Cooperation, Creation, And Protection:
Micro-Mechanisms For Learning From An Alliance

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Abstract: To explain learning patterns in alliances, most research has focused on firm-level concepts such as the firm’s alliance experience or its absorptive capacity. Building on previous research, this paper investigates what micro-level mechanisms, as opposed to firm-level mechanisms, can help a firm benefit from the learning opportunities provided by alliances, while minimizing the risks of losing valuable resources to a potentially competing partner. Focusing on more detailed mechanisms not only helps understand firm-level mechanisms but also helps demonstrate that firms make explicit choices in order to increase the learning potential of alliances when they decide the type of mechanisms to put into place. The paper presents a framework in which a firm’s and its partner’s learning can be explained by three abilities — the Coordination, Creation, and Protection abilities — and by the type of resource transferred. The three abilities are in turn based on a series of micro-level mechanisms, which, used jointly, can favor learning and protection. Micro-level mechanisms include firm-specific mechanisms, such as the type of interface put in place between a firm and its alliances, the firm’s alliance experience, and its learning and protecting intents. They also include alliance-specific mechanisms, such as the similarity between partners and between the alliance and the firm, the diversity of people in the alliance, the characteristics of the employees dealing with alliances, the information systems used, and the governance structure.

Division: Business Policy & Strategy
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Keywords: Learning, Alliances, Resource Protection
Learning provides one of the main motivations to form interfirm alliances, where learning means integrating a resource, routine, or more generally, knowledge, into a firm. Alliances provide an alternative mode of resource acquisition to internal development, resource acquisition in a market, or firm acquisition. Most research has explained learning in alliances through firm-level concepts such as the firm’s alliance experience, its absorptive capacity (Cohen and Levinthal, 1990), or its relative scope in the alliance (Khanna, Gulati and Nohria, 1998). The aim of this paper is to investigate more micro-level mechanisms, as opposed to firm-level mechanisms, that help a firm benefit from the learning opportunities provided by alliances, while minimizing the risks of losing valuable resources to a potentially competing partner. Focusing on more detailed mechanisms not only helps understand firm-level mechanisms but also helps demonstrate that firms, by the choice of micro-level mechanisms, can influence both learning and protection.

**LITERATURE REVIEW**

Academic research on alliances has been very active for the past twenty years. The research has focused on five main questions (Gulati, 1998): (1) the formation of alliances, (2) the choice of governance structure, (3) the dynamic evolution of alliances, (4) the performance of alliances, and (5) the performance consequences for firms that enter alliances. Underlying these questions is the idea that learning is a major concern in most alliances. Learning is one of the main motivations for a firm to enter an alliance, whether to gain access to missing competences, to
combine resources in order to create new resources, or to concentrate scarce resources on an existing business (Hamel and Prahalad, 1990; Hamel, Doz and Prahalad, 1989; Hamel, 1991).

By definition, strategic are difficult to purchase on the input market, since strategic assets are a “set of difficult to trade and imitate, scarce, appropriable and specialized resources and capabilities that bestow the firm’s competitive advantage” (Amit and Schoemaker, 1993). In order to gain access to needed resources, alliances are an alternative to an acquisition, which often involves acquiring unrelated assets (Hennart, 1988), and to a lengthy internal development. In case of information asymmetry, a joint venture also limits the risks of adverse selection in the acquisition process (Kogut, 1991; Balakrishnan and Koza, 1993).

Several factors help influence learning through alliances. The type of resource targeted is one of the main factors: acquiring tacit, as opposed to implicit, resources (Nonaka, 1994; Baughn, et al, 1997; Inkpen, 1998) or ambiguous resources (Simonin, 1999) is more difficult and requires more effort. At the firm level, a firm’s absorptive capacity (Cohen and Levinthal, 1990; Lane and Lubatkin, 1998), also influences learning. Among other important factors, initial conditions (Doz, 1996), the choice between scale and link alliances (Dussauge, Garrette, and Mitchell, 2000), the overlap between the activities conducted inside and outside the alliance (Khanna, Gulati and Nohria, 1998), the choice of the partner (Khanna, Gulati and Nohria, 1998; Lane and Lubatkin, 1998; Mowery, Oxley, and Silverman, 1996), the partners’ learning intent (Hamel, Doz, and Prahalad, 1989; Hamel, Doz and Prahalad, 1990; Hamel, 1991), the partners’ diversity (Parkhe, 1991), and the embeddedness in a network (Almeida, 1996; Powell, Koput, and Smith-Doerr, 1996; Appleyard, 1996) may influence learning.

In addition to learning benefits, though, alliances also present dangers to the learning firm. The idea that learning races can be dangerous to the loser (Hamel, Doz, and Prahalad, 1989; Hamel, Doz and Prahalad, 1990; Hamel, 1991) and that JV instability can be explained by such
reces (Inkpen and Beamish, 1995) is present throughout the literature, although the argument is sometimes considered extreme (Hennart, Roehl and Zietlow, 1999; Oxley, 1999). The debate as to whether alliances are dangerous or beneficial still goes on (Mitchell and Singh, 1996), although recent research tends to argue that it is possible to protect and learn at the same time. Kale, Singh, and Perlmutter (2000), for instance, argue that relational capital in conjunction with an integrative approach to managing conflict are important factors.

Research on learning in alliances has shown that learning is a major concern in most alliances, and that factors such as the type of resource, a firm’s absorptive capacity, and the type of partner chosen in the alliance, have an impact of the success or failure of learning. Building on these findings, our paper explores which micro-level mechanisms underlie these firm-level concepts, and how a firm can, by choosing specific mechanisms, influence the learning and protection outcomes of an alliance.

**GENERAL THEORETICAL FRAMEWORK**

As our literature review suggests, emphasis has generally been put on firm-level and resource-level explanatory factors to understand learning patterns between alliance partners. The framework proposed in this paper builds on previous research and tries to understand how those firm-level and resource-level factors are related to more micro-level and practical mechanisms, which have received little attention. This section presents the general theoretical framework used in this paper. The next sections discuss each part of the model in more detail.

The general framework presented in this paper can be depicted in the following way:
Two main factors influence learning: what the firm wants to learn and how good the firm is at learning. In other words, some resources are easier to understand and integrate than others, and some firms are better at understanding and integrating new resources than others.

Thus, the first factor influencing learning concerns the characteristics of the targeted resource. A tacit resource, for instance, is typically expected to require a longer and more regular interaction between the learner and the teacher than an explicit resource, making the learning more difficult (Nonaka, 1994; Inkpen, 1998). Following a related line of reasoning, if the targeted resource is similar to resources already possessed by the learner, the learning is expected to be easier, because the search is closer (Nelson and Winter, 1982), and because the knowledge bases are similar (Cohen and Levinthal, 1990; Mowery, Oxley, and Silverman, 1996; Lane and Lubatkin, 1998).

In addition to the characteristics of the targeted resource, the second major influencing factor is the ability of the firm to learn. Cohen and Levinthal (1990) have argued that differences between learning firms can be explained by their different absorptive capacities, which are largely a function of the firm’s level of prior related knowledge. Building on this idea, we argue that a firm’s ability to learn is a function of three distinct firm abilities: the ability to coordinate resources, the ability to create resources, and the ability to protect resources.

In turn, coordination, creation, and protection abilities are a function of a series of micro-level mechanisms, which can influence one, two, or all three abilities. One example of these mechanisms is the background diversity of employees dealing with the partner, which influences
the firm’s coordination ability (a greater background diversity helps employees identify and understand relevant resources). A second example is the frequency with which alliance employees rotate back to the parent company, which influences coordination between the alliance and the parent company, as well as resource creation within the alliance.

By going into a deeper level of detail, through the analysis of the coordination, creation and protection mechanisms, we believe that major concepts, such as a firm’s absorptive capacity, and their implications for a firm’s day-to-day operations become clearer.

In the following sections, we discuss each of the components of the framework. After discussing the concept of learning, we will focus on the three abilities and on mechanisms behind them.

**LEARNING AS A RESOURCE TRANSFER**

To learn means to acquire new knowledge. In an organizational setting, learning means acquiring a piece of knowledge, a resource, or a routine. Following this idea, our definition of learning includes three steps: identification/creation, transfer, and assimilation.

*Identification/Creation:* In order to proceed with a resource transfer, i.e., in order for learning to take place, the resource must be either identified (March, 1991; Cohen and Levinthal, 1990) or created (Nelson and Winter, 1982; Nonaka, 1994). If the resource already exists, it has to be identified before it can be acquired. This can be done either internally, if the resource is possessed by some part of the firm and the firm needs to replicate the resource in another part of the organization (Szulanski, 1996), or externally, if the resource exists in another organization (Cohen and Levinthal, 1990). A typical example of internal learning can be the replication of a

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1 In addition, the need for a new resource has to be recognized before the actual steps to identifying or creating a resource can be taken.
best practice across an organization, and an example of external learning can be the acquisition of a best practice from a competitor or from a partner. If the resource does not exist yet, it has to be created (Nelson and Winter, 1982; Nonaka, 1994). This can be achieved either by the routinization of non-routinized activities (Nelson and Winter, 1982) or by the coordination of existing routines for new purposes (Prahalad and Hamel, 1989). This process can be internal, in case the resource is created inside the firm, or external, in case the resource is created jointly with a partner.

**Transfer:** Once the resource is identified or created, the actual transfer can take place. The resource transfer can be internal (Szulanski, 1996) or external (Cohen and Levinthal, 1990). Internal transfers include cases such as the replication of a resource inside a group of people, across groups, across divisions, or across subsidiaries, each of them implying different levels of complexity, but all taking place inside an organization. External transfers include cases such as the replication of a resource possessed by a competitor or by a partner without its agreement, as well as the replication of a resource from a partner with its agreement.

**Assimilation:** Once transferred, the resource still needs to be integrated into a set of existing resources for the learning process to be considered complete (Nelson and Winter, 1982; Prahalad and Hamel, 1989). We note that the integration of a new resource into an existing set of resources means only that the resource is assimilated locally. The further replication of the resource to other parts of the firm may be difficult because of internal stickiness (Szulanski, 1996).

In the case of alliances, these steps take a specific dimension, due to the specificity of inter-organizational transfers. They are of a particular interest, because, as we will discuss later, the micro-level mechanisms that facilitate or hinder learning and protection, will affect each of these steps.
Thus, to learn from an alliance means that three processes have taken place. First, employees from the learning firm have identified and acquired a resource from the partner, or created a resource with the partner. Second, employees from the learning firm have transferred the resource to employees inside the learning firm. Third, employees inside the learning firm have identified the relevance of the new resource and have assimilated it.

In alliances, learning is potentially a two-way process, since at least two firms are involved. Both firms involved are likely to take advantage of the learning opportunities created by alliances. The outcome we seek to explain, learning, involves both firm’s learning and partner’s learning.

Firm’s learning represents the learning achieved by the focal firm inside the alliance. It is the accumulation of all knowledge transfers from the partner’s employees working inside the alliance to the learning firm’s employees.

Partner’s learning represents the learning achieved by the partner of the local firm inside the alliance. Authors have often viewed alliances as potentially dangerous because of the possibility of leakage (Hamel, Doz, and Prahalad, 1989). A component representing partner’s learning should indeed have two dimensions: desired vs. undesired partner’s learning. Desired partner’s learning takes place when a firm needs to pass knowledge or resources to its partners in order to make the alliance work or to create new resources. Undesired partner’s learning is the leakage of valuable resources to the partner.

After defining learning as a resource as a three-step and two-way process, we need to focus on the coordination, creation, and protection abilities of the firm, which, in turn, are affected by micro-level mechanisms that we discuss in a following section.
THE COORDINATION, CREATION, AND PROTECTION ABILITIES OF A FIRM

Three dimensions influence a firm’s behavior: a firm can coordinate existing resources, or create new resources, or protect existing resources from competitors. Each of these dimensions is based on a series of mechanisms that can enhance or diminish one or several abilities. Two main behavioral assumptions, which are common to most research in strategy, are made in this framework: the actors are subject to bounded rationality and there is potential opportunism.

**Resource coordination:** Resource coordination is the set of mechanisms that allow a firm to carry out activities involving existing resources.

1. Identify a relevant resource or routine, in order to coordinate it with existing resources or to replicate it. The identification process can be internal as much as external to the firm (March, 1991; Szulanski, 1996).
2. Adapt a resource or a routine to a new environment. This new environment can be an external competitive environment, as well as an internal reorganization of resources (Nelson and Winter, 1982; Chandler, 1992).
3. Use complementary resources or routines jointly (Prahalad and Hamel, 1989).
4. Transfer a resource or routine. A resource transfer can either mean its replication across the firm or the transfer of a resource from an external source (Nelson and Winter, 1982; Szulanski, 1996).

**Resource creation:** Resource creation is the set of mechanisms that allow a firm to carry out activities involving new resources. These include creating new routines from non-routinized activities (Nelson and Winter, 1982) and creating new resources or routines based on pre-existing resources/routines (Nelson and Winter, 1982; Hamel and Prahalad, 1989).
**Resource protection**: Resource protection is the set of mechanisms that allow a firm to avoid the replication of the company’s resources and routines by potential competitors (Hamel, Doz, and Prahalad, 1989) and avoid the appropriation of the value of one of the company’s resources and routines by potential competitors.

In our model, learning, which is the outcome we seek to explain, can involve either coordination alone, in the case when the resource existed before the creation of the alliance (typically, the resource was possessed by the partner), or coordination and creation, in the case when the resource is created inside the alliance and transferred back into the learning firm. Protection is necessary because of the partners’ potential opportunism. Therefore, these three abilities are the main explanatory factors to learning patterns in our model.

**Central Propositions**

In the previous sections, we discussed the different dimensions of learning in an alliance, and the coordination, creation, and protection abilities of the firm. In this section, we introduce our set of central propositions. In the following section, we will investigate the micro-level mechanisms that underlie the model. The basic model can be depicted as follows (dotted arrows show negative relationships):
The core proposition of this work states that the success in learning from a partner (modeled as a resource transfer) and avoiding undesired partner learning (modeled as an undesired resource transfer to the partner) is influenced by a firm’s coordination, creation, and protection abilities, as well as by the characteristics of the resources at stake. The successes in learning and in avoiding undesired partner learning are linked together and not necessarily antagonistic (Kale, Singh, and Perlmutter, 2000). Each of the arrows in the previous model corresponds to a core proposition in our model.

The coordination ability of a firm encompasses four mechanisms, all of which influence learning. The first mechanism is identification, which is the first step before any adaptation, joint use of resources or transfer. Identification of relevant resources is as crucial internally (March, 1991; Szulanski, 1996) as it is externally (March, 1991; Cohen and Levinthal, 1990). The greater the ability of a firm to identify relevant resources in an alliance, the more successful the actual transfer will be. The second mechanism in coordination is resource adaptation, and the third mechanism is the complementary use of resources. Resources being a bundle of routines, the ability to adapt them for new uses (Nelson and Winter, 1982) should increase the perceived value
of an identified resource, and thus make the actual transfer of that resource likelier. The third
mechanism in coordination is the complementary use of resources. Following reasoning similar
as above, the ability to use resources jointly (Penrose, 1959; Prahalad and Hamel, 1989) should
increase the perceived value of a resource, and thus make the actual transfer of that resource
likelier. The fourth mechanism in coordination is the ability to transfer a resource. The easier it is
for a firm to transfer a resource, the likelier the actual transfer is expected to be.

**Core Proposition 1:** The greater the coordination ability of a firm in an alliance, the more
successful the resource transfer to the firm.

The creation of a new resource within an alliance will in turn create incentives to transfer the
resource back to the parent firm, in order to adapt or use it jointly with other resources inside the
parent. In a similar way, the creation of a new resource inside the alliance is expected to increase
the incentives for the focal firm’s partner to transfer it also. This incentive will be particularly
strong if the resource is complementary to other resources that the firm holds (Penrose, 1959;
Prahalad and Hamel, 1989).

**Core Proposition 2a:** The greater the creation ability of a firm in an alliance, the more
successful the resource transfer to the firm.

**Core Proposition 2b:** The greater the creation ability of a firm in an alliance, the more
successful the resource transfer to the partner.

The protection of valuable assets has been argued to be a major incentive to internalize
transactions (Williamson, 1994), and firms have been considered mechanisms of protection of
knowledge (Porter Liebeskind, 1996). In an alliance, the potential leakage of valuable
information is a major danger, because of the ability the structure gives to potential competitors
to access the firm’s resources (Hamel, Doz, and Prahalad, 1989). In the same way that learning
from external sources requires a specific ability that is unique to each firm (Cohen and Levinthal,
1990), protecting resources from a partner requires a specific firm-specific ability as well.
This protection ability will have two influences. First, protection ability will reduce the danger of leakage. In addition, protection ability will facilitate desired resource transfers. If a firm has a high ability to protect resources, it means that it knows how to avoid information leakage from micro-bargains (Hamel, Doz, and Prahalad, 1989), which, in other terms, means that the firm can identify its resources and control their transfer effectively. This should lead to a more effective desired partner learning.

Core Proposition 3a: The greater the protection ability of a firm in an alliance, the less the undesired resource transfer to the partner.

Core Proposition 3b: The greater the protection ability of a firm in an alliance, the more successful the desired resource transfer to the partner.

A firm’s coordination, creation, and protection abilities depend on a series of micro-level mechanisms, which we detail in the following section. Some mechanisms are common to the three abilities, and others only influence one or two of the three abilities. Most of the mechanisms are explicit strategic choices, such as choosing the characteristics of the employees that participate in the alliance or choosing the frequency with which these employees are transferred back to the parent company, and will jointly affect learning and protecting. It is therefore possible for a firm to consider the potential for learning and the danger of leakage jointly.

Core Proposition 4a: The greater the resource transfer to the firm, the less the undesired resource transfer to the partner.

Core Proposition 4b: The greater the resource transfer to the firm, the greater the desired resource transfer to the partner.

A resource transfer (learning or leakage) will be influenced by the coordination, creation, and protection abilities of a firm but, as the literature discusses in some detail, will also depend on the characteristics of the resources at stake. Three main characteristics influence the ease or difficulty of resource transfer: their tacitness, their similarity with existing resources, and the partner’s agreement on their transfer. First, a tacit resource or routine, as opposed to explicit resources or
routines, requires long and regular interactions in order to be transferred (Nonaka, 1994; Inkpen, 1998). The more tacit a resource or routine is to the learning firm, the more difficult the transfer is thus expected to be. Second, the difficulty to understand a new resource or routine and thus be able to integrate it also depends on its similarity with a firm’s existing resources. Indeed, the more similar the resource is, the closer the search for it is (Nelson and Winter, 1982), and therefore the easier the search is. Moreover, applying the concept of relative absorptive capacity (Cohen and Levinthal, 1990; Mowery, Oxley, and Silverman, 1996; Lane and Lubatkin, 1998) to the resource level, the more similar a resource or routine is, the closer the knowledge bases behind the resources are, and thus the easier the learning is. Third, although not specifically discussed in the literature, a resource will be easier to acquire if the partner agrees on the transfer and therefore does not try to protect it.

Core Proposition 5a: The easier to transfer a resource, the more successful the learning to the firm.

Core Proposition 5b: The easier to transfer a resource, the more successful the learning to the partner.

After presenting the core propositions in our model, we need to focus on the micro-level mechanisms that underlie the coordination, creation, and protection (CCP) abilities.

THE CCP MECHANISMS

As we noted earlier, the literature has emphasized firm-level concepts to explain learning in alliances. We believe that, in order to fully understand learning, we have to go into more detail about how firms set up mechanisms that maximize learning and minimize leakage. The study of these mechanisms and of their influence on the CCP abilities shows that most individual mechanisms must be used in conjunction with others in order for a firm to be able to coordinate, create, and protect at the same time.
Before we can go through the series of propositions linking the micro-level mechanisms to the CCP abilities, we need to understand what these mechanisms are. They can be either specific operational or structural choices that will enhance one or several of the CCP abilities, such as the rotation rate of employees working for the alliance or the governance structure chosen for the alliance, or characteristics due to past behavior, such as the experience accumulated from dealing with alliances. Firms can often change operational and structural mechanisms fairly quickly but have to deal, at least in the short-term, with experiential factors as givens. The mechanisms can also either be firm-specific, when they are independent of a given partner, or alliance-specific.

**The CCP Propositions**

After examining what types of mechanisms exist, we need to explain the relationships between these mechanisms and each of the three abilities they underlie. The following table summarizes the CCP propositions.
<table>
<thead>
<tr>
<th>Proposition</th>
<th>Mechanism</th>
<th>Coord.</th>
<th>Creation</th>
<th>Protection</th>
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<tbody>
<tr>
<td><strong>I. Firm-specific mechanisms</strong></td>
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<tr>
<td><strong>A. Interface</strong></td>
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<td>1</td>
<td>Interface centralization</td>
<td>+/-</td>
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<td>+</td>
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<tr>
<td>2</td>
<td>Diversity at interface</td>
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<td><strong>B. Experience</strong></td>
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<tr>
<td>3</td>
<td>Alliance experience</td>
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<td><strong>C. Intent</strong></td>
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<tr>
<td>4a</td>
<td>Training or incentives to learn</td>
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<td>+</td>
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<td>4b</td>
<td>Training or incentives to protect</td>
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<tr>
<td>5a</td>
<td>Learning culture</td>
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<td>5b</td>
<td>Protective culture</td>
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<td><strong>II. Alliance-specific mechanisms</strong></td>
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<tr>
<td><strong>A. Similarity</strong></td>
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<td>6</td>
<td>Similarity between partners</td>
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<td>7</td>
<td>Similarity of alliance with firm</td>
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<td><strong>B. Diversity of people</strong></td>
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<td>8</td>
<td>Diversity of personnel (background &amp; origin) in the alliance</td>
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<td><strong>C. Personnel characteristics</strong></td>
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<td>9</td>
<td>Employees’ alliance experience</td>
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<td>+</td>
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<td>10</td>
<td>Slack, slack squared</td>
<td>+/-</td>
<td>+/-</td>
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<tr>
<td>11</td>
<td>Rotation rate, rotation rate squared</td>
<td>+/-</td>
<td>-</td>
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<td><strong>D. Information systems</strong></td>
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<tr>
<td>12</td>
<td>Information systems</td>
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<td></td>
<td>+</td>
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<tr>
<td><strong>E. Governance structure</strong></td>
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<tr>
<td>13</td>
<td>Independent structure</td>
<td>+/-</td>
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<td>+</td>
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<tr>
<td>14</td>
<td>Financial hostages</td>
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<td>+</td>
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<tr>
<td>15</td>
<td>Control</td>
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**Firm-specific mechanisms**

Firm-specific mechanisms are unique to a firm and independent of any partner. They should be common to all alliances. Three major firm-specific mechanisms exist: interface, experience, and intent.

**A. Interface:** The interface is the structure (or structures) inside the firm in charge of dealing with alliances. It is the point(s) of contact between a firm and its alliances. Two dimensions characterize different types of interface: degree of centralization and interface diversity.

*Degree of centralization* captures the degree to which the interface is centralized (there is one only structure or team in charge of supervising all the collaborative operations of the firm), or decentralized (there is no central structure, and each alliance is supervised and managed independently). The more centralized the management of alliances, the more experience in dealing with alliances is accumulated, and the easier resource coordination is expected to be (Cohen and Levinthal, 1990; Anand and Khanna, 2000). Organizations characterized by greater structural differentiation need integrative mechanisms to compensate for differentiation (Lawrence and Lorsch, 1967). The existence of a centralized structure and therefore of at least partially centralized decision-making processes when dealing with alliances compensates for the differentiation introduced by the alliance, and thus also enhances coordination. However, a centralization of decisions reduces the diversity of people taking part in the decision process and leads to a greater path dependence, therefore hindering the search routines for new resources (Nelson and Winter, 1982; Cohen and Levinthal, 1990; March, 1991). Centralization is thus expected to hinder identification processes. A centralized structure diminishes the risks of leakage from micro-bargaining (Hamel, Doz, and Prahalad, 1989) and overall allows an accumulation of experience in dealing, and thus protecting from partners, with alliances (Cohen
and Levinthal, 1990; Anand and Khanna, 2000). A centralized structure is thus expected to enhance protection.

CCP Proposition 1a: The higher the degree of interface centralization, the higher the coordination ability.

CCP Proposition 1b: The higher the degree of interface centralization, the lower the identification component of the coordination ability.

CCP Proposition 1c: The higher the degree of interface centralization, the higher the protection ability.

Interface diversity captures the diversity or homogeneity of the group of employees in contact with alliances. Group diversity can be indicated by both the professional diversity (e.g., field of original training) and by the operational diversity (e.g., departments they previously worked for) of the members of the team. The search for new resources or routines can be either close, if the search concentrates around routines close to those already in use, or distant, if the search involves radically new routines (Nelson and Winter, 1982). A similar idea is expressed by March (1991) in his differentiation between exploitation and exploration. The greater the knowledge base on which this search is based (Cohen and Levinthal, 1990), the higher the ability to identify relevant resources is expected to be, especially when exploration processes are involved. The greater the diversity of people working at the firm’s interface, the greater the knowledge base on which the search for new routines when dealing with alliances will be. The employees working at the firm’s interface are in charge of identifying resources transferred back from the alliance as being relevant or not, and thus decide whether a resource will be integrated in the firm’s bundle of resources or not. Therefore, the greater the diversity of the firm’s interface, the higher the ability to identify relevant resources and, consequently, the higher the coordination ability will be.

CCP Proposition 2: The greater the diversity at the firm’s interface level, the higher the coordination ability.
**B. Experience** captures a firm’s previous accumulated experience in learning and protecting through alliances. Scholars have long recognized the role of experience as a factor enhancing learning in alliances. Experience in dealing with alliances reduces the adaptation time needed to operate with a partner, enhances the search routines to identify new resources, and helps transfer the resources back to the firm in a easier and quicker way (Cohen and Levinthal, 1990; Anand and Khanna, 2000). Although not stated as clearly in the literature, the same reasoning applies to the relationship between experience and protection: dealing repeatedly with alliance partners helps identify the sources of leakage and diminish them. Therefore, experience will enhance the coordination and protection abilities of a firm.

*CCP Proposition 3a: The greater the alliance experience, the higher the coordination ability.*  
*CCP Proposition 3b: The greater a firm’s alliance experience, the higher the protection ability.*

**C. Intent** is the conscious intent to learn/protect developed inside the firm. Two dimensions exist. One dimension is the existence of specific training sessions for employees before they enter in contact with the partner on one side, which can be formal such as hiring external training teams or informal such as a discussion about the importance of learning and protecting. This training can be complemented or replaced by incentives to learn and protect, such as financial or promotion incentives based on the success in learning or protecting from the partner.

The second dimension of intent is the awareness of the importance of learning and protecting throughout the firm, which could be called ‘learning culture’ or ‘protective culture’. Intending to learn is a major aspect of actual learning (Hamel, Doz, and Prahalad, 1989; Hamel, 1991). Hamel, Doz, and Prahalad (1989) claim that the lack of learning intent from the US partners in US-Japanese automobile alliances explains the success of the Japanese partners and the failure of US partners in these alliances.
At a more general level, the search for new resources and routines involves intent in the form of search routines (Nelson and Winter, 1982; March, 1991). This intent to learn can be achieved in two main ways. First, the firm can have a focus on learning developed in its dominant logic system (Prahalad and Bettis, 1986; Bettis and Prahalad, 1995). Second, the firm can incite employees to focus on learning. This can be done either by a specific training (which can be formalized with training sessions or informal as would be verbally explaining the importance of learning from partners) or by specific incentives aligned with the firm’s learning needs (Williamson, 1994). Although not stated as clearly in the literature, the same reasoning can be applied for protection.

**CCP Proposition 4a:** The more training and/or incentives to learn from alliances a firm gives its employees, the higher the coordination ability.

**CCP Proposition 4b:** The more training and/or incentives to protect resources from alliances a firm gives its employees, the higher the protection ability.

**CCP Proposition 5a:** The more focused on learning a firm is, the higher the coordination ability.

**CCP Proposition 5b:** The more focused on protecting a firm is, the higher the protection ability.

**Alliance-specific Mechanisms**

Alliance-specific mechanisms are specific to each alliance. They can be the result of a negotiation between the firm and its partner or the result of the partner’s characteristics. There are five types of alliance-specific mechanisms: similarity, diversity, personnel characteristics, information systems, and governance structure.

**A. Similarity** captures the similarity between the alliance and the firm. Two dimensions exist: partner similarity and alliance similarity.
Partner similarity is the similarity between the partner and the firm. Overlaps in knowledge bases have been shown to facilitate learning between partners (Cohen and Levinthal, 1990; Mowery, Oxley, and Silverman, 1996): the closer the knowledge a firm wants to acquire from its partner is from its own knowledge base, the easier it will be for the firm to identify and understand new relevant pieces of knowledge. Lane and Lubatkin (1998) have shown that, in addition to similar knowledge bases, similar organizational structures and dominant logics also facilitate learning.

More generally, the more similar the partners are, the easier the learning processes will be: Partners that work in the same industry and have similar activities will be able to identify and understand valuable knowledge in each other, because their experience in the industry will make the search for new knowledge less distant (Nelson and Winter, 1982). Partners with a similar size or coming from the same country will be able to overcome in an easier way the differences in management styles or cultures, which, being Type II differences (Parkhe, 1991), can endanger the very survival of the alliance. Finally, partners that have been involved in alliances together for some time develop collaborative experience, which can include knowledge-sharing routines, and trust in the relationship (Dyer and Singh, 1998), thus facilitating future learning.

CCP Proposition 6a: The higher the degree of similarity between partners, the higher the coordination ability.

CCP Proposition 6b: The higher the degree of similarity between partners, the higher the creation ability.

Alliance similarity is the similarity between the alliance and the firm. The learning process does not end in the alliance, when employees from the learning firm have successfully understood a resource or a routine from the partner. Instead, the new resource must still be transferred from the alliance to the learning firm. Replication of resources or routines inside a firm is not an instantaneous and easy process: internal stickiness has been used to explain why
resources cannot be replicated easily inside an organization (Szulanski, 1996). Therefore, a resource possessed in the alliance by the firm’s employees is not automatically transferred back to the firm. Employees at the firm’s interface must still go through the process of identifying the relevant resources proposed by the firm’s employees in the alliance and of integrating them. Following a reasoning parallel to the previous section, the more similar to the alliance the learning firm will be, the easier it will be for employees inside the firm to learn from the alliance.

**CCP Proposition 7: The higher the degree of similarity between a firm and its alliance, the higher the coordination ability.**

**B. Diversity** captures the diversity versus homogeneity of people working in the alliance. Two indicators can be found: background diversity and origin diversity. Background diversity is the diversity of the professional and operational backgrounds of employees working inside the alliance. Origin diversity is the proportion of employees hired by the focal firm, by the partner firm, and by the alliance. Diversity in a team tends to increase the width of the knowledge base on which search routines are based (Milliken and Martins, 1996), thus facilitating the identification of new resources and routines (Cohen and Levinthal, 1990; Mowery, Oxley and Silverman, 1996). Inside the alliance, the more diverse the team of employees set up by the learning firm is – be it professional, operational, or origin diversity – the easier it will be for the firm to learn from the partner. Following a similar reasoning, the more diverse the team is, the easier the creation of new resources will be, since creation processes are based on distant search routines (Nelson and Winter, 1982).

**CCP Proposition 8a: The higher the diversity in the alliance, the higher the coordination ability.**

**CCP Proposition 8b: The higher the diversity in the alliance, the higher the creation ability.**
C. Personnel characteristics capture the characteristics of the firm’s employees working in the alliance. Three dimensions exist: employees’ alliance experience, slack, and rotation.

*Employees’ alliance experience* is the number of alliances in which the personnel affected to the alliance has been involved, prior to the focal alliance. The role of experience as a factor enhancing learning through alliances has been discussed at the firm level in a previous section: experience reduces adaptation times, enhances search routines, and facilitates transfers (Cohen and Levinthal, 1990; Anand and Khanna, 2000). However, the experience of a firm in dealing with alliances is not the same thing as the alliance experience of individuals affected to a specific alliance: a firm can be involved in many alliances, and thus have the firm-level mechanisms helping deal with alliances, but might still send to a given alliance individuals who have no alliance experience, and who will still have to adapt to the new environment and to develop specific search routines. The reasoning used at the firm level can be brought down to the individual level to argue that the more alliance experience individuals working in a given alliance have, the easier it will be for them to identify and understand resources in alliances, to create new resources in coordination with a partner, and to protect valuable resources from the partner.

*CCP Proposition 9a:* The greater the experience of employees affected to the alliance, the higher the coordination ability.

*CCP Proposition 9b:* The greater the experience of employees affected to the alliance, the higher the creation ability.

*CCP Proposition 9c:* The greater the experience of employees affected to the alliance, the higher the protection ability.

*Slack* is the amount of time that employees working in the alliance can potentially spare, in addition to day-to-day work, in order to learn from the partner. Hannan and Freeman (1977, 1984) have argued that organizations can be split into specialists and generalists: specialists are organizations which have little excess capacity because they use their resources efficiently and
generalists are organizations with greater excess capacity, which use their resources less efficiently, as shown by the mere that they have excess capacity, but are also better prepared for unexpected changes in the environment. A similar reasoning applies at the team level: the more excess capacity a team has, the more easily the team is expected to identify changes in the environment and react to them. However, Nohria and Gulati (1999) argue that there is an optimum after which excess slack reduces the incentives to search for innovations. We therefore expect a non-monotonic relationship between slack and the CCP abilities.

**CCP Proposition 10a:** Greater slack in the number of employees affected to the alliance will have an inverted-U influence on coordination ability, first increasing and then decreasing.

**CCP Proposition 10b:** Greater slack in the number of employees affected to the alliance will have an inverted-U influence on creation ability, first increasing and then decreasing.

*Rotation* is the average time spent by personnel of the firm inside the alliance before being transferred back to the firm. Although a strategic resource cannot be possessed by a given individual, since it would then be acquirable by hiring personnel and would thus not be a resource on which competitive advantage can be based (Wernerfelt, 1984; Amit and Schoemaker, 1993), resources are embodied in individuals and resource transfers require sharing knowledge between individuals. Depending on the type of resource or routine involved, the need for interaction between individuals varies: If the knowledge is explicit, it can be transferred in the form of a blueprint and the individuals involved do not have to interact, but the more the knowledge becomes tacit, the more day-to-day interactions between individuals are necessary in order to transfer it (Nonaka, 1994; Inkpen, 1998).

Thus, rotation of employees between the alliance and the learning firm is required to ensure that resources and routines acquired in the alliance are transferred back to the learning firm. The higher the rotation rate is, the more learning is expected to take place. However, if rotation is required by the need for alliance employees to interact with employees inside the firm, rotation
will also have a negative effect if the rate becomes too high. Indeed, in order for employees to acquire resources inside the alliance, day-to-day interactions over longer periods are also needed (Inkpen, 1998): if the time spent in contact with the partner is reduced by a high rotation rate, no learning can occur inside the alliance anymore, especially when resources are tacit. Following a similar reasoning, the higher the rotation rate, the less likely the creation of new resources is.

**CCP Proposition 11a:** The rotation rate will have an inverted-U influence on coordination ability, first increasing and then decreasing.

**CCP Proposition 11b:** The higher the rotation rate, the lower the creation ability.

**D. Information systems** are mechanisms promoting information flow between the alliance and the learning firm. As discussed in the previous section, employee rotation is expected to increase the coordination ability of the learning firm, if the rate is not too high. However, rotation is not the only mechanism that can be used by a firm in order to ensure knowledge sharing. In a network, knowledge flows can be characterized by the ties, i.e., information channels, between the individuals (or organizations) involved in the network (Burt, 1992; 1997; Baker, 1984, 1990). The same reasoning can be applied to alliances (Ahuja, 2000; Gulati, 1998; 2000; Kogut, 2000). When studying the ties between employees in an alliance and those in the learning firm, two types of channels can be found: non-electronic mechanisms, which require individual interactions (either formal such as meetings, or informal such as informal networks) and electronic mechanisms (e.g., e-mail, intranet, extranet). Network theory suggests that the existence of such ties facilitates the transfer of information and will enhance coordination. However, electronic mechanisms can only convey explicit knowledge whereas non-electronic interactions can also convey tacit knowledge (Nonaka, 1994; Inkpen, 1998). Therefore, non-electronic mechanisms are needed in order to ensure resource transfers.
**CCP Proposition 12:** The more information systems are available, the higher the coordination ability.

**E. Structure** is the governance structure of the alliance. Three dimensions exist: independent structure, financial hostages, and control.

*Independent structure* captures whether the alliance has an independent existence or not. Note that a joint venture structure does not necessarily imply an independent structure: in this dimension, only those joint ventures with separate organizational existence are considered ‘independent’. In a similar way, an alliance with a separate organizational existence, but which does not have the joint venture legal form, is still considered ‘independent’.

One of the major hurdles to cooperation is the lack of trust due to potential opportunism (Hamel, Doz, and Prahalad, 1989). Opportunism arises from the misalignment of incentives between employees coming from different partners: Williamson (1994) argues that, as opposed to a market, a firm has the ability to align incentives, and thus drastically reduce opportunism. By creating a firm-like structure, alliances with an independent structure may be able to align the employee incentives better than alliances without independent structures.

Moreover, locating alliance employees in one single location increases the opportunities of repeated interactions and thus facilitates learning and creating (Nonaka, 1994; Inkpen, 1998). However, if coordination inside the alliance can be enhanced by an independent structure, coordination between the alliance and the learning firm is expected to be hindered for the same reasons: creating a firm-like structure for the alliance reduces the interaction opportunities between the alliance and the learning firm.

**CCP Proposition 13a:** The existence of an independent structure increases the coordination ability inside the alliance.

**CCP Proposition 13b:** The existence of an independent structure decreases the coordination ability for transfers from the alliance to the firm.
CCP Proposition 13c: The existence of an independent structure increases the creation ability.

Financial hostages are the partners’ investments into the alliance or into each other. The transaction-cost theory stream of research on alliances has emphasized the problem of appropriability hazards due to potential opportunism (Hennart, 1988; Kogut, 1988; Oxley, 1997). One of the solutions to deal with opportunism in alliances is to have financial hostages (Kogut, 1988): by possessing a share of its partner or by ensuring that the partner has a financial stake in the alliance, a firm can increase the cost of ‘betrayal’ for the partner. Thus, the greater the financial hostages a firm holds in its partner, the costlier it will be for the partner to break the collaborative deal, which increases the protection ability of a firm.

CCP Proposition 14: The greater the financial hostages, the higher the protection ability.

Control is the extent to which the alliance is monitored and controlled by the learning firm. Although alliances are the result of a negotiation between two or more partners, the extent to which a given firm has control over its network of alliances varies greatly. The more a firm controls an alliance, the more similar the firm’s and the alliance’s incentives will tend to be (Williamson, 1994). Thus, more control enhances coordination between the firm and the alliance and protection. However, more control may also lead to a lesser creation ability, if it increases path dependence (Cohen and Levinthal, 1990) and gives more rigidity in the search for new resources (Nelson and Winter, 1984; March, 1991).

CCP Proposition 15a: The more control a firm has over its alliance, the higher the coordination ability.

CCP Proposition 15b: The more control a firm has over its alliance, the lower the creation ability.

CCP Proposition 15c: The more control a firm has over its alliance, the higher the protection ability.
CONCLUSION

Building on previous research, this paper derives a framework that provides a more detailed analysis of learning and protection in alliances than the firm-level concepts used in prior research. Our framework proposes that a firm’s and its partner’s learning can be explained by three abilities — coordination, creation, and protection abilities — and by the type of resource transferred. The coordination, creation, and protection abilities are based on a series of micro-level mechanisms, which, used jointly, can enhance learning and protection. Micro-level mechanisms include firm-specific mechanisms, such as the type of interface a firm has with its alliances, its experience in dealing with alliances, and its learning and protecting intents, and alliance-specific mechanisms, such as the alliance similarity, the alliance diversity, the characteristics of the employees, available information systems, and governance structure.

The contributions of this paper are twofold. First, by identifying detailed mechanisms, the paper helps understand firm-level concepts, such as alliance experience or absorptive capacity, in a clearer way. Second, the paper shows that firms can make explicit choices in order to increase the learning potential of alliances when they decide the type of mechanisms to put into place. Further research will provide an empirical test of the framework.
REFERENCES


