making their work easier.

Co-operation creates a contextual modification. So, people involved in the project have to adapt themselves. They learn each other, in a specific learning process : “learning by interacting” [Malerba, 1992]. Standardisation facilitates the learning by interacting and then the project stability without creating uniformity between skills. Through this learning process, co-operation disturbs coherence vouched by internal selection process.

So, learning by interacting is as well an element of the project stability as a source of mutation.

Not creating an *ad-hoc* structure facilitated the obtaining of coherence, only because engineers from Fiat accepted and integrated the methods coming from PSA. In March 1990, the tasks repartition changed, to more responsibilities for PSA. Engineers from Fiat have to adapt themselves to the working methods of the French group. There is no risk of absorption because the « dominant » doesn't want to merge.

b) From Swatchmobile to Smart : a hazardous co-operation :

b1 - Selection criteria inducing to carry out the project :

Contrary to the previous example, co-operation between SMH (Swatch) and Mercedes is not obvious. It happened thanks to a fortunate coincidence and goes with a strategy modification of the two partners. As it seems, SMH carries out a diversification that one could think inconsistent. In fact, motor vehicle doesn't belong to Swatch core of competencies (watch making, precision instruments, plastic accessories). From his part, Helmut Werner from Mercedes wished to rejuvenate his range of products while reducing the car's average price. Class A appears to be the first element of this downsize strategy.

Concerning SMH, criteria of internal selection process are fairly numerous. SMH shows an obvious lack of skill in producing cars. Furthermore, to acquire it in reasonable delay appears totally impossible. It leaves only one alternative : to relinquish the project or co-operate with a car manufacturer. Efforts and creativity on R&D enable SMH to conceive a clearly modern and original car.

SMH's risks motivations incite the firm to go on with the project Swatchmobile, despite the high level of irreversible commitments.

Among the "internal environment"⁸ variables influencing the selection, financial aspect doesn't seem to be a hindrance. Interactions between people inside the firm don't seem to be a hindrance, either. Finally criteria which guide the selection in SMH induce the firm to carry out the project and confirm an unavoidable co-operation with a carmaker. But the choice won't be finalised through internal selection.

If we only take into account the technical skill criteria, Mercedes could have conceived a small city car by itself. But the internal selection process gathers other factors. The low motivation for risk and the high degree of irreversible commitments should have prevented Mercedes to select this project. But the evolution of car's demand is not favourable to the Mercedes traditional line. A downsize strategy, even hazardous, makes the Swatchmobile an attractive project.

⁸ BURGELMAN R. [1994]

The recent success of "upsized" strategies of Japanese carmakers reinforces the competitive pressure on Mercedes, rather unaffected by price considerations until now. More reactive because better organised, Japanese firms offer less expensive vehicles with an equivalent level of equipment. Mercedes' needs to react face these external environment evolutions is rather a good motivation to adopt the project.

However, the transversal form of the organisation's structure facilitates the emergence of Projects Units, which won't disturb the German carmaker's organisation.

Investments require to develop an hybrid vehicle go along with the necessary assimilation of electrical motorization technologies which appears as an hindrance to the Swatchmobile birth. Mercedes would pass the obstacle round by deferring the electric version.

A co-operation with a traditional constructor to achieve the two vehicles would have been rational, although the innovating aspects of the product require a strong visual differentiation.

Finally, Mercedes' internal selection process finalised the Swatchmobile project (with SMH), even if Mercedes could have achieved it alone. The above reasons, which the main one is a strong brand image, Mercedes decided to co-operate with invented Swatch. Thus, the German carmaker obtains Swatch creative reputation and distribution abilities. Mercedes could also have co-operated with a clothes brand for young people, like Benetton.

As well, any other car generalist could have developed SMH concept. Nicolas Hayek had offered to co-operate with Renault, who has an innovating reputation. He also contacted Volkswagen, who had better geographical situation and financial stability. Finally, he found in Helmut Werner a possible partner who shared his views.

One accepted the idea of a creative co-operation between two firms from different sectors (and backgrounds), it was necessary to create a joint entity. When it was created in April 1994, MCC was shared between Daimler-Benz for 51% and SMH for 49%.

With this alliance, substantial savings are possible (even if it's not a major problem). Even before the project's achievement, it's obvious that it will be impossible to respect Nicolas

Hayek's costs criteria : a car for less than 50 000 francs. The savings coming from the strong system-partners » in a particularly innovating and costs saving production process won't be enough. The car, now called Smart and using a traditional motor will be commercialised over 55 000 francs⁹. Mercedes reports (to a long time) the development of electric and hybrid (mixed) versions.

b2 : During the co-operation, synergies and coherence :

Ones the product characteristics made out in very general terms by SMH, Mercedes supplied the technological specifications. The Study Unit settled in Renningen. Few people were hired for the small car conception. Most of the engineers come from Mercedes.

The project development was carried out with the « system-partners » contribution. These Function suppliers were carefully chosen. The main saving source consists in the simultaneous integration of product aspects and its production methods. The « system-partners » shared a part of risks and costs. Each one brings its skills for the function it supplies. This extreme sub-contracting organisation allows Swatch and Mercedes to strongly reduce the investment into R&D, which is essentially provided by these main suppliers.

Thus, the project cost was estimated to eight billions francs (in October 1997). This amount is divided between R&D (2,5 billions francs, included one provided by the main suppliers), distribution network (105 Communication and Sales satellites) and the factory's construction (2,8 billions francs, included 1,3 billion provided by suppliers). The Hambach plant had territory development subsidies of 235 millions of francs (with the Brussels Commission authorisation), to which we add 115 millions of fiscal exemptions.

The insufficient stability of the Class A, exposed on September 1997, reduced the Mercedes reputation. The utilisation of some components and technologies from Class A to Smart jeopardises the co-operation continuation.

⁹ The less equipped Smart&Pure has been launched in France for 57 400 francs. The sales are not satisfying. So, MCC decided on March 1999 to reduce the price to 53 900 francs. Smart&Pulse costs 60 900 francs. Since Octobre 1998, the most equipped is Smart&Passion, sold 65 300 francs.

The commercial launching of Smart is postponed for six months, from March to October 1998. Engineers enlarge the body of the Smart, reduce the gravity centre and adapt the electronics system for dynamic behaviour regulation (they developed for Class A). These adjustments are estimate to one billion francs.

Indeed, the creation of a new trade (MCC) was necessary, because of the dissimilar skills between Mercedes and Swatch. The adoption of totally innovating production process permitted to alleviate skill disparities.

Very strong synergies were found between MCC and the partners, rather than between SMH and Mercedes. The MCC internal coherence was quickly obtained since the behaviours were well codified, essentially by Mercedes.

III - Why do not co-operations go on ?

There aren't theoretical reflections enough about the durability of co-operation. They only explain agreements on Research and/or Development. They privilege the project approach. Motivations for co-operation are stronger for creating a new product or technology than for managing old one.

Today, disagreements about the evolution of monospaces we studied are important. Direction of PSA wants a deep modification of 806 and Evasion. But direction of Fiat thinks they didn't make the project profitable. The limits in the going on seem to be in the Marketing function.

Nicolas Hayek brings his displeasure to light. The gearbox doesn't insure stability of Smart in the snow. Mercedes keep deferring the launching of the electric version of the Short-City. But the source of disagreement is deeper. Swatch can't accept the way Smart is produced. Since October 1998, MCC entirely belong to Mercedes. The breaking off comes from the Production function.

1°) *Strategic alliances and R&D*

a) The project logic's

Most of industries recently imitate the organisation in sectors connected with high technologies. They adopt a project approach. Staffs with specific skills work together to reach an aim precisely defined : discover or develop.

If partners have the same power (size, finance, and innovative abilities), they prefer creating a flexible structure specially created for the project. They put their skills together. The structure will remove when the aim will be reached. In this case, the short life of the co-operation is a sign of a successful result.

b) The absorption probability

Sometimes, the end of an alliance is a merger. Partners disagree on the share of profits and discovery : so, the only solution is the absorption of one from the other. These mergers exist when the two partners haven't the same size. The powerful firm buys patents and a part of knowledge (even the tacit ones) coming from the less powerful one.

A long co-operation seems :

- an aim not yet reached ; they surely will renounce soon
- a lot of diffusion and evolution opportunities for the new product or technology ; the co-operation will still go on until all viable opportunities have been explored
- a disagreement about the appropriation or the sharing of the common creation. This lock-in will vanish in a merger or an open conflict.

2°) Reasons concerning Production and Marketing

a) Smart : differences about the production process :

In September 1997, increasing of MCC capital (then hold by Mercedes and SMH in equal interests) has been supported by Mercedes exclusively. This is the first manifestation of a disagreement between partners. In October 1998, SMH transferred its shares in MCC to Mercedes, who became the only shareholder of the company which produced Smart. At the same time, the creative partnership was over.

We've just noticed that the stability of Smart was bad, as Class A. Important adjustments have been made. The billion of francs spent takes away the possibility of an additional investment in the development of a hybrid version of the Short-City. Nicolas Hayek thinks initial conditions of co-operation haven't been respected. Specifications were concerning the little car with a low level of pollution because of using mixed technologies : electrical and thermal. Progress in electrical engines, both in size and autonomy, are indeed disappointing. Nevertheless, it seems difficult for Smart (thermal motorization) to represent a solution to pollution.

But the most important reason justifying the end of this collaboration is deeper. It concerns the new production process we called *modular consortium*. In such a system, partners are strongly

incited to give details about their technologies and knowledge. Thus, carmakers can easily assimilate supplier's skills. This system increases the preference for big supplier with no possibilities for more equilibrate relationships. Guarantees about substantial and regular supplies are always connected by compulsory reduction of costs and delivery delays, as well as a higher quality is provided by these « system-partners ». Suppliers insure most of the productivity gains. Problems about provisions and human resources are transferred from carmakers to function suppliers. Global wage savings come from productivity (better organisation) and lower wages in suppliers than in car manufacturers. It seems more domination than a partnership. So, this new way to product is not convenient for the SMH managers.

In May 1998, we knew the merger between Mercedes and Chrysler, in fact after November 1998¹⁰. Then, Smart is one of the six brands of the Daimler-Chrysler group : Mercedes, Chrysler, Plymouth, Dodge, Jeep and Smart. This merger and the report of the commercial diffusion of Smart lead to the (constraint) gave up of Helmut Werner and Johann Tomforde (Development Chief), most important supporters of Smart in Mercedes.

From October 1998 to April 1999, 30 000 Smart have been sold in Europe. In October 1998, there is a revision in the production scheduling, from 130 000 to 80 000 for 1999, and from 200 000 to 140 000 units for the next year. If less than 80 000 Smart won't be sold in Europe during 99, Daimler-Chrysler would stop its production. That premature end, decided on May, would cost more than 1,2 billion of \$.

Nicolas Hayek announces looking for a generalist for the realisation of the car (planned in 1989) on summer 2001. This little hybrid engine will be called « Swatch-Mobil », the name has been modified. If that will be done, Smart (thermal engine, Daimler-Chrysler group) and Swatch-Mobil (hybrid, SHM and a carmaker unknown today), two little cars destined to be part of a complementary range, will be in a direct competition !¹¹

¹⁰ The merger induces the birth of the fifth world car producer group. It sales for 779 billions francs and produces 3,6 millions units a year.

¹¹ It may nor arrive if, as we just noticed, the production of Smart is stopped before the (may) commercialisation of the Swatch-Mobil.

If agreements analysed aren't held anymore, that means internal selection mechanisms don't lead to the best choice. So, internal selection process can be biased. In the MCC case, *modular consortium* principles seem to be in contradiction with the organisational structure and internal decision rules of one of the partners. Unfortunately, this choice didn't profit of a real selection because it wasn't included in initial specifications. So, the internal selection process hasn't included whole routines and core competencies.

SMH will surely develop Swatch-Mobil. It shows that past experiment (in this case, a failure) doesn't represent a discriminate criteria in the internal selection of SMH.

b) The future versions of Fiat and PSA monospaces, Marketing divergence.

We already noticed pressures created by the production of Fiat and Lancia vehicles in France. This avoids the Italian group of advantages from the devaluation of the local money, started in September 1992 (when the Italian Lire left the European monetary system). Consequently, monospaces and Commercial vehicles sold in Italy and produced in France became more expensive than other products of the Fiat range. The weak success of Italian monospaces generates a distortion in the sharing production quotas. In the French factory, hold by Fiat at 50%, only 30% of the production is connected with Italian brands.

But the most important source of the no satisfaction in this co-operation concerns *restyling* opportunities. In March 1997, PSA announced the wish of deep modifications in chassis and interior of 806 and Evasion. PSA wants a larger visual differentiation between these products, which are in a strong competition with the new Espace. The cannibalisation between 806 and Evasion is less accepted if we consider that the monospace's French market reached a mature stage the Italian market didn't. Particularities of the second generation of products are never integrated in the emerging phases of a project. This point needs to be considerate in a reflection about strategic alliances and their persistence.

Fiat wants only a few improvements for monospaces, a range of products whole costs have not been completely paid off. For reasons we've already noticed (change and production costs), the Italian group isn't prompted to confront new costs. A divergence in the competition

(effective or felt) explains the disagreement between Fiat and PSA about the future of their common products.

PSA and Fiat act as « followers » because the Big and luxurious monocrps is progressively preferred to Compact ones, a marketing segment created by Renault with Megane Scenic in October 1996. This segment, widely increasing in the European market, have been immediately occupied by Fiat Multiplexa (1998), Opel Zafira (1999) and, soon, Citroën Picasso.

It seems difficult to find a bias in the internal selection process of Fiat and PSA, even if this idea may have a signification. The co-operation was harmonious before 1997. Divergences have emerged when one of the partners wonders about the Marketing *restyling*.

A deep industrial analysis integrating trends in competition in each referent market would avoid this divergence. It would point on the impact of external environment on the internal selection process : competitive intensity, macroeconomics chocks and technological improvement. In this case, the influence of external aspects on the internal selection process has been integrated for a too short time to offer guarantees about the future of this agreement.

It's interesting to remark that the two Compact monocrps vehicles, Fiat Multiplex and Citroën Picasso, have not been developed in co-operation. The current trend is no more sharing the platform to produce different units in a same marketing segment. It's more the sharing of a same base of a platform for two cars of a same group but in different marketing segments. Innovations in robotics allow the modification of a platform for lower costs. So, carmakers avoid the inconvenience of co-operation, even if they benefit of economics advantages. Citroën Picasso shares the platform of Xsara. Opel Zafira has got the same base than Break Astra. In the same trend, after many tensions between Volkswagen and Ford on their common monospaces, the new Sharan won't be designed with Ford but inside the VAG group, based on the future Passat.

This intra-firm standardisation reduces the imperative of mergers between carmakers, even if they keep going, as showed the fusion between Renault and Nissan.

Conclusion

The internal selection process acts on the routines of the firm. It's an automatic process when it selects skills, but a more complex one as natural selection mechanism concerning organisational routines.

A non-neutral selector agent guides the internal selection process according to political and strategic orientations of the firm. So, this selection moves away from the automatic process described by Nelson & Winter [1982].

Routines mutate and disturb the internal coherence of the firm. The selection process theoretically guarantees this coherence and restores it, eliminating inconsistent routines. We have shown with PSA-Fiat's and MCC's examples that the internal selection process sometimes leads to co-operation.

We have highlighted internal selection criteria guiding the selection process. Few of more specifically internal criteria combined with more precisely external ones can lead to co-operation. Indeed, if the co-operation is an « external behaviour » for the firm, it's also the result of each firm internal selection process.

In order to develop a monospace quickly, Fiat and PSA each start a meaning guided by their Directory. They both want to introduce a new market segment : monocorps. Following internal selection criteria answers', the preliminary results for the firms lead to the necessity of a co-operation. But the further question is to know with whom. The conclusions of both internal selection processes converge to their co-operation without common structure.

The situation is different for SMH and Mercedes. SMH has a revolutionary idea whereas Mercedes wants to realise a downsize strategy. Contrary to PSA-Fiat, the initial question for SMH is to know with who the co-operation will be. When SMH presented its project to Mercedes, the German company has already started the downsize strategy by developing the Class A. But the Directory wanted to complete this range of product. Mercedes can not compete with generalists on the price argument. So, it has to find another kind of advantage

(excluded prices and costs), like creativity and originality. The Mercedes preliminary results conclude the co-operation will be better for image motives. For its part, SMH needs skills to develop its car : the first results of its internal selection process lead to a compulsory co-operation.

Finally, the convergence of each motivation leads both internal selection processes to the creation of MCC.

For firms, looking for an internal coherence is the essential condition for living. Internal coherence has to be reach, with or without a common structure. A complex link between learning, path dependence, opportunities and complementary sets are proofs of an internal coherence. The share of these complex elements, in a common unit or not, needs a special attention.

Though, as we shown with the two examples, this coherence is not always obtained. If the end of the co-operation is partly or totally explained by the lack of internal coherence, then we discover a bias in the internal selection process. In fact, the question of internal coherence in the co-operation and the problem of integrating partners routines are two focal points in the explanation of the end of alliances.

It certainly exists other internal selection criteria, which should explain, before the co-operations start, why do they not go on.

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